UTS UNIVERSITY OF TECHNOLOGY SYDNEY

Substance use, mental health conditions, and health-related quality of life among young people in Ethiopia: A mixed-method study

by Jemal Ebrahim Shifa

Thesis submitted in fulfilment of the requirements for the degree of

Doctor of Philosophy (Public Health)

under the supervision of Associate Professor Daniel Demant (principal supervisor) and Distinguished Professor Jon Adams (co-supervisor)

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Certificate of Original Authorship

I, Jemal Ebrahim Shifa, declare that this thesis is submitted in fulfilment of the requirements for the award of Doctor of Philosophy, in the School of Public Health (Faculty of Health) at the University of Technology Sydney.

This thesis is wholly my own work unless otherwise referenced or acknowledged. In addition, I certify that all information sources and literature used are indicated in the thesis.

This document has not been submitted for qualifications at any other academic institution.

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List of Abbreviations and Acronyms

AOR	Adjusted Odds Ratio
AUDIT	Alcohol Use Disorders Identification Test
CAGE	Cut down, Annoyed, Guilty, and Eye-opener
DALY	Disability Adjusted Life Years
CDC	Center for Disease Control
CI	Confidence Interval
CIDI	Composite International Diagnostic Interview
COVID-19	Coronavirus Disease 2019
DSM-IV-TR	Diagnostic and Statistical Manual of Mental Disorders-IV-Text Revised
EDHS	Ethiopian Demographic Health Survey
FGD	Focus Group Discussion
GAD	Generalised Anxiety Disorders
JBI-MAStARI	Joanna Briggs Institute Meta-Analysis of Statistics Assessment Review Instrument
LMIC	Low- and Middle-Income Country
MSPSS	Multidimensional Scale of Perceived Social Support
PHQ	Patient Health Questionnaire
PKUST-17	Problematic Khat Use Screening Test
PTSD	Post Traumatic Stress Disorder
QoL	Quality of life
SDG	Sustainable Development Goals
SSA	Sub-Saharan Africa
SUD	Substance Use Disorders
TSQ	Trauma Screening Questionnaire
UN	United Nations
WHO	World Health Organisation
WHOQOL	World Health Organisation Quality of Life questionnaire
WMH	World Mental Health Survey Initiative
YLD	Years Lost with Disabilities

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Publications included in this thesis

Peer-Reviewed Studies

- *Ebrahim J, Adams J, Demant D. Substance use among young people in sub-Saharan Africa: a systematic review and meta-analysis. Front Psychiatry. 2024 Sep 11; 15:1328318. doi: 10.3389/fpsyt.2024.1328318. PMID: 39323964; PMCID: PMC11422104.*

- *Shifa JE, Adams J, Demant D (2025) Substance use among young people in the West Arsi Zone, Ethiopia: A cross-sectional study. PLoS ONE 20(3): e0319432. https://doi.org/10.1371/journal.pone.0319432*

- *Shifa, J., Adams, J. & Demant, D. Mental health conditions of young Ethiopians who use substances: a cross-sectional study in West Arsi zone. BMC Psychiatry 25, 151 (2025). https://doi.org/10.1186/s12888-025-06550-8*

Submitted manuscripts included in this thesis

- Ebrahim J, Adams J, and Demant, Daniel. Health-Related Quality of Life among Young Substance Users in the West Arsi Zone, Ethiopia: A Cross-Sectional Study. (Under review)

Abstract

Background: Substance use and mental health conditions are major public health challenges among young people globally, with an especially severe burden in low- and middle-income countries like Ethiopia. Despite growing concerns, there remains a significant knowledge gap on the interplay between substance use, mental health conditions, and quality of life among young Ethiopians. Cultural taboos, family dynamics, and structural barriers further complicate the issue. Understanding the prevalence, correlates, and lived experiences of young people who use substances is essential for developing contextually relevant interventions.

Aim:
This thesis aimed to examine the prevalence and association of substance use and mental health conditions, assess health-related quality of life (HRQoL), and explore the lived experiences of young people who use substances, as well as stakeholder perspectives, in the West Arsi zone of Ethiopia. It also synthesised regional evidence on substance use to inform future public health strategies.

Methods:
A mixed-methods design was employed. The quantitative component included a community-based cross-sectional study of 427 randomly selected youth aged 14–29 years. Structured, interviewer-administered questionnaires were used to assess substance use, mental health conditions, perceived social support, and HRQoL. Logistic and linear regressions were performed to identify associated factors. In parallel, a systematic review and meta-analysis of 60 studies involving 83,859 young people aged 10-24 years across sub-Saharan Africa was conducted to estimate pooled substance use prevalence and highlight gaps in regional evidence. The qualitative component involved semi-structured interviews with young substance users and focus group discussions with key stakeholders. Thematic analysis was used to explore motivations, patterns, and perceived consequences of substance use. Ethical clearance was obtained from the University of Technology Sydney and Madda Walabu University.

Results:
The lifetime prevalence of substance use among young people in West Arsi was 48.1%, with khat (76.5%) being the most commonly used, followed by alcohol (49.0%), tobacco (33.3%), and

cannabis (23.0%). The systematic review revealed a pooled lifetime, 12-month, and current substance use prevalence of 21%, 18%, and 15%, respectively in sub-Saharan Africa, with alcohol, khat, and stimulants being the most commonly reported substances. Both the local and regional studies identified increasing substance use prevalence, with alcohol and khat consistently common substances consumed.

Mental health conditions were more prevalent among substance users (47%) compared to non-users (26%), with sex, education level, family history of substance use, and family history of mental illness significantly associated with mental health conditions among non-users. HRQoL among substance users was notably low (mean score: 54.8 ±16.7), with especially poor scores in social and environmental domains. Mental health conditions ($\beta = -18.66$, $p < 0.001$) and family history of mental illness ($\beta = -9.80$, $p < 0.001$) were strong predictors of reduced HRQoL.

Thematic analysis of the qualitative data yielded seven broader themes and several subthemes, reflecting a continuum from initiation to continuation of substance use and its consequences. Drivers included early familial exposure, peer influence, trauma, economic hardship, and gendered experiences. Consequences encompassed dependency, stigma, school dropout, and involvement in crime.

Conclusion:
Substance use is highly prevalent among young Ethiopians and is linked to poor mental health outcomes and lower quality of life. Family and social environments play a crucial role in shaping these vulnerabilities. The findings underscore the urgent need for multi-level, youth-responsive, and culturally tailored interventions that integrate substance use prevention, mental health support, and quality-of-life enhancement strategies. Strengthening community awareness, expanding school- and community-based services, and incorporating mental health into primary care are essential steps toward improving the well-being of young people in Ethiopia and similar low-resource settings.

Chapter 1: Introduction

1.1. Chapter preface

This thesis investigates substance use, mental health conditions, and health-related quality of life (HRQoL) among young people in the West Arsi zone of Oromia regional state, Ethiopia and the broader sub-Saharan African context, applying a mixed-methods approach, incorporating perspectives from both stakeholders and young individuals themselves. This first chapter provides a comprehensive overview of the significance of these interrelated public health challenges, their associated factors, and their wide-ranging consequences, framed from global to local perspectives. An extended description of the country and study setting appears in Methods, Chapter 3 (Section 3.2).

Additionally, this chapter summarises existing knowledge gaps and research limitations, demonstrating how these insights informed the development of research questions and justified the study's need. The chapter concludes by situating the study's contextual framework within the broader Ethiopian context and outlining the thesis structure to guide the reader.

1.2. Problem statement

A substantial majority (90%) of the world's young people live in developing countries, with Africa contributing approximately 41.0% of this population, making it demographically distinct from the rest of the world (United Nations Pupulation Fund, 2024).

In Africa, one in three individuals is a young person, and the continent is expected to account for the majority of global population growth in the coming decades (Mpedzisi & Warth, 2021). This demographic trend underscores the critical importance of safeguarding the health and well-being of young people in sub-Saharan Africa (SSA), including Ethiopia, as a factor of future population health and a cornerstone for sustainable social and economic development (Sawyer et al., 2012; United Nations Population Fund, 2023).

Adolescence and young adulthood represent critical developmental periods marked by rapid physiological, psychological, and social changes. These transitions often coincide with increased exploration, risk-taking behaviours, and heightened vulnerability to external influences, making them key stages during which substance use may be initiated (Squeglia et al., 2009). While these developmental dynamics are universal, they are further shaped by contextual realities. In many parts of sub-Saharan Africa (SSA), young people may face

additional challenges such as economic hardships, exposure to conflicts and experiences of physical, sexual, or psychological abuse. These factors can increase their vulnerability to a range of risk behaviours, including substance use (Kabiru et al., 2013). Substance use is associated with adverse outcomes, including increased risk of injuries, mental health disorders, infectious diseases, and social dysfunction, all of which contribute significantly to the growing burden of disease in this age group (Whiteford et al., 2013).

Globally, substance use contributes to millions of deaths and accounts for approximately 1.3% of the global disease burden (Castelpietra et al., 2022; GBD Alcohol & Drug Use Collaborators, 2018), with approximately 9.0% of the global population aged 12 years and older being classified as dependent on psychoactive substances (SAMHSA, 2019). Alcohol is the most commonly used substance globally, with 100 million prevalent cases contributing to 99.22 million disability-adjusted life years (DALYs) (4.2% of all DALYs) (GBD Collaborators, 2018). Additionally, 1.14 billion people were current tobacco users, contributing to 200 million DALYs annually (GBD Tobacco Collaborators, 2021). Regionally, substance use prevalence among young people in SSA was 21.0% (lifetime), 18.0% (12 months), and 15.0% (current) (Ebrahim J et al., 2024).

The negative effects of substance use—including physical health complications, mental health deterioration, and societal consequences such as impaired relationships, lost productivity, and increased healthcare and social costs—are well-documented (Jorns-Presentati et al., 2021). Young people are particularly susceptible to these effects due to their stage of development, where experimentation and peer influences play a significant role in initiating and sustaining substance use (McLellan, 2017; Zhang et al., 2025). Additionally, substance use among young individuals also acts as a maladaptive coping mechanism for underlying social, emotional, or physical health challenges, further complicating their development (Cooper et al., 2016; Sher, 2014). Adolescence is also a critical period for the onset of chronic mental health conditions, many of which remain undiagnosed and untreated, especially in low and middle-income countries (LMICs) (Kieling et al., 2024; United Nations Children's Fund, 2021).

Mental health conditions, such as depression, anxiety, and post-traumatic stress disorder (PTSD), frequently co-occur with substance use disorder (SUD). This comorbidity is often bidirectional, with one condition exacerbating the other, leading to compounded health and social challenges (Davis et al., 2022). Young people with comorbid substance use and mental health conditions experience heightened risks of stigma, social exclusion, family disruption,

homelessness, and legal issues (Erskine et al., 2015). These challenges often result in decreased educational achievement, employment participation, and overall quality of life among young people.

The consequences of substance use and its comorbidity with mental health conditions extend beyond the individual, affecting families, communities, and societal systems (Daley, 2013). For young people, these consequences manifest as impaired health-related quality of life (HRQoL), disrupting important areas such as relationships, education, and employment. Substance use increases vulnerability to chronic physical and mental health conditions, hinders social integration, and perpetuates stigma, significantly limiting young people's ability to realise their full potential during this developmental phase (Erskine et al., 2015; United Nations Children's Fund, 2021).

Ethiopia, like many low-income countries, faces significant challenges in addressing substance use and associated issues (Federal Ministry of Health of Ethiopia, 2020). Despite the growing production, consumption, and distribution of psychoactive substances, including khat—one of the country's top revenue-generating export commodities—intervention strategies remain limited (Wood et al., 2024). Comprehensive evidence on the prevalence, associated factors, and the relationship with mental health conditions and HRQoL among young Ethiopians is scarce. While some previous studies have highlighted the high prevalence and individual impacts of substance use and mental health conditions across various population segments (Mossie et al., 2016; Roba et al., 2019; Roba et al., 2021; Tefera, 2018), the comorbidity of these conditions and relationship with the HRQoL remain poorly documented in the study setting, underscoring a critical need for rigorous research (Alamirew et al., 2025). For example, a study showed that khat users, one of the most commonly used substances in Ethiopia, were ten times more likely to develop depression than non-users (Mossie et al., 2016). This evidence gap hinders the development of targeted, evidence-based interventions for young people.

This thesis aims to address these gaps by investigating the prevalence of substance use, its effects on mental health conditions, and HRQoL among young people in the West Arsi zone of Ethiopia. The findings inform the design and implementation of integrated, young people-centred interventions for addressing substance use and mental health conditions in the study setting and similar contexts across Ethiopia.

Young people, in this thesis, is defined with reference to international, regional, and national frameworks and tailored to each study component. For the systematic review and meta-analysis

(Chapter 4), we adopt the widely used global definition of 10–24 years, encompassing adolescents (10–19 years) (World Health Organisation, 1977) and youth (15–24 years) (United Nations, 1995). For the Ethiopia-based quantitative studies (Chapters 5–7), we follow the national policy framework that defines young people as 10–29 years (FDRE Ministry of Youth and Sports, 2004), but set the lower bound at 14 years for ethical and practical reasons (very low substance use reported under 14 and consent considerations), yielding a primary analytic range of 14–29 years. The qualitative study (Chapter 8) focuses on 18–29 years to ensure mature, independent participation. These component-specific age bands were chosen deliberately to match the aims and constraints of each study; unless otherwise specified, references to young people in this thesis denote those aged 14–29 years. This thesis was set in Ethiopia, with primary data collected in the West Arsi Zone (urban and rural woredas). A full description of the setting appears in Chapter 3 (Section 3.2).

1.3. Justification of the study

Substance use and mental health conditions among young people are a major public health threat in most LMICs, including Ethiopia. According to recent Global Burden of Disease (GBD) reports, mental health conditions rank among the top ten causes of disease globally, are the second largest contributors to years lived with disability (YLDs), and the seventh leading cause of disability-adjusted life years (DALYs) worldwide (Castaldelli-Maia & Bhugra, 2022; GBD Mental Disorders Collaborators, 2022). Approximately 225 million young people worldwide—88.0% residing in LMICs—are estimated to live with a mental health condition (GBD Mental Disorders Collaborators, 2022; Rathod et al., 2017).

In Ethiopia, young individuals aged 10-24 experience a 12.3% prevalence of mental health conditions, contributing to 11.3% of all DALYs and 22.3% of years lost with disabilities (YLDs) (GBD Mental Disorders Collaborators, 2022). The COVID-19 pandemic and the ongoing armed conflicts within the country have intensified this burden (Federal Ministry of Health of Ethiopia, 2020). Given Ethiopia's youth-dominated demographic, coupled with the widespread availability of various psychoactive substances and their detrimental effects on the mental, physical, and social well-being of this group, there is an urgent need for comprehensive evidence to design effective interventions.

Although some studies in Ethiopia have addressed substance use and mental health conditions, they often exhibit limitations such as narrow age ranges, restricted geographic scope, singular

focus on either in-school or out-of-school young people, or a focus on specific substances or conditions (Gebremariam et al., 2018; Geleta et al., 2022; Gutema et al., 2021; Kassa et al., 2014; Melkam et al., 2023; Mihretu et al., 2020). Moreover, they rarely examined mental health conditions and health-related quality of life among young substance users. Most comprehensive studies on these domains are predominantly from high-income countries, whose findings may not be generalisable to Ethiopia's context due to sociocultural, economic, and contextual differences. Additionally, using locally validated tools to assess these public health problems remains rare in Ethiopia.

This thesis, therefore, addresses these gaps by screening for substance use among young Ethiopians and examining mental health conditions and HRQoL among those identified as substance users. It encompasses adolescents and youth from both rural and urban areas, including in-school and out-of-school populations. The findings serve as essential inputs for stakeholders and policymakers, enabling them to design and implement context-specific interventions to address substance use, mental health conditions, and the quality of life of young Ethiopians.

Additionally, this study aligns with national and global priorities, as emphasised in Ethiopia's National Mental Health Strategy and the United Nations' Sustainable Development Goals (SDGs) (Federal Ministry of Health of Ethiopia, 2020; United Nations, 2015). Addressing mental, neurological, and substance use disorders among young people is a critical step forward in advancing public health, social, and economic development in Ethiopia and beyond.

1.4. Research aims and objectives.

Building on the identified public health challenges — specifically, the lack of comprehensive data on substance use and its comorbidities with mental health conditions and HRQoL in Ethiopia—and the justification for this study, the research aims and objectives were developed to address these gaps. Accordingly, this study aimed to investigate substance use and its associated factors among young people, and subsequently assess mental health conditions and HRQoL among those identified as substance users in the West Arsi zone, Ethiopia, as outlined below:

4. To assess the prevalence, key associated factors, and reasons for substance use among young people in SSA.

5. To determine the prevalence and associated factors of substance use among young people in the West Arsi zone, Ethiopia.
6. To identify the key factors associated with mental health conditions among young people who use substances in the West Arsi zone, Ethiopia.
7. To assess the HRQoL and its associated factors among young people engaged in substance use in the West Arsi zone, Ethiopia.
8. To explore the lived experiences, motivations, patterns, and perceived consequences of substance use among young people in the West Arsi zone of Ethiopia.

1.5. Thesis structure

This thesis follows a compilation-based structure, consisting of nine chapters that incorporate peer-reviewed journal articles (both published and submitted for publication). To maintain clarity within the chapter-based structure, some repetition of content has been necessary, particularly where the studies are embedded as stand-alone sections.

The thesis is structured around five distinct yet interrelated research questions (*see Section 1.4, Research aims and objectives*), each requiring a focused and methodologically appropriate investigation. Accordingly, a range of quantitative and qualitative methods was employed to address the unique aspects of each question.

The complexity of the thesis, as presented through chapters and manuscripts, results in some repetition in formatting and structure. For example, while the overarching methodology is outlined in Chapter 3, each manuscript includes its own methods section, tailored to the specific research question it addresses.

Although the thesis includes published studies, minor modifications have been made to enhance clarity, consistency, and the overall narrative flow. These changes do not affect the core findings or interpretations of the original publications.

Additionally, as the project comprises multiple components, the term '*thesis*' is used to refer to the overarching work, while '*study*' refers to the individual investigations included in the thesis project.

Chapter 1: This chapter introduces the key concepts explored in the thesis, including substance use, mental health conditions, and HRQoL. It also contains the problem statement, rationale for the thesis, operational definitions of key concepts and terms, and outlines the research aim and questions.

Chapter 2: This chapter presents a literature review on the prevalence, associated factors, and consequences of substance use, mental health conditions, and HRQoL with a focus on young people. It explores these topics from global to local contexts, highlighting gaps in the literature and providing the rationale for this thesis.

Chapter 3: This chapter presents the methodology of the thesis, which adopted a mixed-method design to address the research questions. It provides details on the study designs, study setting, participant recruitment, sampling procedures, data collection methods, and quality assurance measures. Furthermore, it outlines the primary statistical and analytical approaches used in each study included in the thesis. Ethical considerations are also addressed in this chapter.

Chapter 4: This chapter presents a published systematic review manuscript investigating the prevalence, key factors associated with, and reasons for substance use among young people in SSA.

Chapter 5: This chapter presents a manuscript examining the prevalence and associated factors of substance use among young people in the West Arsi zone of Ethiopia.

Chapter 6: This chapter presents a manuscript examining the key factors associated with mental health conditions among young people who engage in substance use among young people in the West Arsi zone of Ethiopia.

Chapter 7: This chapter presents a manuscript investigating the level of HRQoL among young people engaged in substance use in the West Arsi zone of Ethiopia.

Chapter 8: This chapter presents a manuscript exploring the lived experiences, motivations, patterns, and perceived consequences of substance use among young people in the West Arsi zone of Ethiopia.

Chapter 9: This chapter synthesises the overall findings of the thesis, comparing them with pre-existing literature. It discusses the extent of substance use, mental health conditions, and

health-related quality of life among young people, along with associated factors and consequences. Additionally, it provides organised and contextualised interpretations of the main findings, discusses policy, research, and practice implications. The chapter concludes with subsections on recommendations, study strengths and limitations, and the comprehensive conclusion to the thesis.

1.6. Chapter summary

The introduction provided an overview of substance use, mental health conditions, and HRQoL, highlighting their prevalence, associated factors, and consequences from a global to a local context. It emphasises the interconnected nature of these issues, particularly among young people, and underscores the need for focused research in Ethiopia. The chapter outlines the statement of the problem, the study's rationale, and its significance, culminating in the presentation of the research aim and questions.

The upcoming section, chapter 2, presents an analysis of the existing literature on substance use, mental health conditions, and HRQoL in general and among young people in particular.

Chapter 2: Literature Review

2.1. Introduction

This chapter summarises the current body of research on substance use, mental health conditions, and health-related quality of life (HRQoL) of young people. Section 2.2 discusses the epidemiology of substance use and associated factors among young people. Section 2.3 discusses the epidemiology of mental health conditions and their associated factors among young people. Finally, Section 2.4 focuses on the association between substance use and mental health conditions as well as their effects on young people's HRQoL.

2.2. Overview and epidemiology of substance use

Substance use refers to the continued use of licit and illicit psychoactive chemicals that affect the nervous system, leading to changes in mood, awareness, thoughts, or behaviours (American Psychiatric Association, 2013). When untreated, substance use is associated with significant health risks and adverse consequences across personal, familial, social, educational, and occupational domains (McLellan, 2017; Onaolapo et al., 2022). These impacts extend to society at large, manifesting as reduced productivity, premature mortality, increased healthcare costs, and higher expenditure on criminal justice, social welfare, and societal challenges (Schulte & Hser, 2014b).

This thesis focuses on alcohol, tobacco, khat, and cannabis, substances widely used in Ethiopia and the broader East African region. Ethiopia, in particular, has a long history of cultivating and consuming psychoactive plants like *Catha edulis* (commonly known as Khat/Chat), Cannabis (locally known as Hashish or Ganja), and locally produced traditional Alcoholic drinks such as *Tella*, *Tej*, and *Areke* (Abebe, 2018; Fentie et al., 2020; Zerihun et al., 2015).

Despite the associated socioeconomic and health risks, substance use remains a significant and evolving global public health concern, with patterns varying by substance use and region. According to the World Health Organisation (WHO), an estimated 2.3 billion people consume alcohol (World Health Organisation, 2018a), 1.1 billion use tobacco (World Health Organisation, 2019a), 147 million use cannabis (Tawfik et al., 2019), and 20 million use khat (Corkery et al., 2011). Globally, substance use accounts for approximately half a million deaths annually, with men disproportionately affected (350,000 men and 150,000 women), and

contributes roughly 1.3% of the global burden of disease (GBD Alcohol & Drug Use Collaborators, 2018).

While maladaptive substance use involves all ages, its effects are particularly pronounced in young people (Das, Salam, Arshad, et al., 2016; Schulte & Hser, 2014a). Adolescence and young adulthood represent critical developmental stages coinciding with the initiation of substance use and the potential onset of chronic mental health conditions (Erskine et al., 2015). Factors like poverty, conflict, and abuse (physical, psychological, or sexual) exacerbate their vulnerability, leading to increased risky behaviours and health challenges. Within this demographic, substance use is influenced by various factors, including peer pressure, experimentation, social bonding, and coping with health issues (Cooper et al., 2016; Sher, 2014).

Substance use in Ethiopia is shaped by socioeconomic stressors (e.g., stigma, economic hardship), cultural practices, and the availability of various psychoactive substances (Ayenew et al., 2020; Geleta et al., 2022; Wubetu et al., 2020). In Ethiopian culture, chewing khat and drinking alcohol are commonly seen as a way to connect with others during social gatherings and social ceremonies, and to foster a sense of belonging with the local community (Debele et al., 2023; Manghi et al., 2009).

Furthermore, like other African countries, urbanisation and globalisation have contributed to shifting societal norms, potentially increasing risks associated with heightened substance use among young Ethiopians (Pankhurst, 2019; Roba et al., 2021). Perceptions that substance use boosts concentration and working memory, or the effect of one substance complements another, may further contribute to increased substance use among young people in Ethiopia (Mihretu et al., 2017b; Olani & Decorte, 2023).

Despite the increasing use of substances among young people, studies in Ethiopia have primarily focused on educational settings, with limited exploration of their prevalence in broader community contexts (Abate et al., 2021; Roba et al., 2019; Tefera, 2018). Additionally, existing research often lacks the use of standardised tools to assess substance use and fails to address rural or semi-urban populations comprehensively.

To address the gap, this thesis examines the prevalence of substance use and its associated factors among young people in the West Arsi zone, Ethiopia. It also investigates mental health conditions and HRQoL among young substance users in the study setting. The findings aim to

inform evidence for designing targeted interventions and public health policies, considering substance use's sociocultural and economic contexts.

2.2.1. Alcohol consumption

Alcohol, a psychoactive substance with dependence-producing properties, has been widely used across many cultures for thousands of years (Flor & Gakidou, 2020). Research has consistently demonstrated that harmful alcohol use is causally linked to a range of diseases and injuries, including communicable diseases (e.g., respiratory infections, liver diseases, sexually transmitted diseases) and non-communicable physical (e.g., heart disease, hepatic disease, cancer) and mental health conditions (e.g., alcohol-related disorders, depression, and psychoses). Moreover, alcohol use increases the risk of unintentional injuries (e.g., road traffic incidents, drowning, poisoning, burns) as well as injuries resulting from aggression and violence (Levesque et al., 2023; Parry et al., 2011).

Globally, alcohol is the most commonly consumed substance among young people (World Health Organisation, 2018a), and it is the leading risk factor for death and disability among those aged 15-29. Approximately 320,000 young individuals in this age group die each year from alcohol-related causes, making alcohol a more prominent cause of mortality than many communicable or chronic diseases in this age group (World Health Organisation, 2018a). They often engage in heavier drinking, experience more adverse effects, and are more likely to partake in high-risk behaviours during or after alcohol consumption. This heightened vulnerability is attributed to developmental and psychosocial factors, including physical and emotional changes, peer pressure, risk-taking tendencies, and the heightened sensitivity of developing brains to alcohol (Debele et al., 2023).

Alcohol consumption remains a significant public health concern globally, with notable variations across regions. Studies from African countries report varying prevalence rates among young people, such as 51.9% lifetime prevalence in Kenya (Atwoli et al., 2011), 31.0% 12-month prevalence in Uganda (Swahn et al., 2020), 43.5% lifetime prevalence in Nigeria (Ajayi et al., 2019), 31.5% current prevalence in South Africa (Morojele & Ramsoomar, 2016), and 43.0% overall prevalence in Ghana (Osei-Bonsu, 2017). However, it should be noted that lifetime prevalence is not always a precise measure of current alcohol use, as it includes individuals who may have only consumed alcohol once or in the distant past, potentially overestimating the proportion of active drinkers and underestimating current patterns of harmful or regular consumption.

Similarly, alcohol is consumed among young people in Ethiopia, where drinking is culturally accepted and integrated into various social and traditional practices (Debele et al., 2023). In Ethiopia, it is common to consume alcohol during *Dabo*—a traditional practice of communal work—as well as during religious holidays, public holidays, and various social gatherings such as birthday parties, weddings, and christening ceremonies (Fekadu et al., 2007). These occasions often serve as platforms for social bonding, where alcohol is frequently integrated into the celebrations, reflecting its cultural significance in fostering communal ties.

In addition to commercially produced alcohol, a significant proportion of alcohol consumption involves locally brewed beverages such as *arakie*, *tella*, and *tej*, which often have higher alcohol content and are accessed at affordable prices compared to some commercial alternatives. *Tella* is a traditional homemade drink prepared from a mixture of barley, maize, sorghum, and Rhamnus prenoides (gesho) (Berhanu, 2014). *Arakei*, a stronger distilled beverage, is typically made using similar grains, undergoing additional distillation processes to increase potency (Yohannes, 2013). *Tej*, a honey wine, is prepared from honey, water, and leaves of gesho (Bahiru et al., 2001). It is widely consumed during cultural ceremonies and is also commercially available in urban settings. While these traditional beverages reflect Ethiopia's rich cultural heritage, they also pose public health challenges because of their unregulated production, and associated health risks are attributed to their higher and inconsistent alcohol content (Alemu & Kuyu, 2024).

Research among young people in Ethiopia reveals significant variation in alcohol consumption. Primary studies conducted among students report current alcohol use prevalence ranging from 12.0% to 68.0% (Boltana et al., 2023; Deressa & Azazh, 2011; Gebeyehu & Srahbzu Biresaw, 2021; Kassa et al., 2016; Shegute & Wasihun, 2021; G. Tesfaye et al., 2014; Yismaw, 2015). A systematic review estimated the pooled prevalence of current alcohol use at 27.6% (Roba et al., 2021) and a lifetime prevalence of 46.2% (Roba et al., 2019). A community-based study conducted among young individuals in Jimma, Ethiopia, reported a current alcohol use prevalence of 30.0% (Geleta et al., 2022). Similarly, another review found a lifetime prevalence of 33.9% and a current prevalence of 15.5% among young Ethiopians aged 10-24 (Abajobir & Kassa, 2019).

Factors associated with alcohol use among young Ethiopians include a family history of substance use, mental health conditions, peer influence, male gender, living alone, other

substance use, unemployment, cultural norms, the accessibility of alcohol, and weak policy implementation (Chekole, 2020; Geleta et al., 2022; Kassew, 2023).

2.2.2. Khat use

Khat refers to the fresh leaves and buds of the *Catha edulis* tree, a green leafy plant widely consumed in Ethiopia, Somalia, Kenya, and Yemen for over a century due to its mildly stimulating properties (Megerssa et al., 2014). It is known by different names in these regions: 'qat' in Yemen, 'chat' or 'chad' in Ethiopia and Somalia, 'miraa' in Kenya, and 'marungi' in Uganda and Rwanda. The spread of khat use beyond its original geographic regions is attributed to population movement and globalisation (Feigin et al., 2012; Griffiths et al., 2010).

Khat contains psychoactive ingredients, primarily cathinone, cathine, and norephedrine, with cathinone sharing chemical and structural similarities to amphetamine, producing comparable behavioural effects (Al-Hebshi & Skaug, 2005). While the International Convention on Psychotropic Drugs (1971) classifies cathinone and cathine as controlled substances, khat leaves remain unscheduled, as the WHO's Expert Committee on Drug Dependence determined its abuse potential insufficient for international control (World Health Organisation, 2006). Despite being banned in many countries outside the khat belt, Khat use remains legal in Ethiopia due to its economic importance, cultural significance, and challenges in restricting its cultivation (wider coverage) (Thomas & Williams, 2013). Khat is one of the major cash crops and income earnings for domestic producers and a means of foreign currency for Ethiopia (Hussein et al., 2023; Terefe Tolcha, 2020). Khat ranks as Ethiopia's third-largest export commodity after coffee and oilseed, generating nearly 325 million USD annually (Belwal & Teshome, 2011; National Bank of Ethiopia, 2020), with the cultivation area expanding from 78,570 hectares in 1998 to 248,648 hectares in 2015 (Binalfew, 2017).

Globally, an estimated 20 million people consume khat daily, although solid conclusive evidence on the exact figure is limited (Corkery et al., 2011). Its use has been associated with various physical and mental health conditions, such as liver disease, cardiovascular problems, digestive disorders, depression, anxiety, psychosis, dependence, and lower overall quality of life (Hassan et al., 2014; Mossie et al., 2016; Orlien et al., 2018). Continuous use of khat has also been linked to poor functioning in work, school, personal life, family dynamics, and social relationships (Gudata et al., 2019). This may be associated with decreased productivity due to prolonged sessions of chewing, which often interfere with responsibilities and commitments. Moreover, the financial strain of spending on khat can lead to conflicts within families,

resulting in poor household management. Social relationships are also impacted, as khat use can result in withdrawal from non-using peers and increased association with other khat users, potentially reinforcing the behaviour (Gudata et al., 2019; Wondemagegn et al., 2017).

Among young Ethiopians, khat use is influenced by cultural, social, economic, and psychological factors, often functioning as a coping mechanism for stress and life challenges (Gudata et al., 2019; Mihretu et al., 2017b). Many young people chew to ease the stress from unemployment, academic pressure, family conflicts, and deprivation, relying on its stimulant effects for temporary relief.

In social contexts, khat promotes togetherness by helping individuals feel included and connected, strengthening social ties, and offering supportive networks (Gudata et al., 2019). It is also used to enhance focus and energy, particularly by students during exams or workers in demanding jobs (Kassa et al., 2017). Culturally, khat chewing has been accepted within Ethiopian cultural and religious practices, making it a common part of certain social and ceremonial contexts (Wuletaw, 2018). Psychological factors, including anxiety and depression, drive some individuals to use khat as a form of self-medication, though its chronic use often worsens these conditions (Edwards & Atkins, 2022). Furthermore, urbanisation and modernisation have also contributed to the growing use of khat as young people face new stressors associated with changing lifestyles (Alemu et al., 2020). Khat use often co-occurs with alcohol consumption and cigarette smoking, with smoking enhancing khat's stimulant effects and alcohol counteracting its side effects (Haile & Lakew, 2015; Mihretu et al., 2017a).

The prevalence of current khat use varies across Ethiopian regions, from 1.0% in Tigray to 53.0% in Harari (Haile & Lakew, 2015), 56.9% in Addis Ababa (Lemma et al., 2024), 58.0% in Hossana (Rather et al., 2021), and 64.9% in Agaro, Oromia (Adugna et al., 1994), driven by cultivation patterns, cultural norms, and social factors. The difference could be determined by cultivation, socialisation, and cultural factors (Tessema & Zeleke, 2020b). For example, khat holds immense cultural and economic significance in eastern Ethiopia (Gudata et al., 2019). It is the primary cultivated cash crop, widely regarded as a means of stress relief, and is commonly used by students and workers as an energy booster or performance enhancer. Khat chewing is integral to various community gatherings and social events, including marriage and mourning ceremonies (Cox & Rampes, 2003; Wuletaw, 2018). Notably, in traditional marriage proposals, the groom's family often presents khat along with other items such as coffee to the bride's family as part of the request for their daughter's hand in marriage (Ware, 2019). The

offering signifies appreciation and readiness to forge a bond. Conversely, alcohol plays a more prominent cultural and social role in northern Ethiopia (Tessema & Zeleke, 2020a).

Among young people in Ethiopia, the prevalence of khat use ranges from 6.0% to 65.0% across different settings (Damena et al., 2011; Gadisa, 2014; Gebrie et al., 2018; Hassen et al., 2021; Rather et al., 2021; Tessema & Zeleke, 2020a). The variation in prevalence rates may be attributed to differences in assessment tools and the diverse social, economic, and cultural contexts.

2.2.3. Tobacco use

The Ethiopian Demographic and Health Survey (EDHS) defines tobacco use as the consumption of any form of tobacco product, including cigarettes, piped tobacco, chewing tobacco, snuff/suret, shisha, gaya, or any other type (EPHI & ICF., 2021). Cigarette smoking is the most common form of tobacco use globally and is the leading cause of preventable diseases and premature deaths (World Health Organisation, 2017c). An estimated 1.1 billion people worldwide currently smoke cigarettes, a figure that was projected to remain stable until 2025. Tobacco remains a leading cause of preventable death, accounting for over 8 million deaths annually, with more than 80% occurring in low and middle-income countries (LMICs) (Peacock et al., 2018; World Health Organisation, 2017c). Most tobacco-related illnesses and deaths stem from malignancies, chronic respiratory diseases, and cardiovascular conditions (Brathwaite et al., 2015; Mamudu et al., 2018). In Africa, the number of tobacco-related deaths has risen sharply, from 150,000 in 1990 to 215,000 in 2016, representing a 70.0% increase (Peacock et al., 2018).

The prevalence of cigarette smoking among young people in LMICs varies significantly: 14.0% in Nigeria (Elegbede et al., 2012), 30.0% in Cameroon (Mbatchou Ngahane et al., 2013), 11.0% in Pakistan (Khubaib et al., 2016), 20.0% in India (Pankaj et al., 2015), 60.0% in Bangladesh (Hossain et al., 2017), 15.0% in Malaysia (Saravanan & Heidhy, 2014), 12.0% in Yemen (Nasser et al., 2018), and 11.0% among Iranian university students (Nakhaee et al., 2011).

In Ethiopia, tobacco-related issues are also a growing concern. In 2021, an estimated 8,395 deaths — accounting for 1.1% of all deaths — were attributed to tobacco use, slightly lower than in Kenya (9,418 deaths), but higher than in Cameroon (4,532 deaths) and Botswana (1,188 deaths) in the same year (Knowledge Action Change, 2025). On average, 259 men and 65

women die weekly from tobacco-related illnesses in Ethiopia (World Health Organisation, 2019b). According to the 2016 Global Adult Tobacco Survey (GATS), 5.0% of Ethiopian adults aged 15 and above were current tobacco users, with prevalence higher among men, 8.1%, compared to women, 1.8% (World Health Organisation et al., 2017).

A systematic review estimated current tobacco use in Ethiopia at 7.0% and lifetime use at 12.0%, with males demonstrating higher prevalence for both current and lifetime tobacco use, as well as greater dependence compared to women (Ayano et al., 2020). The review also identified lower current and lifetime tobacco use prevalence among students compared to the general population, confirming the fact that lifetime risk rises with age.

Studies have also identified various factors associated with smoking behaviour. For example, a study of 341 adolescents in Eastern Ethiopia found that 21.0% were current cigarette users, with parental smoking, peer influence, and khat chewing identified as key associated factors (Roble et al., 2021). Similarly, a community-based study conducted in Hossana, Ethiopia, among 591 participants reported a cigarette smoking prevalence of 31.0% (Mekiso et al., 2022).

Among young University students in Ethiopia, the prevalence of cigarette smoking ranges from 13.0% in a systematic review and meta-analysis (Deressa Guracho et al., 2020), 15.0% at Jigjiga University (Kinati Banti, 2017), 20.6% at Hawassa University (Bago, 2017), and 19.0% at Dilla University (Moges, 2014). These figures among young Ethiopian students are much higher than the national average of 7.2% reported among the general population (World Health Organisation et al., 2017). Factors such as peer pressure, khat chewing, and alcohol consumption were associated with cigarette smoking among students. Another population-based study reported smoking prevalence rates of 20.0% among adults in Arbaminch, Ethiopia (Gutema et al., 2021).

2.2.4. Impacts of substance use on HRQoL

Substance use is a major public health concern, with young people particularly at risk (Bratu et al., 2023). Among young people, substance use disrupts critical areas of life, such as relationships, educational attainment, and physical and mental well-being, thereby resulting in potentially long-term socioeconomic consequences and impairing their HRQoL (Armoon et al., 2022; Assari & Jafari, 2010; Volkow & Blanco, 2023). The effects of substance use are multidimensional: it exacerbates physical health issues through increased susceptibility to chronic conditions and increases the risk of mental health conditions such as anxiety and

depression. Concerning social well-being, substance use often leads to isolation, impaired relationships, and stigma, further affecting the ability of young people to build supportive connections (Morojele et al., 2021). These HRQoL impairments are particularly concerning, as they affect young people during a crucial developmental period, limiting their potential to achieve educational, occupational, and personal goals (Saba et al., 2021).

HRQoL measures an individual's perception of their well-being across physical, mental, social, and environmental domains. It is recognised as an important indicator for assessing the impact of chronic health conditions, including substance use and mental health conditions (Birkeland et al., 2018; Laudet, 2011). It provides a holistic measure of an individual's well-being from their own perspective (Assari & Jafari, 2010), evaluating key domains relevant to individuals with chronic health issues, such as substance use (Akbari Sari et al., 2021; Hernandez-Segura et al., 2022).

Studies show that individuals who use substances often experience lower HRQoL than the general population, likely due to the chronic and relapsing nature of substance use disorders and associated physical, psychological, and social comorbidities, which additionally contribute to a reduced life expectancy (Birkeland et al., 2018; Malibary et al., 2019). Various demographic, cultural, economic, and family factors further influence HRQoL among substance users (Assari & Jafari, 2010). Additionally, disparities in HRQoL among individuals who use substances are shaped by intersecting social factors, including socioeconomic status, housing stability, access to healthcare, and experiences of stigma, trauma, and discrimination (Van Boekel et al., 2013). For example, marginalised populations often face additional barriers to care, exacerbating the negative impacts of substance use on wellbeing (Jones et al., 2022).

Importantly, this relationship can also operate in the opposite direction, with low HRQoL contributing to the initiation or escalation of substance use. Individuals experiencing poor physical or mental health, social isolation, or economic hardship may turn to substances as a coping mechanism, seeking temporary relief from distress or a sense of social connection (Heim et al., 2010; Shankar, 2023). This cycle can further entrench patterns of substance use, creating a feedback loop that perpetuates both poor HRQoL and substance dependence. In Ethiopia, the use of substances like alcohol, khat, tobacco, or cannabis among young people has shown increasing trends (Kassew, 2023; Roba et al., 2021). Socio-cultural and economic factors like peer influence, unemployment, and the increased availability of psychoactive substances contributed to higher levels of acceptance of substance use among young

Ethiopians, resulting in substantial health and social consequences (Tarekegn et al., 2022). Consistent with these findings, studies conducted in Ethiopia, including in the study setting for this research, report a high prevalence of substance use across both urban and rural settings (Atnafie et al., 2020; Damena et al., 2011). This risky behaviour negatively affects the HRQoL by increasing risks of poor physical health, social isolation, and reduced productivity (Tarekegn et al., 2022). Quantifying the extent of HRQoL impairments among substance users and identifying key associated factors can serve as a valuable benchmark for policymakers and program evaluators seeking to improve treatment and prevention programs (Maremmani et al., 2007; Torrens et al., 1997).

Despite the growing recognition of the impacts of substance use on HRQoL, studies specifically focused on young substance users in Ethiopia remain limited, with existing research often based on different cultural contexts or among other populations (Alemu et al., 2024; Shumye et al., 2019; Tarekegn et al., 2022). This study aimed to address this gap by assessing HRQoL and its association with demographic, family, and socioeconomic factors among young substance users in Ethiopia's West Arsi zone. Findings aim to guide policymakers and stakeholders in designing targeted interventions to improve the QoL for young Ethiopians affected by substance use.

2.3. Overview and epidemiology of mental health conditions

Mental health is a crucial dimension of individual, community, and societal well-being and should be universally regarded as a priority (World Health Organisation, 2022). The WHO defines mental health as *"a state of well-being in which the individual realises his or her abilities, can cope with the normal stresses of life, can work productively and fruitfully, and can contribute to his or her community"*(World Health Organisation, 2022). For children, mental health emphasises the development of a strong sense of self, the capacity to regulate emotions, form social connections, learn, and engage fully in society (United Nations Children's Fund, 2021).

The burden of mental health conditions among young people is significant and varies worldwide. Those reliant on labour-intensive farming, living in impoverished conditions, or with higher levels of substance use are at greater risk of experiencing mental health conditions (Charlson et al., 2019). Globally, mental health conditions affect one in seven young people, contributing to 13.0% of the disease burden for this age group (Jorns-Presentati et al., 2021;

Kieling et al., 2024; United Nations Children's Fund, 2021). Conditions such as depression, anxiety, and suicidal behaviour often manifest early, with 50.0% of the cases beginning before age 14 and 75.0% by the mid-20s (Jorns-Presentati et al., 2021; United Nations Children's Fund, 2021). Common mental health conditions such as depression and anxiety disorders are among the leading causes of ill health and disability among adolescents, with suicide being the fourth leading cause of death among 15 to 29-year-olds (World Health Organisation, 2017b).

Globally, the prevalence of anxiety disorders among adolescents is estimated at 28.0%, while depressive disorders affect approximately 13.0% (United Nations Children's Fund, 2021). In sub-Saharan Africa (SSA), including Ethiopia, studies show similarly high prevalence rates: 26.9% for depression, 29.8% for anxiety disorders, 21.5% for posttraumatic stress disorder (PTSD), and 20.8% for suicidal ideation (Jorns-Presentati et al., 2021). Socioeconomic challenges, poverty, conflicts, and various forms of abuse amplify the psychological distress among young people in this region. Compounded by the inadequacies of healthcare systems, these factors exposed young people to engage in risky behaviours such as substance use, which not only harms their social, emotional, and physical well-being but also significantly contributes to the overall disease burden in this demographic (Kassew et al., 2023).

Despite their widespread prevalence, mental health conditions often remain underdiagnosed and untreated, particularly in low- and middle-income countries (LMICs) like Ethiopia (Polanczyk et al., 2015; United Nations Children's Fund, 2021), due to systemic challenges such as limited resources, insufficiently trained personnel, low prioritisation, lack of comprehensive evidence, and absence of culturally appropriate interventions (Kirkbride et al., 2024; Meshesha & Johnson, 2020; Rathod et al., 2017).

2.3.1. Traditional and cultural perceptions of mental health in Ethiopia

In Ethiopia, mental health is often perceived through the lens of spiritual and cultural beliefs. Traditional views tend to associate mental illness with supernatural causes, such as spirit possession, curses, or divine punishment (Girma et al., 2024; Girma et al., 2022). These beliefs influence community attitudes, often resulting in stigma and discrimination against individuals with mental health conditions. Many Ethiopians initially seek help from religious leaders, traditional healers, or family elders rather than formal healthcare providers (Abera et al., 2015). Such practices reflect both deeply rooted cultural norms and the limited availability of mental health services, particularly in rural areas. These traditional understandings are reinforced by conservative societal norms, which emphasise collective well-being over individual mental

health. Consequently, open discussions about mental health are rare, and mental illnesses are frequently hidden to avoid shame or social exclusion. This reluctance further limits help-seeking behaviour and delays treatment, contributing to the chronicity of mental health conditions (Alem et al., 2008).

2.3.2. Mental health in Ethiopia's context

Ethiopia exemplifies the challenges faced by young people in many SSA countries (Food and Agricultural Organisation, 2023). Many young Ethiopians grow up in resource-poor settings, where poverty, food insecurity, conflicts, and limited access to education and healthcare services are persistent realities (Admassie & Abebaw, 2014). In rural areas, where traditional values often dominate, mental health conditions are frequently misunderstood or more frequently stigmatised, leading to a lack of recognition and support (Shibre et al., 2008). This perception discourages individuals from seeking professional care and instead pushes them toward spiritual and traditional healers, whose practices may lack evidence-based approaches.

Research highlights that Ethiopian adolescents face unique challenges due to societal pressures, including achieving socioeconomic independence and conforming to traditional norms. These pressures, coupled with higher rates of adverse childhood experiences such as neglect, abuse, and parental separation, are significant risk factors for mental health conditions (Fekadu & Thornicroft, 2014; Mekonnen et al., 2020). Adolescence also marks a critical developmental period, during which mental health conditions like depression, anxiety, PTSD, and suicidality often emerge, particularly among those who use substances (Jaworska & MacQueen, 2015).

Substance use among young Ethiopians further compounds these challenges. Khat chewing, alcohol consumption, and tobacco use are common among young people in Ethiopia, often serving as coping mechanisms for economic hardship and social pressures (Abajobir & Kassa, 2019; Roba et al., 2019). When combined with the prevailing socioeconomic and cultural challenges, substance use may heighten the risk of developing or exacerbating mental health conditions, including anxiety, depression, and suicidality among young people in Ethiopia. Studies from Ethiopia further support the association between substance use and poor mental health outcomes (Melkam et al., 2024; Melkam, Demilew, et al., 2022), highlighting the need for integrated prevention and treatment programs.

Moreover, Ethiopia's healthcare infrastructure is ill-equipped to meet the growing demand for mental health services. The shortage of trained mental health professionals, with psychiatrists

and psychologists disproportionately concentrated in urban centers is profound, leaving rural areas underserved. The absence of mental health policies in Ethiopia and the lack of adequate funding for interventions and prioritisation reflect a broader trend across many LMICs (Alem et al., 2008).

Mental health conditions represent a significant burden in Ethiopia. The GBD-estimated prevalence of mental health conditions in Ethiopia is 12.3%, with a DALYs burden of 1.3% (GBD Mental Disorders Collaborators, 2022). Studies among the general population report prevalence rates ranging from 14.9% to 27.6% (Abdeta et al., 2023; Hunduma et al., 2017; Kassa & Abajobir, 2018; Kerebih & Soboka, 2016; Yimam, 2014). While these rates are concerning, studies on child and adolescent mental health in Ethiopia remain limited. For instance, an older study reported that 3.5% of children had at least one mental or behavioural disorder, with anxiety disorders being the most common (Ashenafi et al., 2001). A recent Systematic review estimated a pooled prevalence of mental health conditions among Ethiopian children at 24.7% (Kassa et al., 2024). The newly launched Ethiopian National Mental Health Strategy 2020-2025 concluded that, at a prevalence of 12-25.0%, mental health conditions of young people play the biggest role in the burden of mental health problems in the country (Federal Ministry of Health of Ethiopia, 2020).

However, there is limited research specifically addressing mental health conditions among young substance users in Ethiopia. This study aims to assess the prevalence of mental health conditions among young substance users and identify associated factors in the West Arsi zone, Ethiopia. The findings inform policymakers and stakeholders in the design and implementation of appropriate interventions.

2.3.3. Depressive disorders

Depressive disorders (depression) are significant public health issues and are characterised by persistent low mood, decreased energy, and a general decline in activity with reduced capacity for enjoyment, interest, and concentration (American Psychiatric Association, 2013). Depression differs from regular mood changes by the severity of the disorder, its symptoms, and duration. Approximately 4.0% of the total DALYs are attributed to depression, making it the fourth largest contributor to the disease burden globally (Whiteford et al., 2013). Epidemiological data showed that depression accounts for roughly 1.2% of the global burden in Africa and 8.9% in high-income countries (Üstün et al., 2004). It is also a substantial contributor to illness and disability among young individuals (Chen et al., 2024).

Young age is a period of transition from childhood to adulthood and is marked by frequent emotional instability that leads to a higher vulnerability toward depression in adolescents (Cortina et al., 2012; Jorns-Presentati et al., 2021). The WHO classified depression as a priority mental health condition of childhood because of its high prevalence, related impairments, and increased risk of suicide (World Health Organisation, 2022).

In Ethiopia, the prevalence of depression among young individuals aged 10-24 years is approximately 3.0%, accounting for 4.0% of total DALYs, a figure similar to the SSA average (GBD Mental Disorders Collaborators, 2022). A study of 4,495 women aged 15-24 found that 22.0% of the women showed symptoms of moderate or severe depression (Erulkar & Medhin, 2022). Another school-based cross-sectional study, conducted in Jimma, Ethiopia, among adolescents aged 10 to 19 years (Girma et al., 2021), using a PHQ-9 cut-off point of 10, found that 28.0% of adolescents had depression, with 18.5%, 8.2%, and 1.3% having moderate, moderate to severe, and severe depression, respectively. Additionally, 6.5% of adolescents reported attempting suicide at least once, and 7.0% had suicidal thoughts in the two weeks preceding the study. Another study of 1,452 jobless young adults aged 18–30 years in Ethiopia reported a depression prevalence of 30.9% (with 56.7% mild, 36.0% moderate, and 7.3% severe depression) (Mokona et al., 2020) .

Young people's mental health conditions, including depression, are shaped by various interconnected factors in Ethiopia. These include poor living conditions, such as food insecurity (Jebena et al., 2016), low income (Bitew, 2014), and limited access to educational opportunities (Kassa et al., 2024). A high prevalence of infectious diseases, such as malaria (M. Tesfaye et al., 2014) and HIV (Adraro et al., 2024), adds to the burden, along with family mental health histories, disruptions in family structures (Dilgasa & Kibret, 2023), and negative childhood experiences (Abate et al., 2025). Exposure to stressful situations, such as violence, conflict, and substance use, is also a concern (M. A. Kassa et al., 2024). Substance use plays a significant role as both a consequence and a contributing factor to mental health conditions. Studies have shown that substance use increases the risk of depression, anxiety, and suicidal behaviour among young people.

Previous studies in Ethiopia have primarily focused on specific subgroups of the young population, such as immigrant women, students, adolescents not enrolled in school, individuals above 18, and the unemployed. Given the higher prevalence of depression, the existence of

contributing factors, and the disproportionate impact on young people, comprehensive evidence is required to design a focused intervention.

2.3.4. Anxiety Disorders

Anxiety is a normal, emotional, rational, and expected reaction to actual or perceived threats. However, it becomes pathological when symptoms persist for a prolonged period, are irrational, occur in the absence of any external stimuli, or impair functionality (American Psychiatric Association, 2013). Feelings of unease, worry, and bodily signs such as elevated blood pressure, rapid breathing, and tightness in the chest characterise pathological anxiety (Yatham et al., 2018).

A global review of anxiety disorder prevalence among young people estimated rates between 7.0% and 10.0% (Bandelow & Michaelis, 2015; Baxter et al., 2013; Guo et al., 2016; Kessler et al., 2007; Yatham et al., 2018). Anxiety disorders in young people are influenced by complex interactions of risk factors, such as individual characteristics (e.g., sex, age, ethnicity, physical health, stress, substance use, infections), parental characteristics (e.g., education, age, social class, employment, mental and physical health history), and familial, and neighborhood, and contextual factors (Bandelow & Michaelis, 2015; Polanczyk et al., 2015; Yatham et al., 2018).

Anxiety is one of the most common mental health conditions reported in Ethiopia, with an estimated incidence of 3.3%, accounting for 8.5% of the YLDs in the general population (Abdeta et al., 2023). Prevalence among young people ranges from 0.03% to 63.0% (Ashenafi et al., 2001; Fekadu et al., 2006; Kibru et al., 2020; Meshesha & Johnson, 2020; Mulatu, 1995).

Studies on anxiety in Ethiopia have largely focused on specific groups, such as individuals with infectious diseases, orphans, or child laborers, highlighting gaps in the broader understanding of anxiety among the general young population (Ashenafi et al., 2001; Fekadu et al., 2006; Meshesha & Johnson, 2020). This study addresses this gap by assessing anxiety along with other mental health conditions among young people, particularly among substance users. It provides evidence that can guide policymakers and stakeholders in designing focused interventions.

2.3.5. Post-traumatic stress disorder (PTSD)

PTSD is classified as a serious mental illness that affects millions of people across the world (Lauren et al., 2020). It occurs after exposure to a traumatic event that threatens life or physical

or mental integrity (Vahia, 2013). PTSD is diagnosed after exposure to a traumatic event, where the individual experiences intense fear, helplessness, or horror, and the event leads to clinically significant distress or impairment in social, occupational, or other areas of functioning (American Psychiatric Association, 2013). PTSD is marked by symptoms like re-experiencing the traumatic event, avoiding reminders, negative thoughts, and heightened neurovegetative responses (American Psychiatric Association, 2013). While most people who experience trauma do not develop mental health conditions, some individuals are more susceptible to both short- and long-term effects (de Jong et al., 2001). Adolescents are particularly vulnerable to mental health conditions following distressing experiences (Charlson et al., 2019).

Though PTSD has been a focus of several epidemiological studies across the world, there are few studies on children and adolescents, especially in developing countries such as Ethiopia. Studies conducted in Morocco to determine the prevalence of PTSD among 982 school adolescents found that 19.3% showed symptoms consistent with PTSD (Astitene & Barkat, 2021). Another study conducted in the Netherlands to assess the prevalence of PTSD among patients with substance use disorder showed a prevalence of 37.0% (Gielen et al., 2012). A review of the national and regional prevalence of post-traumatic stress disorder in SSA found that the overall pooled prevalence of probable PTSD was 22.0% (Lauren et al., 2020). The prevalence of PTSD among different segments of the population of Ethiopia ranges from 17.1% to 58.4% (Anbesaw et al., 2022; Asnakew et al., 2019; Bezabh et al., 2018; Girma et al., 2018; Lauren et al., 2020; Madoro et al., 2020).

Factors influencing PTSD include female sex, exposure to trauma, family history of mental illness, personal mental health history, lower education, low income, comorbid mental health conditions, substance use, trauma intensity, witnessing deaths, poor social support, unemployment, and poor physical health (Girma et al., 2018; Lauren et al., 2020; Tesfaye et al., 2024). PTSD is a common comorbid disorder with substance use, depression, and other anxiety disorders (Brady et al., 2000).

2.4. Association between substance use and mental health conditions.

The association between substance use and mental health conditions is complex, multifaceted, and influenced by various biological, psychological, systemic, and societal factors. Substance use affects the nervous system, altering mood, awareness, thoughts, or behaviours (Dinis-Oliveira & Magalhaes, 2020). It can act as both a cause and a consequence of mental health

conditions, creating a bidirectional relationship that exacerbates functional impairments and undermines overall well-being (Hall et al., 2009). Over half of individuals with a substance use disorder (SUD) experience a comorbid mental health condition, including anxiety, depression, PTSD, and suicidality, at some point during their lives (Hall et al., 2009; Otasowie, 2020). These comorbidities often result in challenges in relationships, employment, and education.

Young people are particularly vulnerable to the interplay between substance use and mental health conditions (Otasowie, 2020). Early initiation of substance use increases the risk of developing SUD and other mental health conditions, while mental health conditions during childhood or adolescence similarly heighten the likelihood of later substance use (Otasowie, 2020). Despite this, the co-occurrence of substance use and mental health conditions among young people in LMICs remains underexplored. Existing studies, however, highlight a strong association between SUD and mental health conditions such as anxiety disorders, depression, and PTSD in these settings.

Various biological, social, and environmental factors contribute to the co-occurrence of substance use and mental health conditions among young people and in general (Goldstein & Bukstein, 2010; Kelly & Daley, 2013). Stress is a well-established risk factor for a range of mental health conditions and serves as a likely common neurobiological link between the pathophysiology of SUDs and mental health conditions (Ross & Peselow, 2012). This link is particularly relevant for young people, as adolescence and early adulthood are critical periods of brain development during which stress-related alterations can have enduring impacts. Prolonged exposure to stress can dysregulate the Hypothalamic Pituitary-Adrenal (HPA) Axis, disrupting limbic brain circuits involved in motivation, learning, behavioural and impulse control, and emotional regulation—functions that are still maturing in young individuals (Kelly & Daley, 2013; Santucci, 2012). Young people often face intense stressors, such as financial hardship, unemployment, academic pressure, family conflict, or the burden of caregiving, which can overwhelm their coping capacities (Perzow et al., 2021). Without access to appropriate support systems or healthy coping mechanisms, they may turn to substances like alcohol, khat, or tobacco as a way to self-soothe or temporarily escape psychological distress. While these behaviours may offer short-term relief, they often exacerbate underlying mental health conditions and increase long-term risk for co-occurring disorders.

The self-medication hypothesis suggests that individuals use substances to alleviate psychological distress, reduce the impact of traumatic memories, or manage symptoms like

anxiety and depression when other support systems are unavailable (Khantzian, 1997; Turner et al., 2018). While some substances may temporarily alleviate symptoms of mental health conditions, they worsen these conditions in the long term, increasing risks of suicidality, homelessness, and reduced functionality. This dynamic is particularly relevant in Ethiopia, where limited access to mental health services, cultural stigma, and economic constraints contribute to the use of substances like khat, alcohol, and tobacco as maladaptive coping mechanisms for managing psychological distress (Girma et al., 2022; Gureje & Alem, 2000).

In LMICs like Ethiopia, systemic barriers such as inadequate healthcare infrastructure, cultural stigma, and economic constraints exacerbate the relationship between substance use and mental health conditions (Abayneh et al., 2017; Trenoweth et al., 2018). This is evident in regions like the West Arsi zone, the setting of this thesis, where public mental health services are extremely limited or non-existent at the community level, and healthcare systems struggle to meet even basic healthcare needs. In such settings, individuals often turn to substances such as khat, alcohol, or tobacco as maladaptive coping mechanisms for psychological distress (Semrau et al., 2015). Over time, this brain reward system adapts to repeated substance use, increasing tolerance and dependency while intensifying underlying mental health conditions. Cultural norms in rural settings can further discourage help-seeking, as mental health condition is often misunderstood or associated with supernatural causes, and substance use may be normalised or even socially accepted (Girma et al., 2022). Economic hardship also plays a role; young people in the region frequently face limited access to employment opportunities and supportive services, making them more vulnerable to both substance use and mental health conditions as a way of coping (Kiely et al., 2015; Rahmani & Groot, 2023).

Peer influence, sociocultural norms, or family dynamics often reinforce substance as a coping mechanism (Watts et al., 2023; Whitesell et al., 2013). In some cases, individuals use substances to fit in socially or manage conflict in relationships, which can perpetuate both substance use and mental health conditions. The social acceptance of substances such as khat and alcohol, in a significant part of Ethiopia, for example, during social gatherings, weddings, religious holiday celebrations, or mourning ceremonies, normalises their use, even among individuals struggling with mental health conditions (Mihretu et al., 2020; Wood et al., 2024). This creates a cycle where a substance is both a coping mechanism and a stressor when relationships deteriorate due to its negative effects.

Poverty, urbanisation, and socioeconomic disparities create conditions in which substance use becomes a means of coping with hopelessness and a lack of opportunities (Mennis et al., 2016). These factors are closely tied to the burden of mental health conditions and substance use, particularly among young people. In urban Ethiopian settings with high unemployment and limited recreational infrastructure, substance use is often more visible and accessible (Kibret, 2014). Economic instability not only increases stress but also limits access to appropriate mental healthcare. For instance, in the urban centres of West Arsi zone—the setting of this study—young people frequently reported turning to khat or alcohol to cope with feelings of inadequacy, marginalisation, or disillusionment linked to joblessness and widening social inequalities (Kassew et al., 2023). This pattern was also echoed in our qualitative findings, where participants described substance use as both a social norm and a personal escape mechanism. Moreover, rural–urban differences within the West Arsi zone were evident in substance use patterns. While rural areas were generally more protective due to stronger community networks, conservative values, and lower substance availability, urban settings exposed young people to greater peer pressure, easier access to substances, and weaker familial or social support systems (Geleta et al., 2021; Kassew et al., 2023). These dynamics help explain the higher rates of both substance use and co-occurring mental health conditions among urban youth in the study area.

The intersectional aspects of substance use and mental health conditions underscore how structural and social factors, such as gender, socioeconomic status, ethnicity, and rural-urban disparities, interact to shape individual vulnerabilities and coping behaviours (Jane-Llopis & Matytsina, 2006). In conservative Ethiopian communities, for instance, young women face distinct challenges: substance use is not only socially unacceptable but often associated with shame, deviance, or moral failure. This intense stigma can compound psychological burden, leading to internalised stress, social isolation, and a heightened risk of untreated mental health conditions among women who use substances (Stevenson et al., 1996). Fear of being ostracised may also prevent women from accessing available support services, thus prolonging distress and increasing dependency. In contrast, young men are often subjected to societal expectations to remain stoic, emotionally restrained, and economically successful. These norms can discourage emotional expression or help-seeking, making substance use a culturally tolerated—though maladaptive—strategy for managing psychological distress, pressure, or failure. As a result, young men may exhibit higher rates of substance use, while the underlying mental health conditions remain unacknowledged or untreated. These gendered dynamics are

further influenced by socioeconomic and spatial inequalities, such as poverty, unemployment, and differential access to education and healthcare, which can intensify substance-related risks across both rural and urban settings.

The intersection of substance use and mental health conditions represents a substantial public health concern, especially among young people in low-resource settings. When these conditions co-occur, their effects are not merely additive but compounded, resulting in a more profound impact on individuals' functioning and well-being. Evidence suggests that the comorbid presence of SUD and mental health conditions leads to greater impairment in HRQoL than either condition alone (RachBeisel et al., 1999; Sullivan, 2022). This is because both conditions can disrupt multiple domains of life—physical health, emotional stability, social relationships, and environmental satisfaction—thereby diminishing overall life quality (Sullivan, 2022).

HRQoL, a multidimensional construct, captures individuals' subjective perceptions of well-being across these domains and has become a widely accepted outcome measure in studies involving individuals with chronic health conditions, including SUDs and mental illnesses (Bakas et al., 2012; Cesnales & Thyer, 2021). Although the concept of quality of life (QoL) varies slightly across studies and populations, core domains such as physical, psychological, social, and environmental functioning remain consistent (Defar et al., 2023; Revicki et al., 2014).

In the Ethiopian context, studies conducted so far have shown a strong association between substance use and mental health conditions. For instance, a study in the Amhara region reported high rates of depression and anxiety disorders among khat users (Atnafie et al., 2020), while research in the Jimma zone found that khat chewers were up to ten times more likely to develop depression compared to non-chewers (Mossie et al., 2016), and a significant association between common mental health conditions and the use of khat and alcohol (Damena et al., 2011). These findings underscore the mental health burden associated with substance use, yet few studies have comprehensively examined how this comorbidity affects young people's HRQoL.

This thesis addresses that gap by screening for substance use among young people in Ethiopia, assessing the prevalence of mental health conditions and health-related quality of life among those identified as substance users. The findings provide important insights for policymakers,

practitioners, and public health stakeholders who aim to design relevant strategies to overcome the problem.

2.5. Overview of existing intervention strategies in Ethiopia

Ethiopia and several countries in sub-Saharan Africa have strategies and service entry points supportive and relevant to young people's substance use prevention and mental health conditions, though coverage and fidelity remain variable. Within educational institutions, for example, health activities with the help of counselling and student clinics and life-skills clubs provide a natural platform for prevention and early identification; however, substance use and mental-health literacy content are often limited, particularly in rural areas, and training, working guidelines, referral linkages, and supportive supervision are inconsistent. In primary care, youth-friendly services and the progressive integration of basic mental health and substance use care (informed by WHO guidance) offer opportunities for brief screening, advice, and referral, but constraints in staffing, supervision, and supplies limit consistent delivery (Appleby et al., 2019; Keynejad et al., 2021). Community and faith-based structures (e.g., idir/afosha, youth associations, and religious institutions) run peer clubs and outreach that can reduce stigma and facilitate engagement, though programmes are unevenly distributed and often concentrated in urban settings (Leulseged et al., 2024).

Implementation is shaped by cross-cutting barriers: stigma and gender norms that deter help-seeking (especially for girls and young women), constrained and competing health budgets, intermittent service disruptions, and political–economic factors—such as the role of khat and alcohol in household livelihoods and local revenue—which can dampen local ownership of restrictive or preventive measures. At the same time, Ethiopia’s Health Extension Programme, extensive school networks, and dense peer and community organisations are important facilitators that can be leveraged for scalable prevention and early linkage to care (Alemayehu et al., 2023; Appleby et al., 2019).

Taken together, these realities suggest that while foundations exist, consistent school and community delivery remains limited. This gap underscores the need—developed further in later chapters—for context-appropriate strategies that embed age-appropriate life skills and mental health literacy in school routines; integrate brief screening, advice, and referral within school health services and primary care (including youth-friendly hours and confidential

pathways); expand peer-led components with safeguards; and partner with community and faith-based organisations to extend reach and reduce stigma.

2.6. Chapter Summary

This section provides a review of existing literature on substance use, focusing on the specific substances commonly consumed in Ethiopia and their effects on the quality of life. It explores the epidemiology and influencing factors of substance use, including its prevalence in Ethiopia and its social and cultural dimensions. The chapter also reviews the literature on mental health conditions, their associated factors, and their impacts on young people globally and in Ethiopia, emphasising socioeconomic challenges and cultural perceptions. Lastly, it highlights the interplay between substance use and mental health, outlining their combined effects on young people's life quality and the gaps in existing research.

The next chapter, Chapter 3, presents the overarching methodological approaches used in this thesis.

Chapter 3: Methodology

3.1. Chapter overview

This chapter builds on the existing body of literature as outlined in the introduction and literature review. It discusses the overall methodology employed in this study and defines and examines the key constructs of the study, providing a rationale for their selection and relevance in addressing the research questions. The chapter outlines detailed descriptions of the study design, setting, participant recruitment strategies, data collection procedures, variables and measurement tools, data quality assurance, and the data management and analysis techniques used.

Throughout this chapter, as well as in the methods sections of individual studies, relevant core and epidemiological terms are defined and applied appropriately. It is important to note that, given the cross-sectional nature of the overall methodology, the study does not support causal inference. Accordingly, terms such as determinant are used to indicate associations rather than cause–and–effect relationships.

3.2. Country Profile and Study Setting

3.2.1. Ethiopia: Country Profile

The study was conducted in Ethiopia, a sub-Saharan African (SSA) country in the Horn of Africa (Figure 1). Ethiopia is bordered by Eritrea to the north, Djibouti and Somalia to the east, South Sudan and Sudan to the west, and Kenya to the south (House of Federation, 2023). It is the second-most populous country in Africa after Nigeria and ranks twelfth globally, with an estimated population of nearly 130 million (United Nations, 2024), with around 76.0% residing in rural areas and over 70.0% of the country's population below age 30.

Ethiopia is a culturally diverse nation, home to over 80 ethnic groups, each with its own language, traditions, and cultural heritage. The major religions include Orthodox Christianity, Protestantism, Islam, and Wakefana. The capital city, Addis Ababa, serves as the political and economic hub of the country and hosts the headquarters of the African Union. It is centrally located within the nation (Carbonetti et al., 2024; House of Federation, 2023).

Administratively, Ethiopia is structured into four levels: regions, zones, woredas (districts), and kebeles. The country is composed of twelve regions and two city administrations, further

divided into numerous zones, woredas, and kebeles. Regions or regional states, also known as *kilil* locally, are the first and largest administrative divisions and are based on ethno-linguistic territories. Regions are subdivided into zones, zones into woredas or districts, and woredas into kebeles, which are the smallest administrative units in Ethiopia (House of Federation, 2023).

Oromia, one of Ethiopia's twelve regional states, is the largest in terms of land mass and population. Covering about 34.0% of the country's landmass, Oromia accounts for 37.0% of Ethiopia's population (Central Statistical Agency, 2013). This study was conducted in the Oromia regional state.

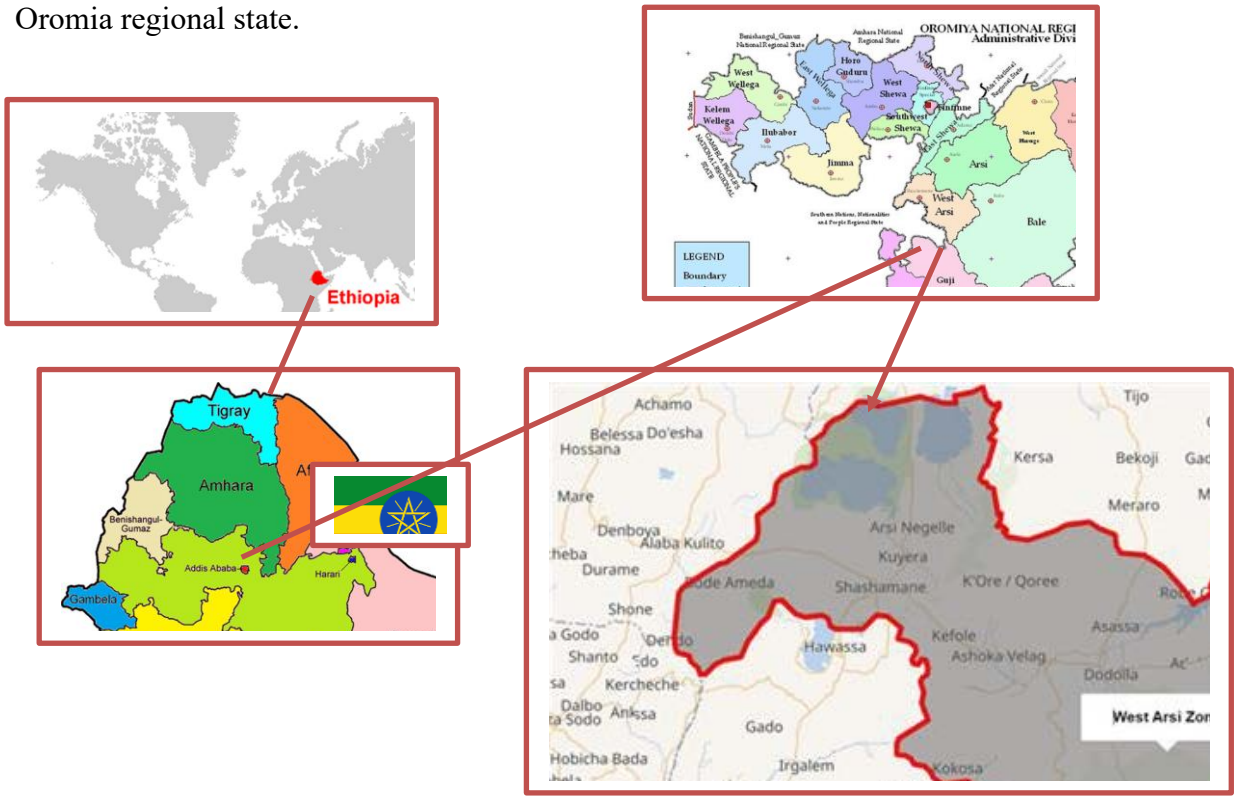

Figure 1: Maps of the study area adapted from Google Maps, 2024.

3.2.2. Study setting

The Oromia region is divided into twenty administrative zones, thirty town administrations, 287 rural, and forty-six town woredas (districts) (House of Federation, 2023). The study was specifically conducted in the West Arsi zone of Oromia Regional State, located in the south-central part of the country (see Figure 1). Shashemene, the capital of the zonal administration, is located approximately 250 kilometres south of Ethiopia's capital, Addis Ababa. The zone includes thirteen districts and two town administrations, covering an area of 540 square kilometres. According to the Central Statistics Agency report from mid-July 2022, the zone's total population was approximately three million, with young people aged 10-29 years accounting for 1.2 million (Central Statistical Agency of Ethiopia, 2022).

3.2.3. Health care delivery system in Ethiopia

Ethiopia's healthcare system operates as a decentralised structure, aiming to deliver comprehensive services to its diverse urban and rural populations (Federal Ministry of Health of Ethiopia, 2010). The offices at various levels of the health sector in Ethiopia, ranging from the Federal Ministry of Health (FMoH) to regional health bureaus and woreda health offices, share decision-making processes, powers, and duties. The FMOH oversees policy formulation, strategic planning, and national-level monitoring, while regional health bureaus adapt and implement these strategies based on local needs. As illustrated in **Figure 2**, Ethiopia's healthcare system follows a three-tier structure. At the primary level, health posts, health centers, and primary hospitals focus on basic health services and disease prevention. The secondary level includes general hospitals, which serve approximately one million people and function as referral centers for primary hospitals. The tertiary level consists of specialised hospitals, providing advanced care for approximately five million people and serving as referral centers for general hospitals.

Health care service provision in Ethiopia is largely publicly provided, with privately owned centers mainly focusing on curative aspects. While some essential health services are universally accessible, most curative services require out-of-pocket payment by individuals (Federal Ministry of Health of Ethiopia, 2014). Ethiopia's healthcare policy prioritises health promotion, disease prevention, and universal access to essential services through the National Essential Health Service Package (EHSP), which is implemented via a series of five-year Health Sector Transformation Plans (HSTPs) (Federal Ministry of Health of Ethiopia, 2010).

Recognising the increasing burden of mental health conditions and substance use disorders, Ethiopia's health policy, as articulated in the HSTPs and the National Mental Health Strategy, places significant emphasis on addressing these challenges (Federal Ministry of Health of Ethiopia, 2020). Key national mental health strategies include the integration of mental health services into primary healthcare settings, youth-targeted campaigns to raise awareness about mental health and the dangers of substance use, capacity building through training healthcare professionals in mental, neurological, and substance (MNS) disorders, expanding access to treatment in general hospitals, and promoting culturally sensitive and community-driven approaches to reduce stigma and enhance care delivery.

Organisations like the World Health Organisation (WHO), other United Nations organisations, local and international non-government organisations (NGOs), civil society organisations

(faith-based and community-based), and professional organisations have long been actively involved in Ethiopia, complementing the government's efforts in various humanitarian and development sectors. These organisations play a crucial role in supporting the public healthcare system, particularly in the areas of mental health and substance use. Organisations such as the WHO, People in Safe Charitable Organisation (PISCO), Ethiopian Mental Health Society, Makedonia Humanitarian Association, Gefersa Rehabilitation Center, and Mekele Youth Development Center focus on increasing access to mental health care and raising awareness about the risks associated with substance use. These organisations often engage in capacity building, community mobilisation, and advocacy for improved mental health policies and substance use prevention strategies. Some also provide institutional or community-based rehabilitative services, though these remain limited.

These efforts are vital in addressing the gaps in Ethiopia's healthcare system, particularly in rural areas where healthcare access is limited, and stigma surrounding mental health and substance use remains high. Collaborative frameworks between NGOs and public health entities enhance resource allocation, expand service coverage, and promote community resilience in combating substance use and mental health challenges.

For young people, targeted initiatives include school-based programs, community outreach activities, and digital campaigns designed to educate young people about the risks of substance use and provide resources for mental health support. Programs such as the Child and Youth Empowerment Initiatives (CYEI) and Youth Action for Mental Health (YAMH) actively engage young people by providing safe spaces, peer support groups, and education on coping strategies for stress and mental health challenges.

In the study setting, West Arsi Zone, the Tamra Youth Center, based in the capital, Shashemene, is the only non-government organisation currently implementing youth-oriented healthcare services, primarily focusing on reproductive health. The zone has 92 public health facilities, including one referral hospital, two general hospitals, four primary hospitals, and 85 health centers currently providing services. All public hospitals offer psychiatric care services for mental, neurological, and substance use disorders through outpatient departments. The referral hospital also provides admission services at a newly built neuropsychiatric center, supported by two neurologist volunteers who have long provided humanitarian services in the hospital. The center primarily focuses on neuropsychiatric disorders, such as epilepsy management, while also offering care for other mental health and substance use-related

conditions. However, there are no institution-based or community-based substance use rehabilitation services run by either the government or private entities in the zone.

These efforts are vital in addressing the gaps in Ethiopia's healthcare system, particularly in rural areas where healthcare access is limited, and stigma surrounding mental health and substance use remains high. Collaborative frameworks between NGOs and public health entities enhance resource allocation, expand service coverage, and promote community resilience in combating substance use and mental health challenges.

Beyond policy intent, implementation studies indicate that integrating mental health into primary care in Ethiopia is feasible but variably adopted. mhGAP-aligned task-sharing pilots and scale-up efforts have demonstrated improvements in detection and treatment initiation for common mental, neurological, and substance-use (MNS) conditions at health-centre level when paired with focused training, supervision, and supply support; however, coverage and continuity remain uneven, particularly in rural settings, due to workforce turnover, supervision gaps, psychotropic stock-outs, and stigma (e.g., programmatic case studies and PRIME/ENACT evaluations). School and community platforms show promise but limited systematic evaluation in Ethiopia: life-skills and mental-health-literacy activities within school health programs and youth clubs are present in some districts, and community delivery via the Health Extension Program (HEP), faith-based structures, and peer groups can enhance engagement; still, fidelity, rural reach, and sustained resourcing are inconsistent. Regional reviews from sub-Saharan Africa report small-to-moderate effects of school life-skills/SEL and mental-health-literacy packages on knowledge, help-seeking, and some behavioural outcomes, and improved linkage to care when community/peer components are added, suggesting viable models for contextual adaptation in Ethiopia. Overall, the evidence supports the thesis's emphasis on strengthening youth-centred, integrated services—leveraging HEP reach, school networks, and community organisations—while addressing known barriers (staffing and supervision, commodity security, stigma and gender norms, and budget constraints) to move from policy to consistent practice (Das, Salam, Lassi, et al., 2016; Haileamlak & Ataro, 2023; Mendenhall et al., 2014; Tadesse Gebremedhin et al., 2021).

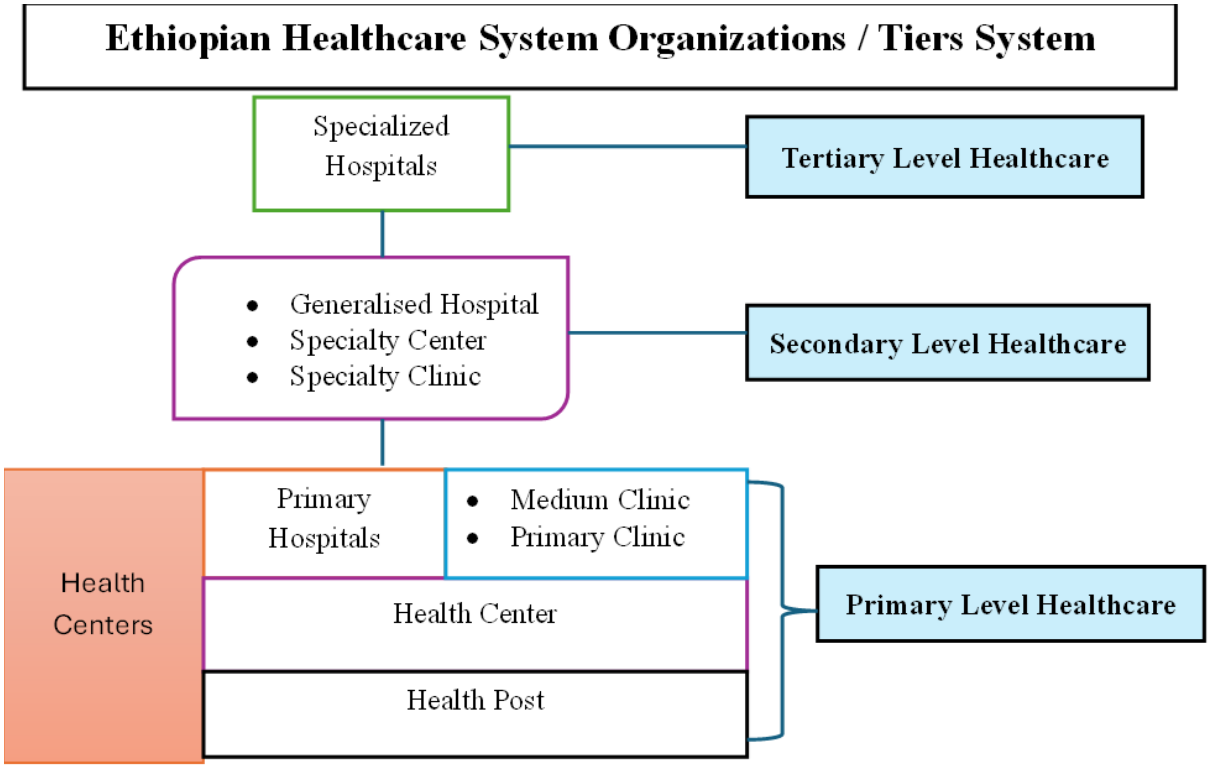

Figure 2: The current three-tier system of health service delivery in Ethiopia

3.3. Philosophical approach and study design

3.3.1. Philosophical approach

Ontology: Understanding the nature of core problems

Ontology, the philosophical study of the nature of being and existence, informs how concepts within a phenomenon are defined and understood (Hathcoat et al., 2019; Lawson, 2004). In this study, substance use, mental health conditions, and health-related quality of life (HRQoL) among young people are conceptualised as interconnected and complex phenomena. These challenges arise from the intricate interplay of biological, social, cultural, economic, and environmental factors.

Adopting a constructivist ontological stance, the study views these issues as dynamic and context dependent. Substance use, mental health conditions, and HRQoL are not isolated biological or behavioural occurrences; instead, they are shaped by broader societal and individual factors such as sociocultural norms, family dynamics, peer influences, and economic circumstances (Belfiore et al., 2024; Kirkbride et al., 2024; Nawi et al., 2021). This perspective

recognises the fluidity of these phenomena and highlights their susceptibility to the unique lived experiences of young people in Ethiopia, providing a foundation for nuanced inquiry.

Epistemology: Examining Concepts and Constructs

Epistemology, the study of the nature and scope of knowledge, shapes how research approaches the acquisition and interpretation of information (Sol & Heng, 2022). In this study, a pragmatic epistemological approach was adopted, integrating quantitative and qualitative methods to address the complexity of the research questions and ensure actionable findings.

Quantitative methods were employed to screen for and measure substance use prevalence and associated mental health conditions. These methods allowed for precision and generalisability, offering insights into patterns and relationships at the population level. To explore HRQoL, a mixed-methods design was utilised, blending quantitative assessments with qualitative insights. This approach enabled a comprehensive understanding by capturing measurable data and contextualising it with participants' subjective experiences.

Given the interconnected nature of the problems, occurring across social, cultural, biological, and environmental domains, a pragmatic approach was ideal for addressing real-world challenges and generating meaningful, actionable knowledge (Kelly & Cordeiro, 2020). Pragmatism emphasises solving problems within their specific contexts, ensuring the study's focus aligns with the lived realities of young Ethiopians.

3.3.2. Overview of the study design

This thesis employed a mixed-methods approach, incorporating both qualitative and quantitative research methodologies to address the research objectives comprehensively. The decision to adopt this design was informed by the sensitive and complex nature of substance use and mental health conditions, particularly among young people, issues that are often underreported due to a range of personal, social, and cultural barriers (Richert et al., 2020). In Ethiopia, many young individuals experiencing such challenges do not disclose their problems or seek help (Kassew et al., 2023). This reluctance can stem from various factors, such as low health literacy, difficulty expressing emotions, fear of social stigma, high tendencies for negative self-evaluation, low self-confidence, emotional immaturity, reliance on maladaptive coping strategies, and cultural and societal expectations related to discussing substance use and mental health conditions within the family and among friends (Belete et al., 2019; Kasturi et al., 2014).

Given the multifaceted nature of these issues, a mixed-methods design was necessary to both quantify the prevalence and associated factors and explore the contextual and lived experiences underlying them. This approach allows for triangulation, enhancing the credibility of findings through the use of multiple data sources and methods (Fielding, 2012), and balances the strengths and limitations of each approach by combining generalisability with depth.

A convergent mixed-methods design was used, where quantitative (systematic review and cross-sectional study) and qualitative (interviews and focus group discussions) data were collected concurrently, analysed independently, and integrated during the interpretation phase. Findings are presented in distinct, self-contained chapters, reflecting the compilation-based thesis format.

Integration of findings took place during the final discussion chapter, which synthesised and interpreted results across studies to offer a more comprehensive explanation of the research questions. This approach aligns with the convergent parallel design in mixed-methods research (Creswell & Clark, 2017), where qualitative and quantitative data are collected and analysed separately, but merged during interpretation to enhance understanding and validity through triangulation.

3.4. Systematic review and meta-analysis

The findings of this study are presented in Chapter 4. This systematic review and meta-analysis were conducted to synthesise available evidence on the prevalence, associated factors, and reasons for substance use among young people in SSA. The review aimed to provide a comprehensive regional overview that could inform policy, programming, and future research on young people's substance use patterns.

The review followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines (Page et al., 2021), ensuring a transparent and replicable process. A comprehensive literature search was conducted across major electronic databases. Studies were screened against predefined inclusion criteria, and quality was appraised using validated tools.

For the purpose of this review, young people were defined as individuals aged 10-24 years, a widely used classification in global research. This age range encompasses adolescents (10-19 years) (World Health Organisation, 1977) and youth (15- 24 years) (United Nations, 1995).

While this definition differs slightly from other components of the thesis, it was selected to enhance comparability with existing SSA literature.

A standardised data extraction form, adapted from the Joanna Briggs Institute (JBI) tool (Munn et al., 2015) was used to systematically collect key information from each included study. Extracted variables included: primary author, publication year, study location, design, sample size, gender distribution, age statistics, prevalence estimates, substance types, definitions and measurement of substance use (e.g., ever use, 12-month use, current use, harmful use, hazardous use, dependence), assessment tools, associated factors, and the key findings. Data extraction was conducted by JE with close input from all co-authors. Each step was cross-checked line-by-line against the JBI checklist by all investigators to ensure adherence to the pre-specified eligibility criteria, and discrepancies were resolved by consensus.

Study quality was assessed using the Joanna Briggs Institute Meta-Analysis of Statistics Assessment and Review Instrument (JBI-MAStARI) critical appraisal checklist for prevalence studies (Munn et al., 2015), allowing for systematic evaluation of methodological rigour.

Meta-analyses were conducted using Stata Version 17 statistical software. Heterogeneity among studies was assessed using Cochrane's Q-test and I^2 statistic, while univariate meta-regression analysis was employed to explore potential sources of heterogeneity. A random-effects meta-analysis model was employed to estimate the pooled prevalence of substance use, accounting for between-study variation. Subgroup analyses were conducted based on relevant study characteristics, such as country, region, age group, year of publication, or substance type. Publication bias was assessed using Egger's and Begg's tests at a 5% level of significance.

Anticipating substantial methodological and contextual variability across studies, we prespecified use of random-effects models and subgroup analyses (region, country, and study setting) to explore heterogeneity. Because study-level covariates (e.g., age bands, instruments/cut-offs, sampling frames) were inconsistently reported, further moderator analyses (e.g., meta-regression) were not feasible. Consequently, pooled estimates are interpreted as broad regional summaries rather than precise point estimates for any single setting. Residual heterogeneity is reported transparently in Chapter 4.

The findings from this review informed the design of the original primary studies conducted among young people in Ethiopia, ensuring contextual relevance and alignment with existing evidence.

3.5. Quantitative Studies

3.5.1. Overview

This section outlines the overarching methodological approach employed for the community-based cross-sectional studies based on primary data collected from young people in the West Arsi zone in Ethiopia. These studies form the second major component of the thesis and are presented in detail across Chapters 5 to 7. Each study addresses a distinct but interrelated aspect of the overarching research questions, focusing on substance use, mental health conditions, and the health-related quality of life (HRQoL) among young people.

While each chapter provides specific methodological details relevant to its objectives, this section presents the shared methodological framework, including the study participants, setting, sampling strategies, participant recruitment, data collection procedures, variables and measures, and key ethical considerations that underpin all three studies.

3.5.2. Study Participants

The study population for this research consisted of young people aged 14-29 years living in the West Arsi zone, Oromia region, Ethiopia. This age group was selected for its demographic dominance within the country and its representation of a critical developmental stage where substance use, mental health conditions, and quality of life are priority concerns.

3.5.3. Operational definitions of core concepts

Young people - in this thesis, the definition of young people was guided by international, regional, and national frameworks, and adapted to suit the specific methodological requirements of each study component. For the systematic review and meta-analysis (Chapter 4), which focused on SSA, we adopted the United Nations' widely accepted definition of young people as those aged 10-24 years. This range encompasses both adolescents (10-19 years) (World Health Organisation, 1977) and youth (15-24 years) (United Nations, 1995), consistent with global practices.

For the cross-sectional study conducted in Ethiopia (Chapters 5,6,7), we employed the broader nationally endorsed definition of young people — those aged 10 to 29 years — in line with Ethiopian demographic and policy frameworks (FDRE Ministry of Youth and Sports, 2004). However, the lower age limit of 14 years for participation in the quantitative study was

determined by ethical, developmental, and sociocultural considerations. Children younger than 14 often lack the maturity to meaningfully respond to sensitive questions on substance use and mental health, and their inclusion could have introduced both ethical risks and unreliable data. In the Ethiopian context, it is also highly unlikely for children under 14 to engage in substance use, as they generally lack the financial resources and social independence required to access substances. This is consistent with existing evidence showing that substance use is rare in this age group. Furthermore, epidemiological studies indicate that around 50% of lifetime mental health problems emerge by age 14 and nearly 75% by the early twenties, highlighting the importance of focusing on mid-adolescence and early adulthood as critical periods for research (United Nations Children Fund, 2021). By setting the threshold at 14 years, the study captured this key developmental window while minimising ethical and cultural concerns, thereby ensuring both the validity and appropriateness of the research. To safeguard the welfare of minors aged 14–17 years who were included, informed assent was obtained from the participants alongside parental or guardian consent, ensuring respect for their autonomy while maintaining appropriate protection.

In the qualitative study (Chapter 8), young people aged 18-29 years were purposively selected to ensure respondents could provide mature, reflective, and independent perspectives of their substance use experiences.

Although the age brackets differ slightly across the different components of the thesis, this variation was done deliberately to align with the conceptual aims, ethical considerations, and practical realities of each study. This should be taken into consideration when interpreting both the individual findings and the overall integrated conclusions presented in Chapter 9.

Beyond methodological consistency, the definition of young people in this project also reflects the contextual demographic realities of Ethiopia, where individuals aged 10 to 29 years account for approximately 42.0% of Ethiopia's total population (Admassu et al., 2022; Ethiopian Public Health Institute et al., 2021). Given their demographic weight and societal role, young people are a critical force for Ethiopia’s social, political, and economic development.

Inclusion criteria: The target population included young people aged 14-29 years, residents of the study area who had lived there for at least six months at the time of the survey (In the Ethiopian context, six months is widely regarded as the minimum period required for recognising residency in a neighborhood), could provide informed consent and/or assent, and were willing to participate.

Exclusion criteria: Young people who were critically ill and unable to provide information, and individuals who were absent during the data collection period were excluded.

Study-specific inclusion: Young people aged 14-29 years who met the general inclusion criteria were surveyed to determine the prevalence of substance use and associated factors, in Chapter 5, whereas participants for the subsequent Chapters 6 and 7 were drawn from those screened for substance use in Chapter 5.

3.5.4. Sample size determination

The sample size for the general survey (Chapter 5) was determined using a 95% CI with a Z-value of 1.96, a 5% level of precision (d = 0.05), an estimated proportion of substance use (P = 50.0%), and a 10% non-response rate. The proportion of 50.0% was considered to ensure the inclusion of the maximum possible sample size for this study (Daniel & Cross, 2018). Based on these parameters, the required sample size was determined to be 427 participants**.**

To further ensure adequate statistical power and account for key factors associated with substance use, such as sex, family history of substance use, and peer substance use reported in previous literature, additional sample size calculations were conducted using the double population proportion formula. However, a comparison of all independently calculated sample sizes revealed that the single population proportion formula based on a 50.0% prevalence provided the largest sample size. Consequently, the sample size of 427 participants was adopted as the final sample size for the study of substance use in Chapter 5.

For the subsequent mental health condition and health-related quality of life (HRQoL) studies (Chapters 6 and 7), the sample size was not independently determined; instead, participants who reported substance use in the initial study (Chapter 5), totalling 204 individuals, were included in these analyses. This ensured that the mental health condition and HRQoL assessments focused on the subset of young people identified as substance users in Chapter 5.

3.5.5. Participant recruitment

The study was conducted in the West Arsi zone of the Oromia Regional State, Ethiopia. This zone was chosen due to the researcher's familiarity with the area, the significant production, distribution, and accessibility of various psychoactive substances, and the high unemployment rate in the region (Mokona et al., 2020), which has been identified as a potential risk factor for substance use.

Among the 13 woredas in the West Arsi zone, four woredas (*Shashemene, Adaba, Wondo, and Negelle Arsi*) were purposively selected, considering population size, security, and the distribution/production of different substances. This selection represents approximately 30.0% of the woredas within the West Arsi zone and is considered feasible coverage within the selected woredas. Within each woreda, two rural and two urban kebeles (the smallest administrative unit in Ethiopia) were selected based on their accessibility and the concentration of the young population, and the total sample was allocated to kebeles proportionally to their population. Within kebeles, eligible youth were selected by systematic random sampling (see **Table 1**). The urban-rural stratification was included to facilitate comparisons, given documented variations in substance use between urban and rural communities in Ethiopia (Zenbaba et al., 2022).

Because woredas were not selected with probability proportional to size (PPS), inclusion probabilities may differ slightly by woreda. To assess this, we computed **woreda-level sampling weights** as $W_h=N_h/n_h$, where N_h is the woreda population and n_h is the analysed sample from that woreda. Using the analysed counts (Shashemene 141; Adaba 88; Wondo 79; Negelle Arsi 116) and woreda populations (158,357; 94,451; 87,484; 129,565), the raw weights were:

- Shashemene: 1,123.1
- Adaba: 1,073.3
- Wondo: 1,107.4
- Negelle Arsi: 1,116.9

For analysis, weights were normalised to have a mean of 1 (so they do not change the total N): 1.016, 0.971, 1.002, and 1.011, respectively. The coefficient of variation of the raw weights was ~1.7%, implying a negligible design effect from unequal weighting alone, which is approximately 1.0003. Because proportional allocation yielded very similar sampling fractions across woredas, the design is approximately self-weighted; we therefore report unweighted estimates, with inference limited to the sampled kebeles in the four selected woredas.

Following the initial step that involved the identification of the selected kebeles, and to prepare for data collection, a one-week census of households with young individuals was conducted. Each household was given a unique number to establish a sampling frame. The numbering process began at a central or predefined landmark in each kebele, such as the kebele administration office, mosque, church, school, or another prominent feature, depending on the

setting. From this starting point, households were numbered systematically, ensuring full coverage within the kebele boundary until the last household to be included in the study was reached.

Local young individuals, capable of writing, participated voluntarily in the process of household identification and numbering, assisted by local law enforcement personnel assigned from the kebele administration office to ensure the safety and smooth execution of the process, particularly to address the local security concerns. This was necessary due to the challenge of obtaining comprehensive information about the target population from local government sources.

The unique household identification number formed the basis for a lottery system used to randomly select households for participation. Samples were proportionally allocated among the selected kebeles to ensure representation based on the total number of young people in each kebele. Once households were identified, data collectors conducted interviews with young individuals in the selected households. In situations where more than one eligible individual was present in a household, a lottery method was applied to select one participant, ensuring randomisation and avoiding clustering effects.

Table 1: Proportional distribution of sample size among the chosen kebeles, West Arsi, 2024

S.#	Selected Woreda	Woreda total population	Selected Kebele	Sample size from each kebele	Total sample from each woreda
1	Shashemene	158,357	Awasho (*U*)	43	143 (*141 included in the analysis*)
			Dida boke (*U*)	38	
			Faji goba (*R*)	33	
			Borera (*R*)	29	
2	Adaba	94,451	Wosha (*R*)	22	88
			Bucha raya (*R*)	21	
			Kebele 01 (*U*)	23	
			Kebele 02 (*U*)	22	
3	Wondo	87,484	Gotu (*R*)	17	79
			Shasha (*R*)	18	
			Hintaye (*U*)	21	
			Busa (*U*)	23	
4	Negelle Arsi	129,565	Kersa ilala (*R*)	24	117 (*116 included in the analysis*)
			Melka shehiti (*U*)	31	
			Kiltu dema (*U*)	32	
			Ali woyo (*R*)	30	
	4 woredas		*16 kebeles*	*427*	*427(424 analysed)*

U= Urban *R= Rural*

3.5.6. Data collection process and quality control

A face-to-face interview was conducted door-to-door to administer the questionnaire. The overall data collection took place from May 18, 2023, to September 22, 2023. Face-to-face data collection was adopted to counter the potential for information contamination due to the low literacy rate in the region (World Bank, 2020). Experience with research in the Ethiopian context shows that, in the case of remotely administered and self-reported questionnaires, young people tend to share information with their friends and relatives, leading to potentially biased responses in addition to ethical concerns. This information sharing, a critical problem in research, could result from low literacy, the unfamiliarity of the community with the concept of research, and communication problems that interfere with information comprehension. Additionally, online surveys were not considered viable due to the limited and inconsistent internet access and use across the country. Given these challenges, face-to-face interviews were determined to be the most appropriate and effective method for data collection, ensuring reliable and accurate responses from the study participants.

Questions used in the survey data collection were structured into sections, including items (I) assessing the sociodemographic characteristics of respondents, (II) screening substance use, III) assessing mental health conditions, and IV) examining perceived social support (***see Appendix – 1***).

Most of the tools used in the study were standardised questionnaires with prior validation in Ethiopia and other African settings. Previously translated versions of these tools, used in various earlier studies, were adapted for the current study. For some tools, additional translation from Amharic to Afan Oromo was necessary to cater to the local language needs of the study site. This translation process was conducted collaboratively by the primary researcher, an expert from Madda Walabu University's English department, and the data collectors. The process included iterative back-and-forth translation to ensure linguistic consistency and cultural relevance. This meticulous approach ensured that the questionnaires captured the intended information while respecting the cultural and linguistic nuances of the target population.

The data collection was carried out by a team of four experts who were proficient in both Afan Oromoo and Amharic. They were assisted by local law enforcement personnel assigned by the Kebele administration office to address the safety concerns and smooth implementation, particularly in areas with potential security concerns. The primary researcher supervised the

overall data collection process, providing oversight and assisting in data collection when necessary.

Before data collection began, a training session was conducted for the data collectors to ensure a shared understanding of the study objectives, the data collection tools, and the overall process.

During the data collection, participants were given a detailed explanation of the study as included in the information sheet, and those meeting the eligibility criteria were asked for informed consent. Most participants provided written consent, while those with functional illiteracy gave verbal consent. For participants under the age of 18, written consent was obtained from parents or caregivers after explaining the study's purpose in detail, as outlined in the translated parent information sheet. Participants under 18 also provided written consent, apart from three individuals within this age group who declined to do so. The reason cited for declining consent was a privacy concern, stating that they did not wish to disclose their substance use to their families. Their decisions were respected, and the next eligible participants were included instead.

Interviews were conducted in locations chosen based on the preferences of participants, ensuring a comfortable and private setting. The duration of each interview ranged from 35 to 60 minutes.

3.5.7. Variables and measures

3.5.7.1. Study variables

Outcome variables:

Primary outcome variables in each study were outlined as follows:

- Chapter 5: The outcome variable was substance use, focusing on alcohol, tobacco, khat, and cannabis.
- Chapter 6: The outcome variable was the experience of mental health conditions, including depression, anxiety disorders, PTSD, and suicidal behaviour.
- Chapter 7: The outcome variable was health-related quality of life.

Independent variables:

Independent variables remain consistent across the studies, except for mental health conditions, which were considered independent variables in the substance use and quality of life studies.

These variables include sociodemographic characteristics such as age, sex, education, religion, ethnicity, marital status, occupation, place of residence, living status, family information, family income, and individual income status, as well as perceived social support.

3.5.7.2. Variable measures

Detailed information on variable measures is provided in the methodology section of each study. This section presents the key outcome variables and independent variables for reference.

Substance use:

Substance – in the context of this thesis, a substance refers to any psychoactive chemical or product containing psychoactive chemicals (such as alcohol, khat, tobacco, cannabis, etc.) that, when consumed, affects or distorts a person's mental and/or physical state and leads to changes in consciousness (Saunders & Latt, 2015). Prescription medications expressly used in the diagnosis, cure, mitigation, treatment, or prevention of a disease or illness are not defined as substances for this research, regardless of their effect.

Substance use refers to the use of one or more of the substances listed above and is categorised as lifetime use, past 12-month use, and current use.

- **Lifetime use** – refers to the use of a substance at least once in a lifetime.
- **Past twelve-month use** - defined as the use of any of the above-listed substances in the past 12 months.
- **Current use** – refers to the use of any substances within the past 30 days preceding the data collection.

Guided by the systematic review and meta-analysis findings, the primary survey focused a priori on four substances with the highest regional salience—alcohol, khat, tobacco, and cannabis—and constructed two harmonised binary indicators per substance: lifetime (ever) and current (past 30 days). These definitions were applied uniformly across substances to ensure comparability. Additional substance-specific items (e.g., AUDIT frequency) informed descriptive summaries only and did not alter prevalence case definitions.

The variable *substance use* was derived from the specific type of substances consumed, including alcohol, khat, tobacco, and cannabis. Each substance was measured using locally validated standard tools alongside certain author-developed questions. Alcohol consumption was assessed using the Alcohol Use Disorders Identification Test (AUDIT), a screening tool

developed by the World Health Organisation (de Meneses-Gaya et al., 2009; Saunders et al., 1993). Khat use was assessed using the Problematic Khat Use Screening Test (PKUST-17), a tool recently developed and validated within the Ethiopian context (A. Mihretu et al., 2022). Tobacco use was assessed using questions adapted from the 2019 Ethiopian Demographic and Health Survey (EDHS), and cannabis use was measured using a simple yes/no question. A dichotomous variable, *substance use,* with yes/no options, was subsequently created, where an individual was classified as a substance user if they responded "yes" to using at least one of the listed substances.

Health-related quality of life (HRQoL) – there is no agreed-upon definition of HRQoL in research and practice. Existing definitions vary regarding the inclusion of different domains, balancing different domains, as well as the subjectivity of HRQoL. This research employed the World Health Organisation's definition of QoL as *"an individual's perception of their position in life in the context of the culture and value systems in which they live and with their goal, expectations, standards and concerns"* (World Health Organisation, 1996).

HRQoL is assessed using WHOQOL-BREF, a well-established instrument, measuring the quality of life across four domains based on 26 items (World Health Organisation, 1996). Respondents rated their experiences over the past two weeks on a 5-point Likert scale. The WHOQOL-BREF is a widely validated tool across various demographic and sociocultural settings, including Ethiopia (Reba et al., 2019). A locally validated Amharic version of the WHOQOL-BREF was employed in this study (Reba et al., 2019).

Mental health condition:

Mental health conditions- refer to mental illnesses or disorders, which refer to a wide range of mental health conditions — disorders that affect your mood, thinking, and behaviour. The current study focuses particularly on depression, anxiety disorders, PTSD, and suicidal behaviour.

- **Depression** – depressive disorders are *"characterised by depressive mood (e.g., sad, irritable, empty) or loss of pleasure accompanied by other cognitive, behavioural or neurovegetative symptoms that significantly affect an individual's ability to function" (American Psychiatric Association, 2013; World Health Organisation, 2022).*
- **Generalised Anxiety Disorders** – The International Classification of Diseases (11th edition) defined Generalised Anxiety Disorders as *"characterised by marked symptoms*

of anxiety that persist for at least several months, for more days than not, manifested by either general apprehension (i.e. 'free-floating anxiety') or excessive worry focused on multiple everyday events (World Health Organisation, 2022). The symptoms result in significant distress or significant impairment in personal, family, social, educational, occupational, or other important areas of functioning."

- **Post-Traumatic Stress Disorder (PTSD)** is a stress-related disorder that *"develops following exposure to an extremely threatening or horrific event or series of events"* and is characterised by re-experiencing trauma, avoidance of thoughts and memories of the events and persistent perceptions of the heightened current threat. Symptoms can last for several weeks or longer and cause meaningful impairment across personal, family, social, educational, occupational, and other dimensions of functioning (World Health Organisation, 2018b).
- **Suicidal behaviour** – refers to a spectrum of mental disorders involving deliberate attempts or serious contemplation of self-harm with the intent of ending one's life. In this study, we specifically focused on the three non-fatal components of suicidal behaviour: ideation, planning, and attempts (World Health Organisation, 2021a).
    - Suicidal ideation is a frequent thought of ending one's life.
    - Suicidal plans are a specific intention or strategy and steps for self-harm or suicide.
    - A suicide attempt is the actual event of trying to end one's life.

The variable mental health condition was built from a combination of specific mental health disorders, including depression, anxiety, PTSD, and suicidal behaviour. Mental health conditions were assessed using previously used and validated instruments: PHQ-9 for depression (Gelaye et al., 2013), the GAD-7 for anxiety disorder (Manzar et al., 2021), the TSQ-10 for PTSD (Alenko et al., 2019), and items from previous studies on suicide behaviour (Tessema et al., 2024). In this study, participants were classified as positive for mental health conditions if they responded affirmatively to at least one of these conditions and negative otherwise.

Perceived social support

Social support was measured using the 12-item Multidimensional Scale of Perceived Social Support (MSPSS), previously used in Ethiopia and other similar settings across Africa. In this

study, perceived social support levels were classified as low, moderate, and high based on the mean score (Zimet et al., 1988).

Other demographic, social, and family factors

Other independent variables such as age, sex, education, religion, ethnicity, marital status, occupation, place of residence, children status, number of children, family size, spouse education, spouse education, family income, and source of income, family history of substance use, and family history of mental illness were assessed using a combination of author-constructed questions and adapted items from previous studies (Kassew et al., 2023; Tarekegn et al., 2022).

3.5.8. Data quality assurance

To ensure data quality, data collectors received comprehensive training on the study's objectives, data collection methods, and adherence to ethical principles. Confidentiality was maintained throughout the process by replacing all identifying information with unique participant codes, such as Sh/AW/001, representing the woreda, kebele, and participant number. The collected data were checked daily for completeness and clarity, with the primary researcher supervising the overall field data collection process. Additionally, all data were securely stored in a protected system in accordance with the ethics and UTS data storage policy, ensuring compliance with institutional and ethical standards. A final soft copy of the data is kept in a password-protected computer, and the hard copies are stored in a locked cabinet.

3.5.9. Quantitative data management and statistical analysis

The collected data were entered, cleaned, and analysed using Stata version 18.0. Descriptive statistics were presented as means for continuous variables with a normal distribution and medians for those without, while categorical variables were summarised using frequencies and percentages. Results were also presented using tables and figures. Detailed descriptions of the analytical methods and statistical procedures employed in each study are provided in the method sections of Chapters 5-7.

3.6. Qualitative semi-structured interviews and focus group discussions

3.6.1. Overview

The qualitative component of the thesis involved semi-structured interviews with young people who reported substance use in the preceding survey and focus group discussions (FGDs) with key stakeholders. The aim was to explore young people's perceptions and experiences related to substance use—types, initiation, drivers, and consequences—and to understand stakeholders' perspectives, practices, and values concerning the problem.

This component followed a concurrent triangulation design, where qualitative and quantitative data were collected simultaneously to allow for contextualisation and interpretation of findings across both strands. The sample size was determined based on the principle of data saturation, meaning data collection continued until no new themes or insights emerged (Saunders et al., 2018). For planning and ethical clearance purposes, eight semi-structured interviews with young people and six FGDs with stakeholders were conducted. The qualitative study employed purposive and convenience sampling approaches to ensure that participants were information-rich and could provide diverse perspectives on substance use among young people.

3.6.2. Study participants and recruitment

3.6.2.1. Semi-structured interview

Young participants for the semi-structured interview were purposively recruited from the population of the prior substance use study (Study I). Eligible participants were young people aged 18-29 years who reported the use of at least two substances, had resided in the study area for at least six months (in line with Ethiopian residency standards), and provided informed consent. This purposive selection ensured that interviewees could provide in-depth accounts of their lived experiences, motivations, and the consequences of substance use within their social and cultural contexts. A total of eight participants (seven men and one woman) were interviewed. Recruitment was conducted through a confidential contact list generated from survey data, following ethical protocols to maintain privacy.

3.6.2.2. Focus group discussion (FGD)

FGDs were conducted to explore stakeholders' experiences, perceptions, attitudes, and beliefs about substance use and its consequences on young people. Participants included

representatives from various sectors, including civil sectors such as health, education, youth association, women and child affairs, sport and youth affairs, social security, and vocational training offices; security and legal sectors such as law enforcement agents; and community and religious leaders. A total of six FGDs were organised: Four FGDs with civil sector participants, one of which was exclusively with women participants; one with security and legal sector participants, including one woman participant; and one with community and religious leaders. Each FGD included between six and ten participants, ensuring a diversity of perspectives and experiences.

The selection of institutions and participants was purposively carried out based on the relevance of their roles, expertise, and involvement in substance use prevention, education, health services, law enforcement, and community leadership. This approach allowed the study to capture a wide range of institutional, social, and cultural perspectives on the issue, thereby complementing the lived experiences of young people with systemic and community-level insights. Invitations were extended to the selected stakeholders, and written informed consent was obtained from each participant. To minimise the selection bias, the primary researcher had limited involvement in the participant selection process.

3.6.2. Qualitative data collection

Qualitative data were collected using a pre-designed interview guide developed in English by the researcher based on the study objectives. Separate interview guides were prepared for individual interviews and focus group discussions (***see Appendix 2A and 2B***). These semi-structured guides facilitated data collection by offering direction while allowing participants to discuss their ideas in their own words and to introduce additional relevant topics.

Semi-structured interviews with young people were conducted to gain a deeper understanding of the impact of substance use on their quality of life. Each of the eight participants participated in one-on-one interviews, which lasted 45 to 60 minutes. Participants were encouraged to share their narratives and insights. The individual interviews were conducted in a private and comfortable setting, ensuring confidentiality and creating an environment conducive to open discussions. An audio recording of the interviews was carried out with the participants' consent.

The FGDs followed a semi-structured approach, enabling open and interactive discussions about substance use, mental health, quality of life, and help-seeking behaviour. Broad and

general questions encouraged participants to share their experiences, opinions, personal values, attitudes, and beliefs. Each FGD was led by a trained facilitator, with a moderator present to manage the logistics and ensure discussions ran smoothly. Audio recordings were made to facilitate accurate data analysis. A total of six FGDs involving representatives from different stakeholder groups were conducted, with durations ranging from 30 minutes to 2 hours and 40 minutes. These discussions were held at times and locations preferred by participants to ensure privacy and comfort.

All interviews and FGDs were conducted in Afan Oromo (the local language) by trained and experienced field researchers. The sessions were audio-recorded, and the researcher subsequently transcribed and translated the recordings into English. Field notes were also taken during the process to ensure consistency and supplement the audio recordings. A relaxed and conversational strategy was employed throughout to foster open communication and interaction among participants.

3.6.3. Qualitative data management and analysis

A thematic analysis approach was used to analyse the qualitative data. A thematic approach is fundamentally independent and flexible in that it can be applied across a range of theoretical and epistemological perspectives (Braun & Clarke, 2006). Before the actual analysis, the data collected in a digital recorder was transcribed and translated from the local language into English. After reading transcripts several times, the researchers assigned codes. The codes are then organised into categories by looking at connections between the identified codes. Finally, the different categories were linked to developing themes based on the study's objectives. The analysis was conducted using NVivo software version 12 to code the data line-by-line, which strengthens the reliability of the analysis (Zamawe, 2015).

3.7. Ethical considerations

Ethics approval and institutional compliance

Ethics approval was obtained from the UTS Health and Medical Research Ethics Committee and Madda Walabu University (MWU) Shashemene Campus Research Ethics Review Committee. The inclusion of MWU ensured that national and regional ethical standards were adhered to. Support letters from MWU Shashemene Campus were sent to the relevant woreda

administration offices, which notified local sectors to facilitate participant recruitment and assist during data collection.

Informed consent and confidentiality

Informed consent was obtained from all participants, emphasising their right to withdraw at any time without intimidation. Confidentiality was maintained by assigning code numbers for participant identification. Data were securely stored in a locked room before entry, and post-entry, were password protected, and accessible only to investigators, ensuring use solely for research purposes.

Challenges in data collection and mitigation strategies

Data collection in resource-limited settings like Ethiopia presented several challenges, including linguistic barriers, high literacy rates, limited community familiarity with research, and potential information contamination when using hard-copy questionnaires. This may impact the quality of the response. Similarly, an online platform is not feasible due to poor internet coverage and consistency.

To mitigate these issues, we employed a face-to-face survey to ensure higher engagement and data quality. Trained data collectors supported participants by providing clarification, probing for accurate responses, and encouraging full participation. This approach reduced the risk of incomplete or misunderstood responses, thereby improving the reliability of our data.

The legal framework of substance use in Ethiopia

Substance use in Ethiopia is regulated under various laws and regulations addressing the production, distribution, and consumption of commonly consumed psychoactive substances such as alcohol, khat, tobacco, cannabis, and other illicit drugs:

Khat is legally and culturally accepted in many regions. It is a significant agricultural product and a source of income for farmers and the government. However, its regulation presents a policy dilemma. While khat contributes to the economy through foreign exchange and tax revenue, it is excluded from the agricultural policy and strategies. The Federal Ministry of Health aims to reduce khat consumption in its recent Health Sector Development Plan, the Ministry of Education prohibits its use in school premises, and traffic regulations ban drivers from operating vehicles under its influence. Despite these measures, Ethiopia lacks a

comprehensive policy governing the production, distribution, and consumption of khat (Weldeyohanes et al., 2021).

Alcohol and tobacco- the sale and consumption of alcohol and tobacco are legal in Ethiopia for individuals above 18, but both are tightly regulated to promote public health. Alcohol advertising is banned, and sales are restricted in various locations such as cinemas, educational institutions, health facilities, government offices, and other public places. Tobacco regulations prohibit smoking in public spaces, enforce health warnings on packaging, and ban sales near schools, health institutions, and youth centers. The sale and import of e-cigarettes are prohibited.

Cannabis and illicit drugs- the use, possession, sale, and trafficking of cannabis and other illicit drugs are strictly prohibited in Ethiopia, with severe penalties for offenders. Border crossings and entry points are routinely monitored to prevent illegal drug trade.

Ethical considerations in the study design

Given the legal and cultural landscape surrounding substance use in Ethiopia, several ethical considerations were integral to the study design to ensure compliance with national laws and the protection of participants' rights and well-being. Measures taken include ensuring informed consent and confidentiality, adopting a risk minimisation approach, adhering to national laws and cultural norms, and conducting anonymous data collection in private and safe settings. Research assistants were trained in the study's objectives, data collection processes, and ethical considerations specific to the Ethiopian context to handle sensitive disclosures and provide necessary support while maintaining ethical and legal compliance.

3.8. Summary of the methodology chapter and outlines of the findings' chapters

This chapter presented the overall methodological approach of the thesis, which employed a mixed-methods design comprising three interrelated components: a systematic review and meta-analysis, a community-based cross-sectional survey, and qualitative interviews and focus groups. These components were designed to explore the prevalence, associated factors, consequences, and lived experiences of substance use and its relationship with mental health conditions and health-related quality of life (HRQoL) among young people in Ethiopia and sub-Saharan Africa.

The subsequent chapters (Chapters 4 to 8) each correspond to an individual study that explores a specific aspect of the research topic. These chapters are organised as distinct, self-contained studies, with separate analyses and discussions. As such, this section does not include an overarching discussion of the results, since each chapter provides its own interpretation and contextualisation.

Chapter 4 presents findings from a systematic review and meta-analysis of substance use among young people in Sub-Saharan Africa

Chapter 5 presents findings from a cross-sectional study of substance use and associated factors among young people in the West Arsi zone, Ethiopia

Chapter 6 presents findings from a cross-sectional study of mental health conditions and its associated factors among young substance users in the West Arsi zone, Ethiopia

Chapter 7 presents findings from a cross-sectional study of health-related quality of life (HRQoL) and its associated factors among young substance users in the West Arsi zone, Ethiopia

Chapter 8 presents qualitative findings from the lived experiences, motivations, patterns, and perceived consequences of substance use among young people in the West Arsi zone of Ethiopia.

Chapter Four: Study Findings— Systematic review and meta-analysis

4.1. General Overview

The systematic review and meta-analysis of substance use among young people in sub-Saharan Africa (SSA) was published in the Frontiers in Psychiatry journal.

Submission and publication history (Frontiers in Psychiatry Journal)

Manuscript submitted:	26 October 2023
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Candidate's contribution to this study

The PhD candidate is the first author of the manuscript and was responsible for the data analysis, drafting and finalising of the manuscript as well as responding to reviewer feedback. The second and third authors provided feedback on the overall aims of the study, during the analysis as well as editorial feedback during the drafting and finalisation of the manuscript.

4.2. Abstract

Background: The use of substances such as alcohol, tobacco, khat, or drugs among young people is becoming a public health concern globally, with particularly high prevalence rates in low and middle-income settings, where socio-cultural and economic factors contribute to distinct challenges in addressing this problem. This review aims to summarise the current literature on the prevalence of substance use among young people in sub-Saharan Africa (SSA) and identify gaps in the current body of literature.

Methods: Seven databases and Google were searched for studies reporting on substance use prevalence among young people (aged 10-24 years) in SSA, published between January 2010 and May 2024. Observational studies were included, assessed for methodological quality, and checked for the presence of heterogeneity and publication bias using standard methods. A random effect model was used to estimate the pooled proportions for substance use among young people.

Results: The literature search identified 1,889 hits from the databases and Google. Among these 60 eligible studies, involving 83,859 respondents, were included in the review. The overall lifetime, 12-month, and current prevalence of any substance use among young people in SSA was found to be 21.0% (95% CI=18.0, 24.0), 18% (95% CI=10,27), and 15% (95% CI=12,18), respectively. Among young people from SSA, alcohol use problem was the most prevalent (40%), followed by khat use (25%), stimulant use (20%), and cigarette smoking (16%). Other substances used by a smaller proportion of young people included cannabis, cocaine, inhalants, sedatives, shisha, hallucinogens, steroids, and mastics. The prevalence of substance use problems was higher among men compared to women, highest in the southern African region, followed by Western and Eastern regions, and in community-based studies compared to institutional-based studies.

Conclusions: In SSA, over a fourth of young people use at least one substance in their lifetime, with higher rates among men than women and in community-based compared to institution-based studies. These results emphasise the need for interventions targeting the wider young population and those in specific subgroups identified as being at higher risk of substance use. This approach allows for the provision of tailored support and resources to those who need it most while also promoting positive health outcomes for the entire population of young people in the region.

Keywords: substance use, substance use problems, substance use disorders, alcohol use, drug use, khat use, sub-Saharan Africa, young people

4.3. Introduction

Young people, defined as individuals aged 10-24 years (United Nations, 1995), constitute a significant portion of the global population (24%), estimated at approximately 1.9 billion (United Nations Population Fund, 2023). This demographic is primarily concentrated in low- and middle-income countries (LMICs), where 90% of young people reside (United Nations

Population Fund, 2023). SSA is home to one of the largest and fastest-growing populations of young people, with individuals in this age group making up over 60% of the region's total population (United Nations, 2022). This demographic presents both a potential for economic growth and a challenge in terms of public health and social issues, including substance use (World Health Organisation, 2017c).

Substance use among young people is a critical public health concern globally, significantly contributing to the burden of disease (Simon et al., 2022). The Global Burden of Disease (GBD) study identifies substance use disorders (SUDs) as major contributors to morbidity and mortality among young people (GBD Collaborators, 2018). In SSA, the situation is particularly alarming (Kugbey, 2023; Mhaka-Mutepfa, 2021; Morojele et al., 2021). Recent data indicate a rising trend in substance use among adolescents in this region, with substantial implications for their health and well-being (Morojele et al., 2021; Olawole-Isaac et al., 2018).

Several risk factors contribute to substance use among young people. These include socio-economic factors such as poverty, unemployment, and lack of education, as well as social and environmental influences like peer pressure, family dynamics, and the availability of substances (Jaguga et al., 2022; Nawi et al., 2021). Additionally, psychological factors such as stress, trauma, and mental health play a significant role (Gopiram & Kishore, 2014; Health & Welfare, 2024). Understanding these risk indicators is crucial for developing effective prevention and intervention strategies.

The consequences of substance use among young people are profound and multifaceted. Substance use is associated with a range of risky behaviours, including unprotected sex, violence, and criminal activities (Mhaka-Mutepfa, 2021; Ritchwood et al., 2015), directly and indirectly leading to an increase in the likelihood of poor health outcomes, such as sexually transmitted infections (STIs), injuries, and mental health disorders (Jere et al., 2017; Oppong Asante et al., 2014; Ritchwood et al., 2015). Furthermore, substance use can lead to chronic conditions, contributing to long-term morbidity and premature mortality (McLellan, 2017; Sanchez-Roige et al., 2022). The impact extends beyond individual health, affecting families, communities, and broader societal structures (Daley, 2013).

The present review aimed to address the need for a comprehensive understanding of substance use among young people in SSA. While previous reviews have provided valuable insights in this area, some of them focused on specific countries (Abate et al., 2021; Jaguga et al., 2022; Jatau et al., 2021), while others focused on adolescents (10-19 years of age) (Olawole-Isaac et

al., 2018), or on specific substances of use (Belete et al., 2024; Townsend et al., 2009). This systematic review and meta-analysis sought to fill the gap by offering a region-wide perspective on the prevalence and risk factors of substance use among young people (covering both adolescents and youth) in SSA. By addressing these gaps, the study will contribute to the understanding of substance use in SSA, informing policy and programmatic responses to mitigate this pressing public health issue among young people.

4.4. Materials and Methods

4.4.1. Protocol and registration

This review was prepared and reported in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) 2015 guideline (Moher et al., 2015). The protocol was registered on the International Prospective Register of Systematic Reviews under CRD42022366774.

4.4.2. Search strategy

Studies published between January 1, 2010, and May 31, 2024, were searched through a comprehensive search in the following databases: African Journals Online (AJOL), PubMed, ProQuest, PsycINFO, Web of Science, Scopus, and African Index Medicus (AIM) library. The chosen databases are widely used for indexing publications in health and substance use, have search functions appropriate for conducting systematic reviews, are generally perceived as trustworthy within academia, and index a large number of journals that include work published in our geographic area of interest (SSA). The body of knowledge in the fields of health and behavioural sciences changes quickly with the acquisition of new knowledge, discoveries, theories, processes, or best practices, and there is a need to share the most recent evidence with practitioners in those fields. Accordingly, our systematic review aimed to provide a synthesis of recent evidence published in the last 14 years in the area of substance use for practitioners, policymakers, clinical practice guideline developers, program designers, and those designing and justifying primary research.

Additional searches were made using the Google search engines, including using the reference lists of identified original research. Comprehensive search terms were designed using Medical Education Subject Heading (MeSH) and keywords, were primarily developed for the PubMed

search protocol and applied to other databases as well. Details of the search terms and strategies used are as follows.

Search term and strategy

Search term

Concept 1: Substance use

["substance *use"/, "substance dependence"/, "substance consumption"/, "substance use disorder"/, "drug *use"/, "drug dependence", addict*/, "alcohol *use"/, "alcohol drinking", alcoholism/, "alcohol use disorder"/, "hazardous drinking"/, "harmful drinking"/, "khat *use"/, "chat *use"/, "khat dependence"/, "khat consumption"/, "cigar* smok*"/, nicotine/, "psychoactive substance use"/, "cannabis *use"/, "marijuana *use"/, "cocaine use", "opioid use"]

Concept 2: Prevalence

[prevalence/, magnitude/, epidemiology/, proportion/]

Concept 3: Young people

["young people"/, young*/, youth/, adolescen*/, underage/, teenage*/, student/]

Concept 4: Geographical coverage:

[sub-Saharan Africa- list of countries in the sub-Saharan region, separated by the Boolean term "OR" was included in the search]

Search Strategy: Combine all concepts using Boolean operators

- Concept 1 AND Concept 2 AND Concept 3 AND Concept 4

4.4.3. Inclusion and exclusion criteria

This review considered all observational study designs, including case-control, cohort, and cross-sectional studies, that empirically investigated the prevalence and patterns of substance use among young individuals aged 10-24 years. Young people were defined as those from 10 to 24 years of age, encompassing both adolescents and youths (Sawyer et al., 2018; United Nations, 1995). Studies published in English between January 1, 2010, and May 31, 2024, and involving human subjects were eligible for inclusion. The review excluded anonymous reports, letters, editorials, brief communications, comments, and reviews.

4.4.4. Study selection

The articles retrieved were initially loaded into the EndNote program, where authors identified and removed the duplicates. Subsequently, the remaining articles were exported to Covidence for title, abstract, and full-text screening. Each screening stage adhered to the predetermined eligibility criteria. JE conducted the screening, with ongoing line-by-line discussions among the authors to ensure consistency and consensus at each step. Any minor disagreements that arose in the screening and review process were resolved by discussion.

4.4.5. Data extraction

A standardised data extraction format was adapted from the Joanna Briggs Institute (JBI) data extraction format (Munn et al., 2015), and implemented in a Microsoft Excel sheet version 365. The data extracted included the following information: author/s, publication year, study location (country), study design, sample size, gender distribution, participant age, types of substances used, prevalence of substance use, tools used to measure substance use, associated factors, and common reasons for substance use (**Table 2**). JE extracted the required study parameters or information from the included studies, with all authors closely collaborating at each step.

Table 2: Summary characteristics of studies included in the Systematic Review and Meta-Analysis of the prevalence of substance use among young people in sub-Saharan Africa, 2024.

S.N	Author, year	Country	Design	Setting	Age range	Sample size	Gender (M/F)	Type of substance studied	Combined prevalence		
									Lifetime	12-month	30-days
1.	Ogunkunle et al., 2020	Nigeria	Cross-sectional	Community-based	10-18	501	259/242	Cigarettes, Alcohol, Cannabis, Stimulants, Sedatives, Codeine cough syrup, Tramadol, Cocaine, Hallucinogens, solvents/inhalants	0.09		0.06
2.	Gobopamang et al., 2016	Botswana	Cross-sectional	Institution based	10-19	3567	1,565/2002	Tobacco, Alcohol, Marijuana, Glue, Mandrax, Cocaine, Ecstasy, Sextasy, others	0.10	0.52	0.07
3.	Teni et al., 2015	Ethiopia	Cross-sectional	Institution based	16-30	400	239/161	Khat	0.42		0.32
4.	Ofonime et al., 2017	Nigeria	Cross-sectional	Institution based	18-25	324	170/154	Alcohol, codeine, tramadol, cigarette, Marijuana, Steroid	0.56		
5.	Hamdulay & Mash R., 2011	South Africa	Cross-sectional	Institution based	≥16 and <16	438	209/229	Alcohol, tobacco smoking, cannabis, crystal methamphetamine, ecstasy, mandrax, solvents, and cocaine.	0.19	0.12	0.10
6.	Kassa et al., 2014	Ethiopia	Cross-sectional	Institution based	15-30	586	479/107	Alcohol, khat, cigarette, marijuana, and other illicit PASs such as Ecstasy, lysergic diethylamide (LSD), cocaine, crack, heroin,	0.09	0.18	

								solvents or inhalants, and un-prescribed psychoactive medications			
7.	Siziya et al., 2013	Zambia	Cross-sectional	Institution based	13-16+	2257	994/1039	Cannabis	0.40		
8.	Dida et al., 2014	Ethiopia	Cross-sectional	Institution based	15-29	603	373/230	Khat, Alcohol, Cigarette, Shisha			0.13
9.	Abdeta et al., 2017	Ethiopia	Cross-sectional	Institution based	20-25	619	464/155	khat	0.26		0.10
10.	Haleem A. et al., 2019	Nigeria	Cross-sectional	Institution based	14-18	243	243/-	Non-amphetamine stimulants, alcoholic beverages, Inhalants, Sedatives or sleeping pills, Heroin, morphine, pain medication, Tobacco products, Marijuana, Hallucinogens, Cocaine or crack, Amphetamine-type stimulants	0.08		0.07
11.	Tsegaye A. et al., 2021	Ethiopia	Cross-sectional	Institution based	17-25, ⩾25	409	206/203	khat	0.24		0.22
12.	Bright A. et al., 2016	Ghana	Cross-sectional	Institution based	14-19 years	240	119/121	Alcohol, Marijuana, Tobacco	0.20		
13.	Adere et al., 2017	Ethiopia	Cross-sectional	Institution based	18-25	655	444/211	Alcohol drinking, khat chewing, and cigarette smoking.	0.18	0.17	0.15
14.	Admasu et al., 2018	Ethiopia	Cross-sectional	Institution based	18-25	403	274/129	Khat	0.12		0.10
15.	Alebachew et al., 2019	Ethiopia	Cross-sectional	Institution based	18-26	251	171/80	Khat. Cigarette smoking, Alcohol drinking, and other substances (hashish, cocaine, cannabis, etc.)	0.26		0.18

16.	Astatkie et al., 2015	Ethiopia	Cross-sectional	Institution based		1252	927/325	Khat	0.44	0.16	0.11
17.	Ayenew et al., 2020	Ethiopia	Cross-sectional	Community-based	12–18 years	312	281/31	Khat, Cigarette, Mastics, Alcohol, Benzene	0.26		0.28
18.	Birhanu et al., 2014	Ethiopia	Cross-sectional	Institution based	14-19	651	358/293	Alcohol, cigarettes, and khat	0.39		0.21
19.	Chekole, 2020	Ethiopia	Cross-sectional	Institution based	15-30 years	803	537/266	Alcohol	0.31		0.24
20.	Chivandire, 2016	Zimbabwe	Cross-sectional	Institution based	13-19	311	180/131	Cannabis	0.16		0.07
21.	Deressa, 2011	Ethiopia	Cross-sectional	Institution based	18-39 years	622	426/196	Alcohol, cigarette, khat chewing	0.18	0.14	0.05
22.	Desai, 2019	South Africa	Cross-sectional	Community-based	13-20	4185	2506/1716	Cigarette smoking			0.50
23.	Dires et al., 2016	Ethiopia	Cross-sectional	Institution based	13-23	296	168/128	Khat	0.16		0.14
24.	Durowade et al., 2019	Nigeria	Cross-sectional	Institution based	20-29	416	228/188	Alcohol, cigarettes, marijuana, cannabis, opioids, methamphetamine,			0.18
25.	Francis et al., 2015	Tanzania	Cross-sectional	Mixed	15-24 yrs	1954	1264/690	Alcohol	0.51	0.27	0.13
26.	Gebrehanna et al., 2014	Ethiopia	Cross-sectional	Institution based		3001	2328/673	Khat	0.02	0.13	0.08
27.	Gebremariam et al., 2018	Ethiopia	Cross-sectional	Institution based	15-25 years	617	363/254	Alcohol, khat, cigarette, cannabis, cocaine, and heroin	0.11		0.09
28.	Gebresilassie et al., 2020	Ethiopia	Cross-sectional	Institution based	18-29 years	1207	889/318	Alcohol, khat, cigarette, cannabis, cocaine	0.25		0.13
29.	Gebreslassie et al., 2013	Ethiopia	Cross-sectional	Institution based	15-30 years	756	444/312	Khat, Alcohol, Cigarette	0.24	0.24	0.23
30.	Getachew et al., 2019	Ethiopia	Cross-sectional	Community-based	13–19 years	3932	2117/1815	Alcohol and tobacco	0.19		0.08
31.	Hirpa et al., 2021	Ethiopia	Cross-sectional	Institution based	13-22 years	3319	1515/1804	Shisha smoking	0.02		0.01

32.	Itanyi et al., 2020	Nigeria	Cross-sectional	Institution based	10-19 years	4332	1889/244	Tobacco products			0.13
33.	Kanyoni et al. 2015	Rwanda	Cross-sectional	Community-based	14-35 years	2479	1388/1091	Alcohol, tobacco smoking, cannabis, glue, and drugs such as diazepam.	0.13	0.10	0.09
34.	Kassa et al., 2017	Ethiopia	Cross-sectional	Community-based	10-24 years	1577	860/717	Khat	0.15		0.06
35.	Kassa et al., 2016	Ethiopia	Cross-sectional	Institution based	15-30 year	586	479/107	Alcohol and Khat	0.36	0.31	0.23
36.	Kuteesa et al., 2020	Uganda	Cross-sectional	Community-based	15-24 year	1281	675/606	Alcohol and other illicit drugs	0.35		
37.	Mayanja et al., 2020	Uganda	Cross-sectional	Community-based	15-24 year	1440	-/1440	Alcohol			0.75
38.	Musyoka et al., 2020	Kenya	Cross-sectional	Community-based		406	206//200	Alcohol, Tobacco, Cannabis, Others (opioids, cocaine, amphetamine, hallucinogens, sedatives, and inhalants.)	0.12		
39.	Mutiso et al., 2022	Kenya	Cross-sectional	Institution based	15-43 years	9673	5173/4500	Opioids	0.03		0.09
40.	Ogunsola et al., 2016	Nigeria	Cross-sectional	Institution based	10-19 years	600	345/255	Heroin, cocaine, cannabis, tobacco, sniffing substances, alcoholic beverages	0.16		0.03
41.	Olashore et al., 2018	Botswana	Cross-sectional	Institution based	18-24 years	401	199/202	Alcohol, tobacco, cannabis, Inhalants, LSD, cocaine, heroin, petrol and glue, ATS, methylphenidate, street drugs, crystal methamphetamine, khat, and benzodiazepines.			0.11

42.	Onya et al., 2012	South Africa	Cross-sectional	Institution based	11-25 years	1600	744/856	Alcohol	0.15		
43.	Oshodi et al., 2010	Nigeria	Cross-sectional	Institution based	11-20 years	402	175/227	Tobacco, alcohol, cannabis, opiates, cocaine, psychostimulants, hallucinogens, organic solvents, and hypnosedatives.	0.27	0.07	0.17
44.	Owusu-Sarpong et al., 2019	Ghana	Cross-sectional	Institution based	12 -19 years	700	336/364	Cigarette Smoking	0.18		
45.	Reda et al., 2012	Ethiopia	Cross-sectional	Institution based	15-25 years	1707	856/851	Khat	0.27		
46.	Riva et al., 2018	Botswana	Cross-sectional	Institution based	14-17 years	1933	904/1029	Alcohol and other drugs	0.25		
47.	Roble et al., 2021	Ethiopia	Cross-sectional	Community-based		341	243/98	Cigarette smoking	0.23		0.21
48.	Seid et al., 2021	Ethiopia	Cross-sectional	Institution based	15-24 years	374	180/194	Alcohol, Khat, cigarette, cannabis, Shisha	0.14		0.06
49.	Shegute et al., 2021	Ethiopia	Cross-sectional	Institution based	15-30 years	782	468/314	Alcohol, Khat, cigarettes, and other illicit drugs	0.56		0.37
50.	Sinshaw et al., 2014	Ethiopia	Cross-sectional	Institution based	18-23 years	302	183/119	Khat	0.10		0.07
51.	Soepnel et al., 2022	South Africa	Cross-sectional	Community-based	18-28 years	1508	-/1508	Tobacco use	0.51		
52.	Soremekun et al., 2020	Nigeria	Cross-sectional	Institution based	10–15 years	1048	533/515	Tobacco, Alcohol, Cannabis, Cocaine, Inhaled things, Tranquilisers, Sedatives, Heroin, Opioids (pharmaceutical)	0.07	0.02	0.03
53.	Augustus et ai., 2024	Sierra Leone	Cross-sectional	School-based	10–19 years	1730	845/885	Alcohol, cannabis	0.04		0.11

54.	Einarsdóttir, 2024	Guinea-Bissau	Cross-sectional	School-based	14–19 years	2039	1015/1024	Shisha, tobacco, alcohol, cannabis	0.18		0.15
55.	Jaguga et al., 2023	Kenya	Mixed method	Youth-clinic based	16–19 years	100	59/41	Tobacco, alcohol, cannabis, cocaine, khat, sedatives, hallucinogen	0.12		
56.	Kinyanjui et al., 2023	Kenya	Cross-sectional	University based	median 21	400	203/197	Alcohol, cigarettes, cannabis, sedatives, khat, tranquilizers, inhalants, heroin, opium, cocaine	0.07		
57.	Kyei-Gyamfi, 2024	Ghana	Mixed method	Community-based	10–17 years	4144	2099/2045	Alcohol, cigarettes, cannabis, tramadol, codeine, shisha, heroin, cocaine	0.13		
58.	Kyei-Gyamfi, 2023	Ghana	Mixed method	Community-based	8–17 years	5024	2566/2458	Alcohol	0.07		
59.	Mavura, 2022	Tanzania	Cross-sectional	School-based	10–19 years	3224	1515/1709	Cigarettes, alcohol, khat, marijuana, amphetamine	0.05		0.03
60.	Olashore, 2022	Botswana	Cross-sectional	School-based	12–19 years	742	326/407	Alcohol, tobacco, inhalants, cannabis, cocaine, ATS, LSD, sedatives, solvents, heroin		0.12	

4.4.6. Quality appraisal

The quality assessment was primarily done by JE and DD, supplemented via discussions among the authors. The JBI Meta-Analysis of Statistics Assessment and Review Instrument (JBI-MAStARI) quality assessment tool (Munn et al., 2015) was used to assess quality. JBI-MAStARI tools are among the most commonly used scales for assessing quality, and risk of bias for cross-sectional, cohort, case-control, qualitative, and observational studies (Aromataris et al., 2015) (***Annex - 1***). The appraisal aims to assess the methodological robustness of a study and its effectiveness in addressing the potential bias in the design, conduct, and analysis. All studies chosen for the review were subject to an appraisal based on the scoring guide. Scores were awarded for each criterion as follows: 0 = not fulfilling the criteria; 1 = fulfilling the criteria. The scores of each criterion added up and the result ranged from 0- 9. Those studies with a score above the mean for methodological quality appraisal were included in the review. The scoring relied on JBI guidance notes (Aromataris et al., 2015) as well as the judgment and expertise of our review team. Studies with a score below the mean were considered unfit and excluded from the review. Features considered to report as low quality include unmentioned study sample size determination, insufficient sample size, and absence of statistical evaluation on the reliability and validity of relevant assessment tools among others (**Table 3**).

Table 3: Quality appraisal status of studies included in the Systematic Review and Meta-Analysis according to JBI characteristics, 2024.

S.#	Author, Year	Study design	Q 1	Q 2	Q 3	Q 4	Q 5	Q 6	Q7	Q 8	Q 9	Total for each Item
1	Ogunkunle et al., 2020	Cross-sectional	1	1	1	1	0	0	1	1	1	7
2	Gobopamang et al., 2016	Cross-sectional	0	1	0	1	1	0	1	1	1	6
3	Teni et al., 2015	Cross-sectional	1	1	1	0	0	0	1	1	1	6
4	Ofonime et al., 2017	Cross-sectional	1	0	1	1	0	0	1	1	1	6
5	Hamdulay AK., & Mash R., 2011	Cross-sectional	1	0	0	1	0	0	1	1	1	5
6	Kassa et al., 2014	Cross-sectional	1	1	1	1	1	1	1	1	1	9
7	Siziya et al., 2013	Cross-sectional	1	1	1	1	1	1	0	1	0	7
8	Dida et al., 2014	Cross-sectional	1	1	1	0	1	0	0	1	1	6
9	Abdeta et al., 2017	Cross-sectional	1	1	1	1	1	0	1	1	1	8
10	Haleem A. et al., 2019	Cross-sectional	1	1	0	0	1	1	0	0	1	5
11	Tsegaye A. et al., 2021	Cross-sectional	1	1	1	1	1	0	0	1	1	7
12	Bright A. et al., 2016	Cross-sectional	1	1	0	1	0	0	1	1	0	5
13	Adebiyi et al., 2010	Cross-sectional	1	1	0	1	0	0	0	0	1	4
14	Adere et al., 2017	Cross-sectional	1	1	1	1	1	0	0	1	1	7
15	Admasu et al., 2018	Cross-sectional	1	1	1	1	1	0	0	0	1	6
16	Ajayi et al., 2019	Cross-sectional	1	0	0	1	1	0	0	1	0	4
17	Ajayi et al., 2020	Cross-sectional	0	1	0	1	0	0	1	0	1	4

18	Alebachew et al., 2019	Cross-sectional	1	1	1	1	1	1	1	1	9
19	Astatkie et al., 2015	Cross-sectional	1	1	1	1	1	1	1	1	9
20	Atwoli et al., 2011	Cross-sectional	0	0	0	1	0	1	1	0	3
21	Ayenew et al., 2020	Cross-sectional	0	1	1	0	1	0	0	1	5
22	Birhanu et al., 2014	Cross-sectional	1	1	1	1	1	0	0	1	7
23	Weybright et al., 2018	Cross-sectional	1	1	0	1	0	0	0	1	4
24	Chekole, 2020	Cross-sectional	1	1	1	1	1	0	1	1	8
25	Chivandire, 2016	Cross-sectional	1	0	0	1	1	0	0	1	5
26	Cumber, 2016	Cross-sectional	0	0	0	1	0	0	0	1	3
27	Deressa, 2011	Cross-sectional	1	1	1	1	1	0	1	1	8
28	Desai, 2019	Cross-sectional	1	1	1	1	1	0	1	1	8
29	Dires et al., 2016	Cross-sectional	1	1	1	0	0	0	1	1	6
30	Durowade et al., 2019	Cross-sectional	1	1	1	1	1	0	0	1	7
31	Francis et al., 2015	Cross-sectional	1	1	1	1	1	1	1	1	9
32	Gebrehanna et al., 2014	Cross-sectional	1	1	1	1	0	0	0	1	6
33	Gebremariam et al., 2018	Cross-sectional	1	0	1	0	1	0	1	1	6
34	Gebresilassie et al., 2020	Cross-sectional	1	1	1	0	1	1	1	1	8
35	Gebreslassie et al., 2013	Cross-sectional	1	1	1	0	1	0	0	1	6
36	Getachew et al., 2019	Cross-sectional	1	0	1	0	1	0	0	1	5
37	Hirpa et al., 2021	Cross-sectional	1	0	1	1	1	0	1	1	7
38	Ipingbemi et al., 2021	Cross-sectional	0	1	1	0	0	0	1	0	4
39	Itanyi et al., 2020	Cross-sectional	1	1	1	0	1	1	1	0	7
40	Kanyoni et al. 2015	Cross-sectional	1	1	1	1	1	1	1	1	9
41	Kassa et al., 2017	Cross-sectional	1	1	1	1	1	0	1	1	8
42	Kassa et al., 2016	Cross-sectional	1	1	1	1	1	0	1	1	8
43	Kuteesa et al., 2020	Cross-sectional	1	1	1	1	1	1	1	1	9
44	Lakew et al., 2014	Cross-sectional	1	0	1	0	1	0	0	0	4
45	Manyike et al., 2016	Cross-sectional	0	0	0	0	1	0	1	1	3
46	Mayanja et al., 2020	Cross-sectional	0	0	0	1	1	1	1	1	5
47	Mokwena et al., 2021	Cross-sectional	1	0	1	0	0	0	1	0	4
48	Moodley et al., 2012	Cross-sectional	0	0	0	1	0	0	1	0	3
49	Mossie et al., 2015	Cross-sectional	0	0	1	1	1	0	0	0	4
50	Musyoka et al., 2020	Cross-sectional	1	1	1	0	1	1	1	1	8
51	Mutiso et al., 2022	Cross-sectional	1	1	1	1	1	1	1	1	9
52	Ogunsola et al., 2016	Cross-sectional	1	1	1	1	1	0	1	1	8
53	Olashore et al., 2018	Cross-sectional	1	0	0	1	1	0	1	1	6
54	Onifade et al., 2014	Cross-sectional	0	0	0	1	1	0	1	1	4
55	Onya et al., 2012	Cross-sectional	0	1	0	1	1	0	1	1	6
56	Onyekachi-Chigbu et al., 2021	Cross-sectional	0	0	1	0	0	0	1	1	4
57	Oshodi et al., 2010	Cross-sectional	1	1	1	0	1	0	1	1	7
58	Owusu-Sarpong et al., 2019	Cross-sectional	0	1	0	1	1	0	0	1	5
59	PLZwane et al., 2022	Cross-sectional	0	0	1	0	0	0	1	1	4
60	Reda et al., 2012	Cross-sectional	1	1	1	1	0	0	1	1	7
61	Riva et al., 2018	Cross-sectional	1	1	1	1	1	1	1	1	9
62	Roble et al., 2021	Cross-sectional	1	1	1	0	0	0	1	1	6
63	Seid et al., 2021	Cross-sectional	1	1	1	0	0	0	1	1	6

64	Shegute et al., 2021	Cross-sectional	1	1	1	0	0	0	1	1	1	6
65	Sinshaw et al., 2014	Cross-sectional	1	1	1	0	1	0	0	1	1	6
66	Soepnel et al., 2022	Cross-sectional	1	0	0	1	1	1	1	1	0	6
67	Soremekun et al., 2020	Cross-sectional	1	0	1	1	0	0	1	1	1	6
68	Soremekun et al., 2021	Cross-sectional	0	1	1	0	0	0	1	0	1	4
69	Tshitanganoet al., 2016	Cross-sectional	0	0	1	0	0	0	0	1	1	3
70	Vorster et al., 2019	Cross-sectional	0	0	1	0	0	0	0	1	1	3
71	Zeleke et al., 2013	Cross-sectional	0	1	1	0	0	0	0	1	1	4
72	Augustus et ai., 2024	Cross-sectional	1	0	0	1	1	1	1	1	1	7
73	Einarsdóttir, 2024	Cross-sectional	1	1	1	1	1	1	1	1	1	9
74	Jaguga et al., 2023	Cross-sectional	1	0	0	1	1	1	1	1	1	7
75	Kinyanjui et al., 2023	Cross-sectional	1	1	1	1	1	1	1	1	1	9
76	Kyei-Gyamfi, 2024	Cross-sectional	1	1	1	1	1	1	1	1	1	9
77	Kyei-Gyamfi, 2023	Cross-sectional	1	1	1	1	1	1	1	1	1	9
78	Mavura, 2022	Cross-sectional	1	1	1	1	1	1	1	1	1	9
79	Olashore, 2022	Cross-sectional	1	1	1	1	1	1	1	1	1	9

Q= Quality Appraisal Question

4.4.7. Data analysis and synthesis

The results of this review were organised to include descriptive characteristics of the study, a narrative synthesis of findings organised by subgroups, and a meta-analysis result.

The meta-analysis was conducted using Stata Version 18 statistical software to estimate the effect sizes using a standard error (SE) and 95% confidence interval (CI). To estimate the overall prevalence of substance use, the lifetime, one-year, and current prevalence data from each study were combined, along with their corresponding SE. Lifetime prevalence was defined as the use of a substance at least once in an individual's lifetime, 12-month prevalence was the use of a substance at any time during the past year, and current prevalence was the use of a substance within the past 30 days before data collection. Accounting for the potential overlap between the different substance uses, the combined (overall) prevalence from each study was computed first. Then, the overall prevalence in the three reporting patterns (lifetime, current, and 12 months) was analysed separately using the combined prevalence and its corresponding SE.

To ensure consistency across studies, substance-use measures were harmonised to common time frames—lifetime (ever), past 12 months, and current (past 30 days)—and coded as binary (Yes vs No) for pooling; where studies reported substances beyond alcohol, khat, tobacco, and cannabis, these were retained and mapped to the same time-frame definitions when data were sufficient.

A random effect model, which accounts for potential heterogeneity (DerSimonian & Laird, 1986), was used to estimate the pooled effects in the meta-analysis. A forest plot was utilised to illustrate the combined estimate with the 95% CI. Heterogeneity among the studies was assessed through visual inspection of the forest plots and quantified using the I^2 statistic (Ioannidis, 2008; Lin & Chu, 2018). Heterogeneity levels were classified as low ($I^2 = 25\%$), moderate ($I^2 = 50\%$), and high ($I^2 = 75\%$) based on I^2 statistics (Lin & Chu, 2018). Publication bias was assessed using Egger's test, with a p-value of less than 0.05 indicating possible publication bias (Lin & Chu, 2018).

Furthermore, to minimise random variations between each primary study, subgroup analysis was undertaken by the region and country where a study collected empirical data (east, south, and west Africa); sex of study participants (male, female); year of publication; and the study setting type (community-based versus institution-based). These variables were selected due to their inclusion in the majority of reviewed studies.

4.5. Results

4.5.1. Search results

The search yielded 1,948 hits from the databases, with an additional 166 articles identified through Google searches. After excluding duplicates and studies that did not meet the review inclusion criteria, 79 studies were eligible for review. Out of these, 19 were judged to be of poor methodological quality and excluded. The types of features deemed to present low methodological quality were no mention of the study sample size determination, insufficient sample size, and a lack of statistical assessment regarding the reliability and validity of relevant measurement tools, among others. The remaining 60 were considered for full review (see **Figure 3**).

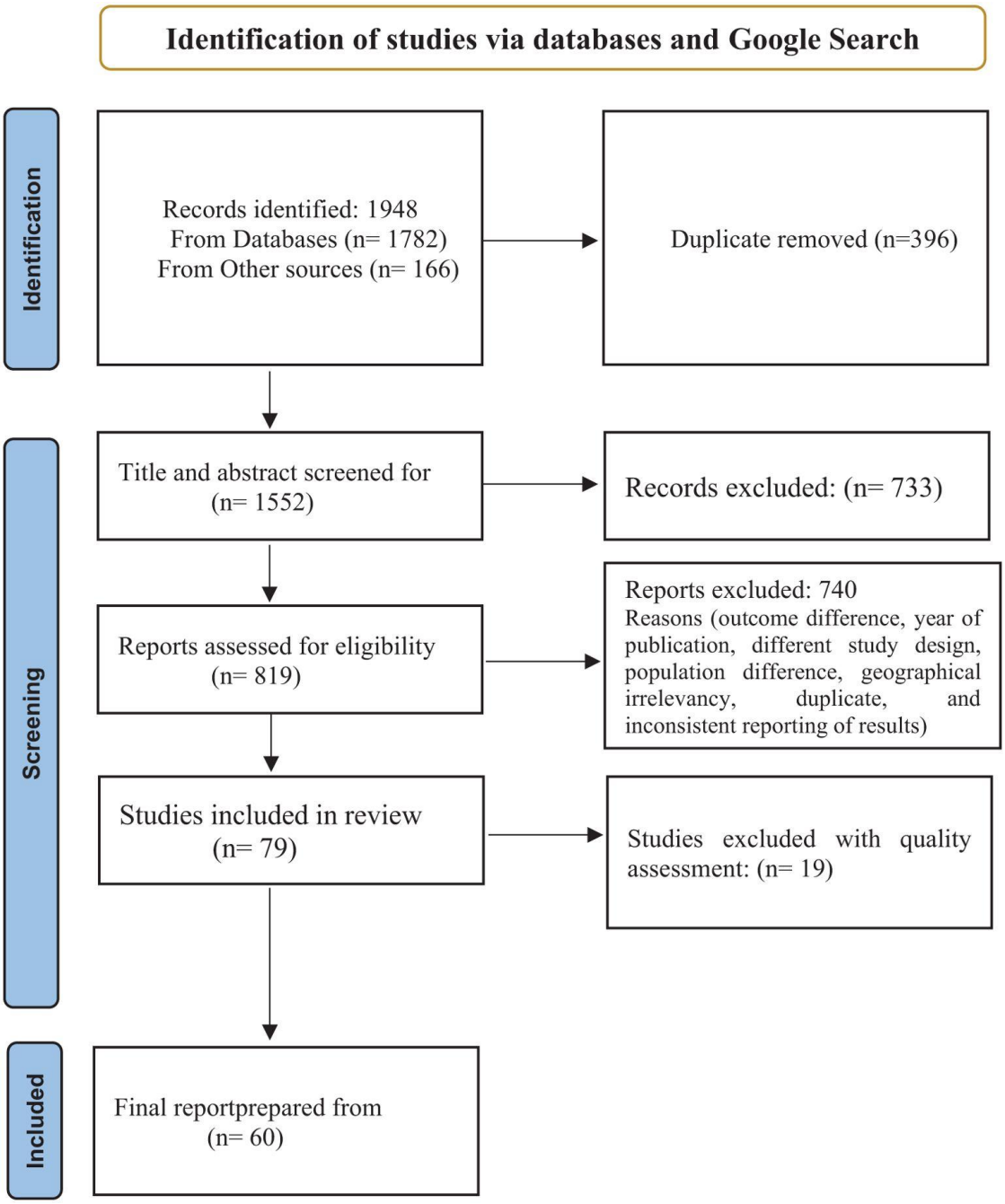

Figure 3: Flow diagram of the studies included in the Systematic Review and Meta-Analysis of substance use among young people in Sub-Saharan Africa, 2024.

4.5.2. General characteristics of the reviewed studies

The total sample size across the included studies was 83,859 respondents, with 54.0% male and 46.0% female. Sample sizes in individual studies ranged from 100 (Jaguga et al., 2023) to 9,742 (Mutiso et al., 2022) participants.

The review considered studies focused on the prevalence of substance use (lifetime, 12-month, and current) among young individuals, with almost all being cross-sectional empirical studies.

Concerning publication trends, **Figure 4** shows a relative increase in publication trends on substance use over the last five years in SSA.

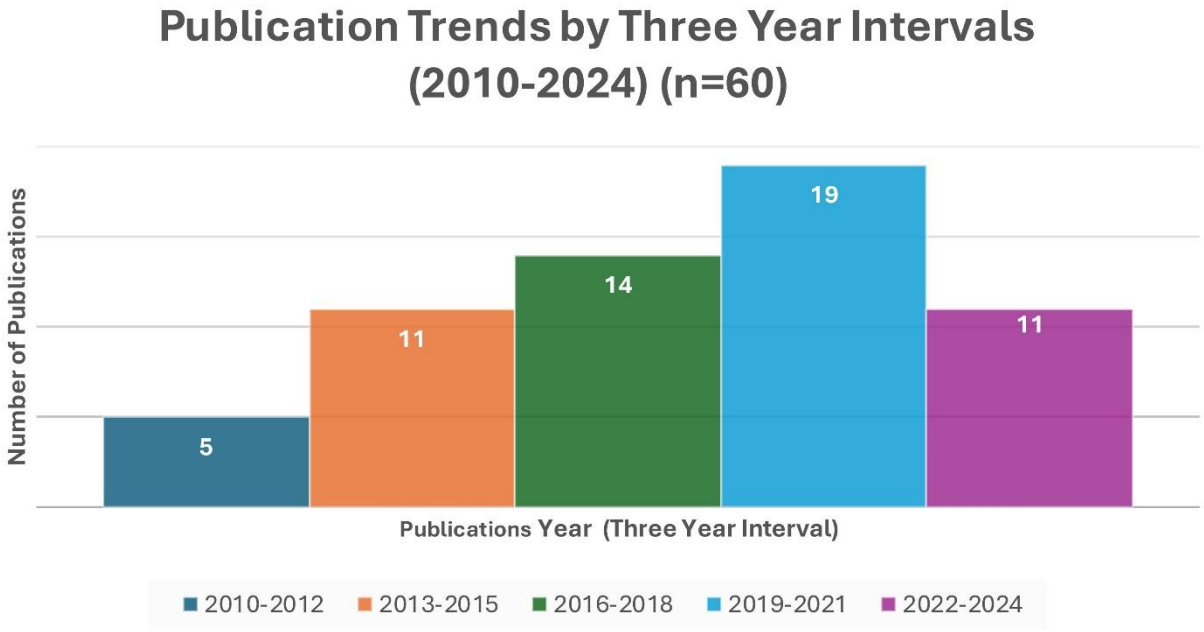

Figure 4: Trends in the publication of substance use studies in a three-year interval from 2010-2024

As shown in **Table 2**, among the reviewed studies, alcohol was the most frequently reported (n=41), followed by cigarette smoking (n=36), khat use (n=28), and cannabis use (n=26), among other substances.

Most studies were conducted in educational institutions, with forty-six studies in schools, universities, and student clinics, and thirteen studies in community settings. Additionally, one study had a mixed population from schools, colleges, local industries, and casual laborers (see **Table 2**).

To measure substance use, 24 (40.0%) studies employed standardised tools such as the Alcohol, Smoking and Substance Involvement Screening Test (Who Assist Working Group, 2002) (ASSIST), CAGE (Bush et al., 1987), Alcohol Use Disorders Identification Test (AUDIT) (de Meneses-Gaya et al., 2009), Cannabis Abuse Screening Test (CAST) (Bastiani et al., 2017), and the Global Student Drug Use Survey questionnaire (Adelekan & Odejide, 1989), while 36 (60.0%) studies used questionnaires adapted from previous literature.

4.5.3. Prevalence of substance use

In general, the prevalence of substance use varied widely among studies, ranging from 2% (95% CI=1.0, 2.0) (Hirpa et al., 2021) in a study from Ethiopia to 56.0% (95% CI=51.0, 62.0) (Johnson et al., 2017) in a study from Nigeria.

Lifetime prevalence:

The lifetime prevalence of any substance use, pooled from 53 studies, was 21.0% (95% CI=18.0, 24.0) (**Figure 5**). Regionally, Southern Africa had the highest lifetime prevalence at 25.0% (95% CI=13.0, 37.0), followed by East Africa at 22.0% (95% CI=18.0, 26.0), and West Africa at 17.0% (95% CI=13.0, 21.0). Country-specific data showed Zambia with the highest lifetime prevalence at 40.0% (95% CI=38.0, 42.0) and Sierra Leone the lowest at 4.0% (95% CI=3.0, 5.0). Analysis by study setting where participants were recruited showed a pooled lifetime prevalence of 20.0% in both community and institutional settings (**Figure 6**).

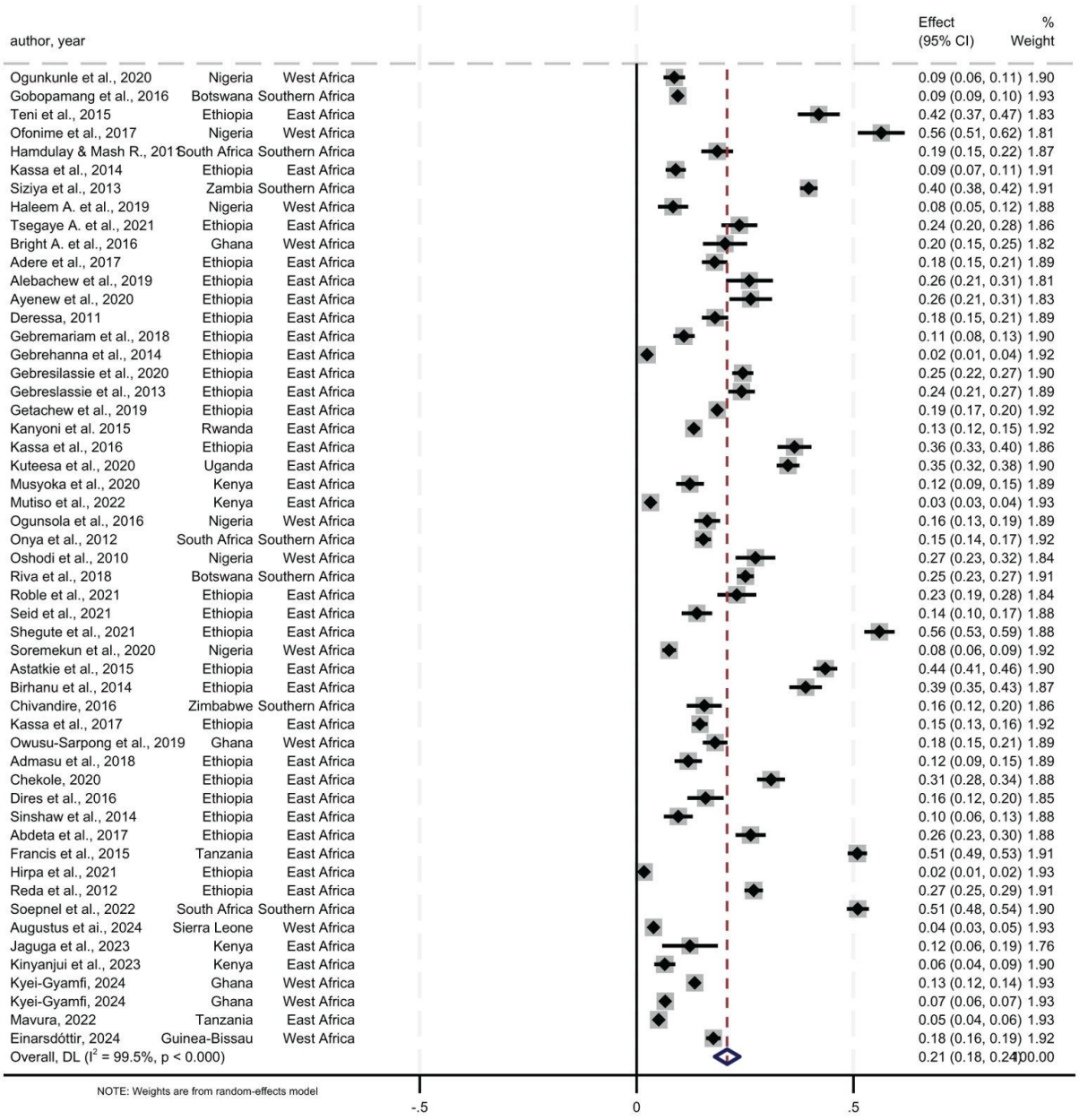

Figure 5: Pooled lifetime prevalence of any substance use among young people in sub-Saharan Africa, 2024.

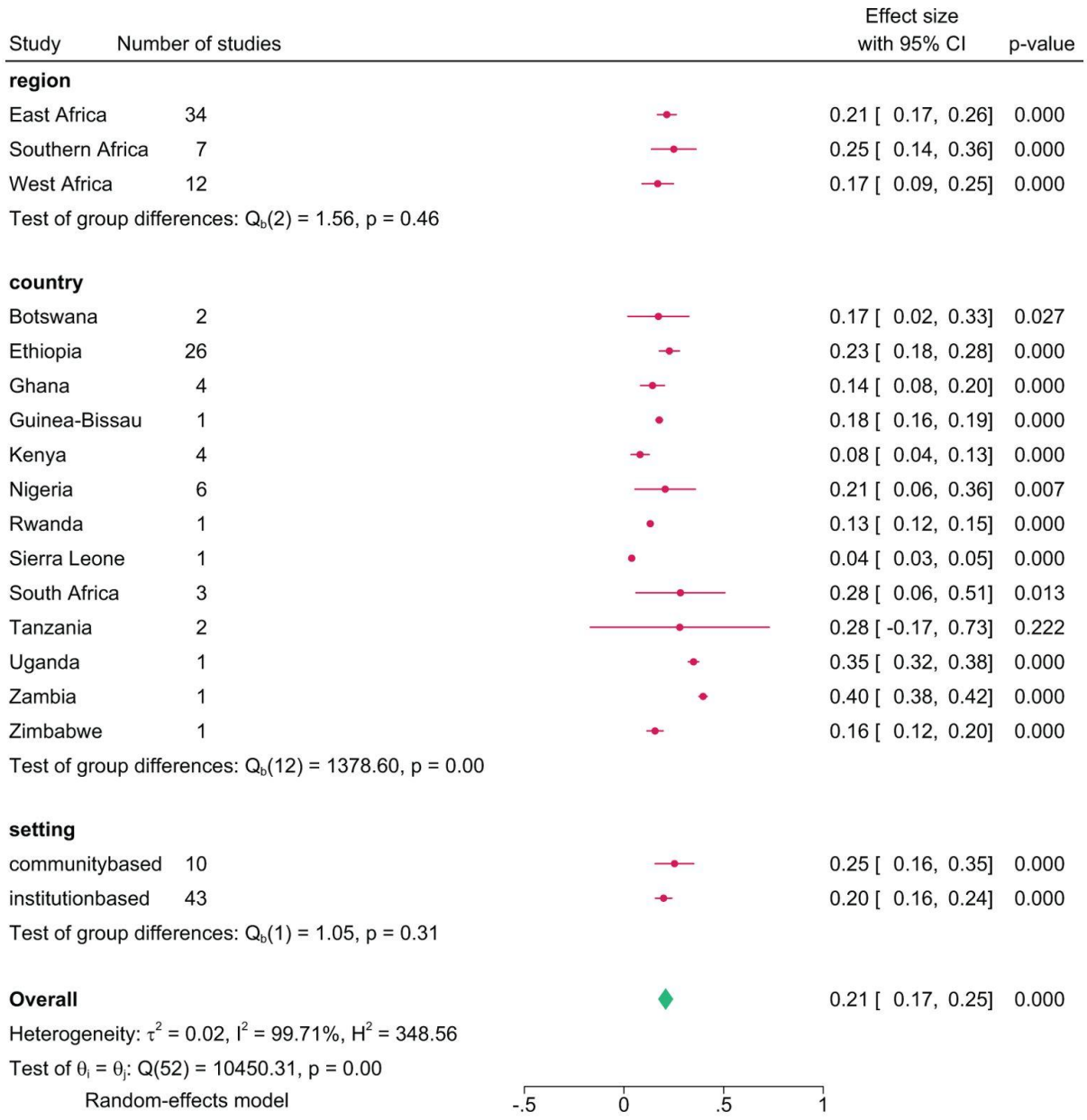

Figure 6: Pooled lifetime prevalence of any substance use among young people in sub-Saharan Africa by subgroup, 2024.

Current prevalence:

The pooled current prevalence of any substance use was 15.0% (95% CI=12.0, 18.0), with the lowest at 2.5% (95% CI=1.6, 3.4) (Soremekun et al., 2020) and the highest at 75.0% (95% CI=73.0, 78.0) (Mayanja et al., 2020) from individual studies (**Figure 7**). In a further analysis by region, East Africa had the highest current prevalence at 17.4% (95% CI=13.0, 22.0), followed by Southern Africa, 17.1% (95% CI=3.0, 37.0), and West Africa at 10.0% (95% CI=6.0, 14.0). Among countries, the highest current prevalence was recorded in Uganda at 75.0% (95% CI=73.0, 78.0) and the lowest in Zimbabwe at 7.0% (95% CI=5.0, 10.0). Additional analysis by study setting showed a pooled current prevalence of 15.0% (95%

CI=11.0, 19.0), with 26% from community-based studies and 13.0% from institution-based studies (**Figure 8**).

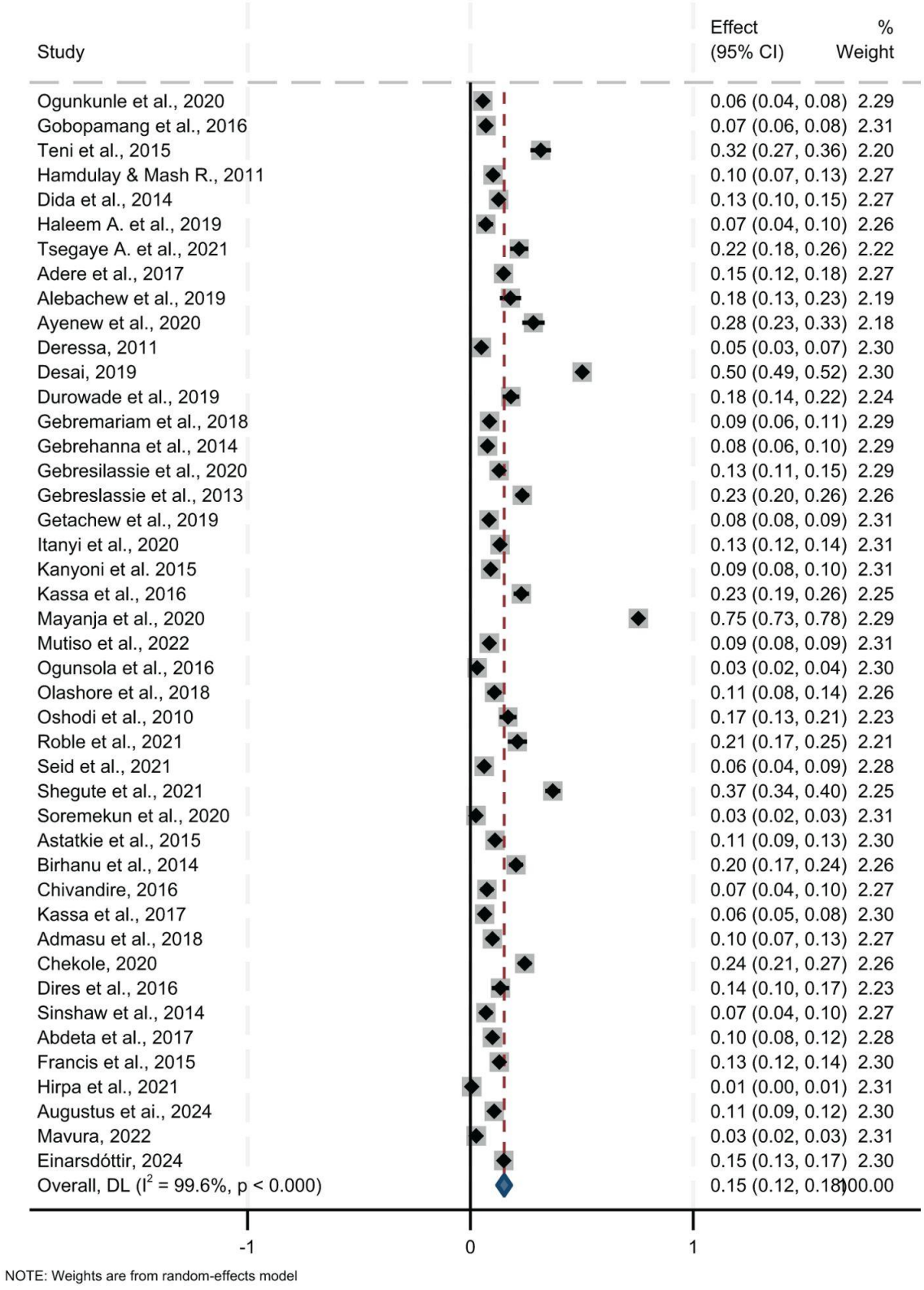

Figure 7: Pooled current prevalence of any substance use among young people in sub-Saharan Africa, 2024.

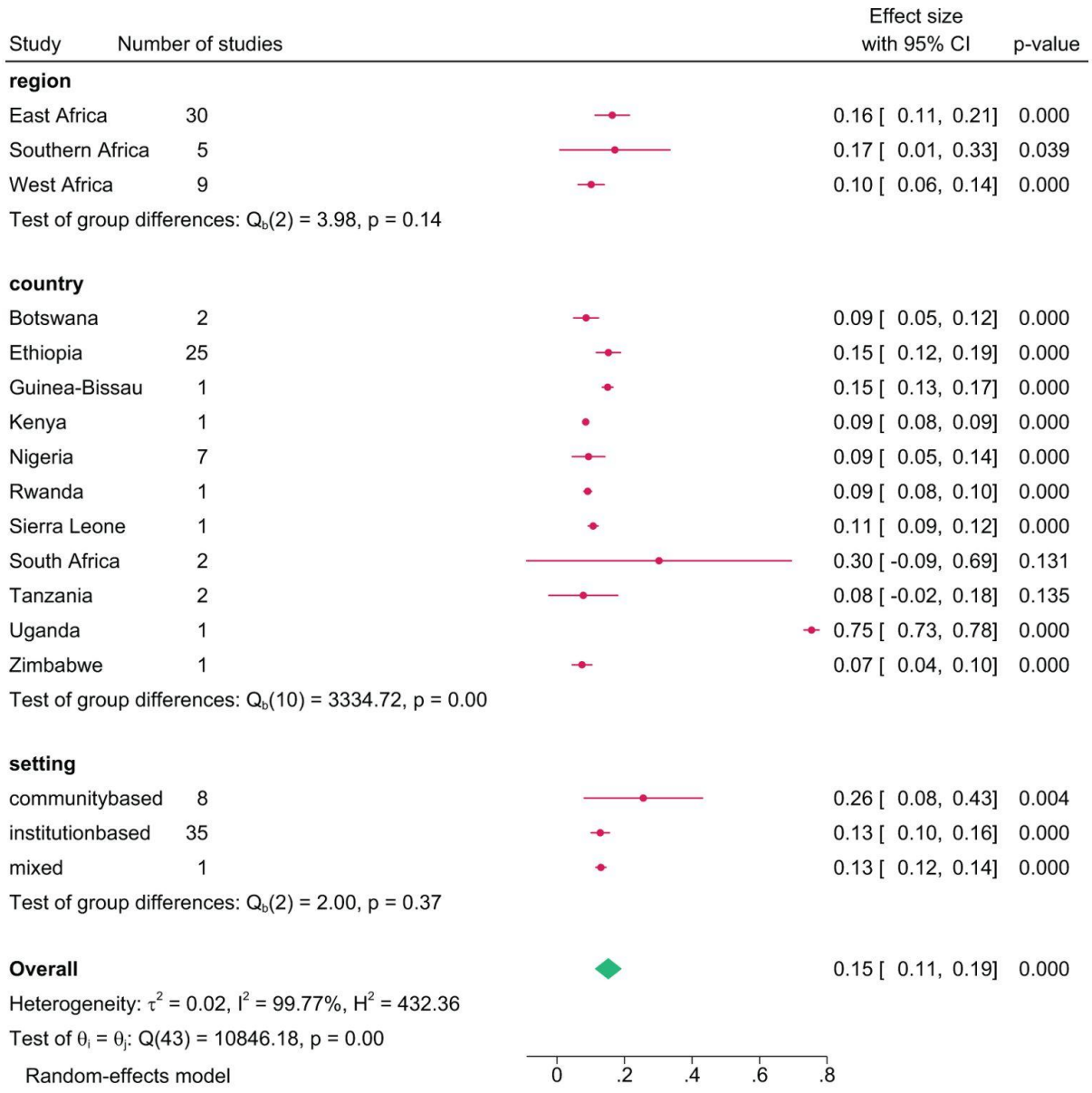

Figure 8: Pooled current prevalence of any substance use among young people in sub-Saharan Africa by subgroup, 2024.

12-month prevalence:

The 12-month prevalence of any substance, pooled from 14 studies, was 18.0% (95% CI=10.0, 27.0) (**Figure 9**). Botswana had the highest 12-month prevalence at 32.0% (95% CI=7.0, 71.0), and Nigeria lowest at 4.0% (95% CI=1.0, 10.0). Further group analysis by region showed the lowest 12-month prevalence in West Africa at 4.0% (95% CI=1.0, 10.0), and the highest in Southern Africa at 25% (95% CI=4.0, 55.0) (Figure 10). The review showed a pooled 12-month prevalence of 18.0% (95% CI=11.0, 26.0) in institution-based studies and 10.0% (95% CI=9.0, 11.0) in community-based studies (**Figure 10**).

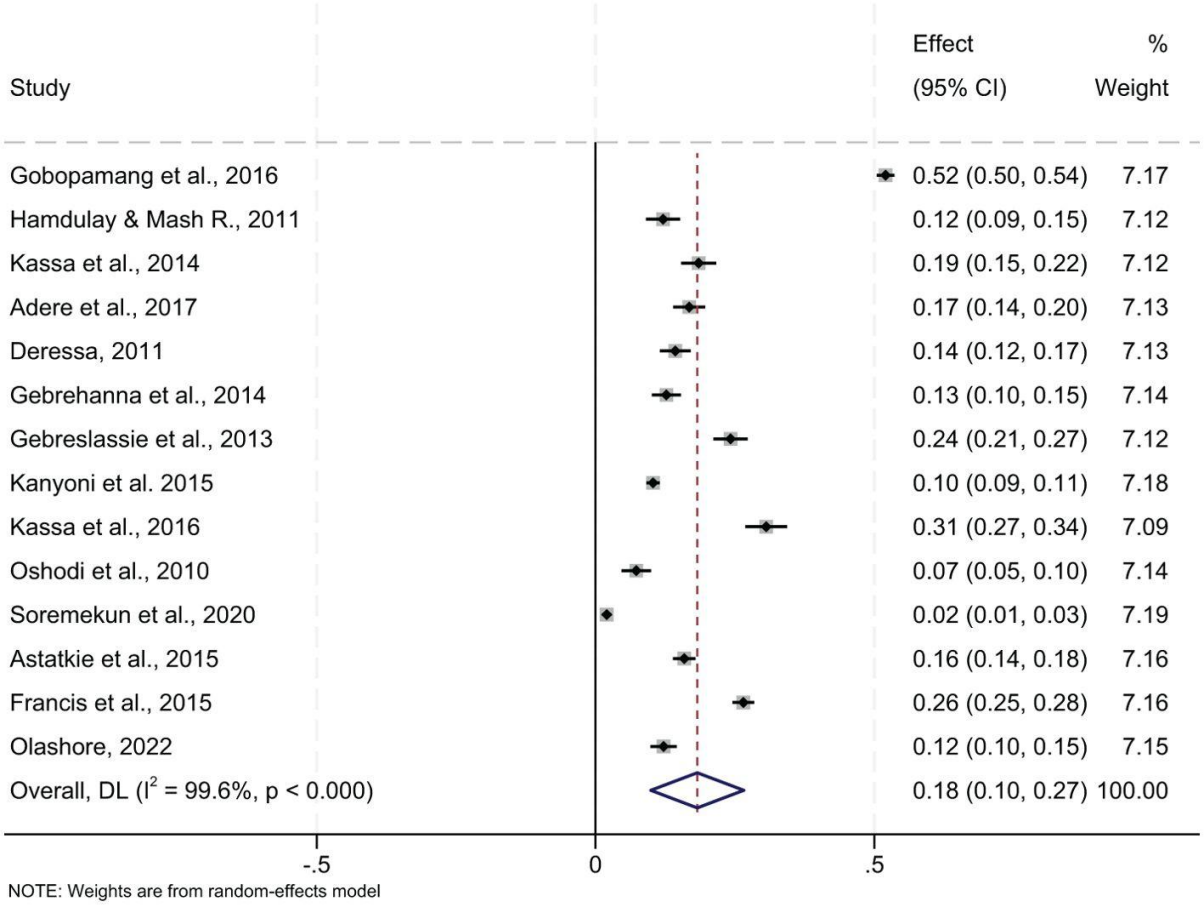

Figure 9: Pooled 12-month prevalence of any substance use among young people in sub-Saharan Africa, 2024.

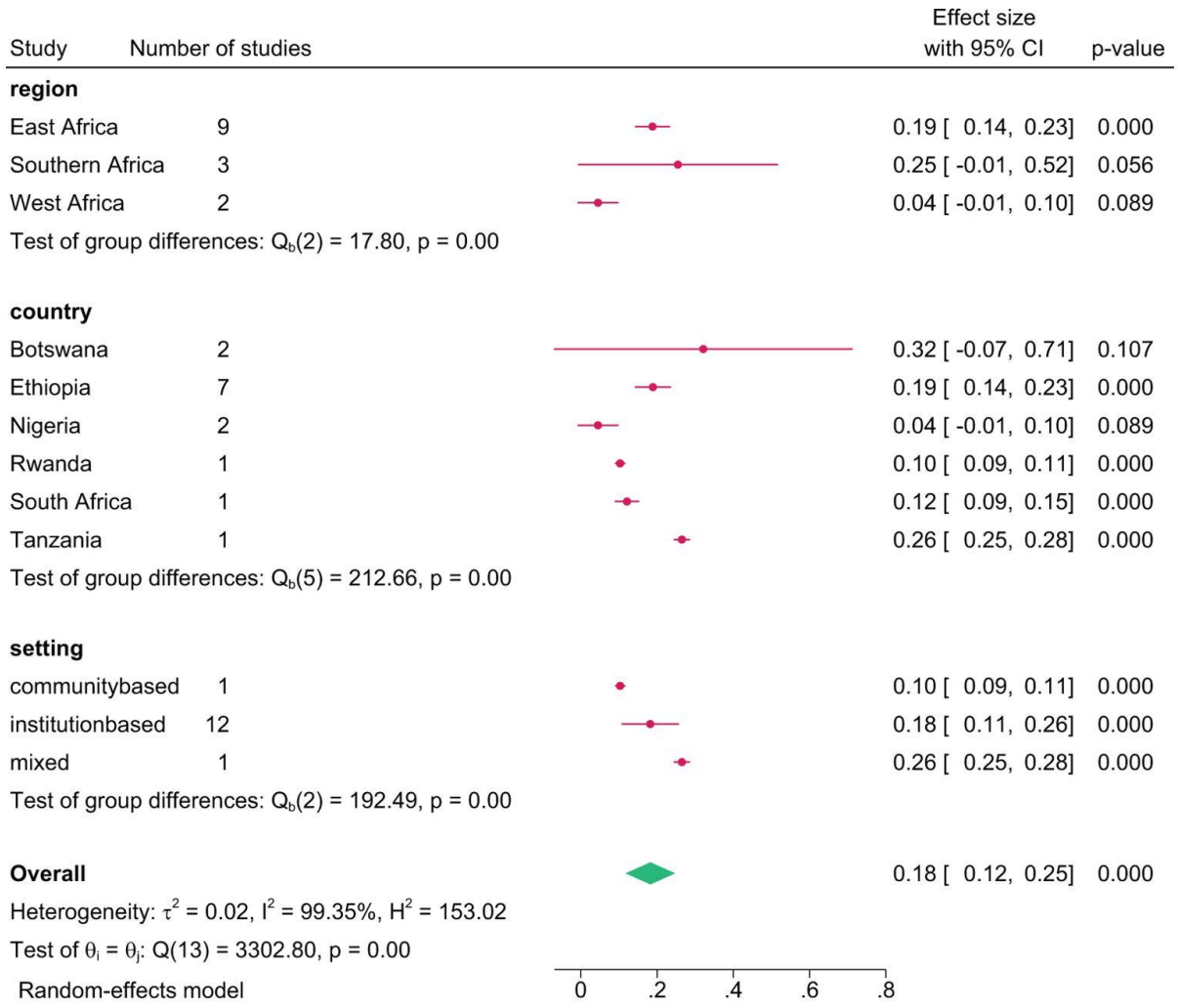

Figure 10: Pooled 12-month prevalence of any substance use among young people in sub-Saharan Africa by subgroup, 2024.

4.5.4. Prevalence of specific substances

Alcohol consumption

The lifetime prevalence of alcohol use, pooled from 39 studies, was 36.2% (95% CI=29.4, 43.0). The prevalence was higher in Uganda at 51.4% (95% CI=48.3, 53.7), followed closely by Rwanda, at 50.6% (95% CI=49.0, 53.0), while it was comparatively lower in Botswana at 29.0% (95% CI=3.5, 54.5). Alcohol prevalence in individual studies ranged from 2.0% (95% CI=2.0, 2.0) (Hirpa et al., 2021) to 69.0% (95% CI=67.0, 71.0) (Soepnel et al., 2022). Furthermore, gender-disaggregated data from 19 studies showed a higher lifetime prevalence among males, 45.9% (95% CI=32.5, 59.4) compared to females, 25.6% (95% CI=18.6, 32.7).

The pooled current prevalence of alcohol use, based on 35 studies, was 23.6% (95% CI=19.1, 28.2). Among studies with gender-disaggregated data, 10 reported a prevalence of 48.7% (95% CI=27.8, 32.7) among males and 14.3% (95% CI=9.9, 18.7) among females.

The pooled 12-month prevalence of alcohol use, based on 10 studies, was 30.0% (95% CI=17.0, 44.0). Similarly, pooled data from 10 studies on 12-month prevalence showed 58.9% (95% CI=40.8, 76.9) among males and 25.0% (95% CI=16.4, 33.7) among females. The highest 12-month alcohol use prevalence was recorded in South Africa at 41.0% (95% CI=36.4, 45,6), and the lowest in Nigeria at 3.0% (95% CI=0.3, 0.9).

Cigarette use

The pooled lifetime prevalence of cigarette use, from 36 studies, was 15.2% (95% CI=12.5, 17.9). Country-specific analysis showed the highest lifetime cigarette use in South Africa at 30.4% (95% CI=7.6, 53.2) and lowest in Tanzania at 7.6% (95% CI=6.7, 8.5). Prevalence reported by individual studies ranged from 1.0% (95% CI=0.1, 2.0) (Admasu et al., 2018) to 49.7% (95% CI=45.0, 54.4) (Soepnel et al., 2022). Gender-disaggregated data from 14 studies showed a higher lifetime prevalence in males at 36.6% (95% CI=15.4, 57.7) compared to females at 10.7% (95% CI=7.2, 14.3).

The pooled current prevalence of cigarette use, based on 31 studies, was 11.8% (95% CI=8.8, 14.8). Among these, 9 studies provided gender-disaggregated data, showing a current prevalence of 27.7% (95% CI=11.1, 44.3) in males and 8.1% (95% CI=3.1, 13.2) in females. By country, South Africa had a higher current prevalence at 42.7% (95% CI=28.0, 57.4), while Tanzania had a lower prevalence at 4.0% (95% CI=3.3, 4.7).

For 12-month prevalence, the pooled estimate from 12 studies was 12.5% (95% CI=7.8, 17.2). Regionally, data from 7 studies showed a higher 12-month prevalence in South Africa at 36% (95% CI=31.0, 41.0) and lower in West Africa at 2.0% (95% CI=0.1, 4.0). Additionally, 3 studies (Adere et al., 2017; Gebreslassie et al., 2013; Hamdulay & Mash, 2011) reported 12-month prevalence rates of 50.0% (95% CI=0.1, 100.0) among males and 22.5% (95% CI=2.0, 43.0) among females.

Khat use

The pooled lifetime prevalence of khat use, from 28 studies, was 23.0% (95% CI=16.9, 29.1). Country-specific analysis showed higher lifetime khat consumption in Ethiopia at 25.8% (95%

CI=20.3, 31.3) and lower in Tanzania at 2.0% (95% CI=1.2, 2.8). The lifetime prevalence reported by individual studies ranged from 2.0% (95% CI=1.2, 2.8) (Mavura et al., 2022) to 63.0% (95% CI=58.3, 67.7) (Ayenew et al., 2020). The current and 12-month prevalence of khat was 17.3% (95% CI=13.4, 21.1) and 16.0% (95% CI:16.0, 21.0), respectively. Generally, the lifetime, 12-month, and current prevalence of khat use were higher among males than females: 51.0% (95% CI: 31.0, 70.0), 48.0% (95% CI: 12.0, 84.0), and 51.0% (95% CI: 31.0, 71.0) for males, compared to 13% (95% CI: 9.0, 17.0), 9% (95% CI: 5.0, 13.0), and 14% (95% CI: 10.0, 18.0) for females, respectively

Cannabis use

The pooled lifetime prevalence of cannabis use was 11.0% (95% CI=9.0, 13.0), with the highest recorded in Zambia at 37.0% (95% CI=35.0, 39.0) and the lowest in Tanzania at 1.0% (95% CI=0.7, 1.3). The lifetime prevalence reports from individual studies ranged from 0.5% (95% CI=0.1, 2.0) (Admasu et al., 2018) to 61.0% (95% CI=58.0, 64.0) (Astatkie et al., 2015). Among nine studies with gender-disaggregated data, the pooled lifetime prevalence of cannabis use was 26.0% (95% CI=3.0, 48.0) among males and 18.0% (95% CI=10.0, 26.0) among females. The current pooled prevalence of cannabis use, based on 17 studies, was found to be 3.7% (95% CI=2.7, 4.7), while the 12-month prevalence, from 5 studies, was 6.0% (95% CI=3.0, 9.0).

Cocaine use

Twelve studies in the review reported a lifetime cocaine use prevalence of 3.0% (95% CI=2.0, 3.0) among young people. The highest prevalence was recorded in Botswana at 6.0% (95% CI=5.3, 6.7) (Letamo et al., 2016), and the lowest was in South Africa at 1.0% (95% CI=0.1, 1.9) (Hamdulay & Mash, 2011). The lifetime prevalence of cocaine use reported in individual studies range from 1.0% (95% CI=0.1, 2.0) (Hamdulay & Mash, 2011) to 6.0% (95% CI=5.0, 7.0) (Letamo et al., 2016). For the current and 12-month period, the prevalence of cocaine use was 0.8% (95% CI=0.4, 1.1) and 1.3% (95% CI=0.4, 2.3), respectively.

Shisha use

Seven studies (Dida et al., 2014; Einarsdóttir et al., 2024; Gebremariam et al., 2018; Hirpa et al., 2021; Kassa et al., 2014; Kyei-Gyamfi et al., 2024; Reda et al., 2012; Roble et al., 2021) reported the lifetime prevalence of shisha use, and four studies (Abdeta et al., 2017; Dida et al., 2014; Einarsdóttir et al., 2024; Hirpa et al., 2021) reported the current prevalence. The

pooled lifetime prevalence was 8.4% (95% CI=5.4, 11.8), and the pooled current prevalence was 6.2% (95% CI:0.3, 12.2).

Hallucinogens

This group includes studies reporting on hallucinogens and LSD (Lysergic Acid Diethylamide). The lifetime prevalence of hallucinogen, pooled from 6 studies, was 3.0% (95% CI=1.0, 5.0), ranging from 1.0% in Kenya (Jaguga et al., 2023) to 7.0% in Ethiopia (Ayenew et al., 2020). Only one study from Ethiopia (Ayenew et al., 2020) reported a lifetime prevalence of 0.5% among males and 3.0% among females. The current prevalence of hallucinogens, based on 3 studies (Abdurahman et al., 2019; Ayenew et al., 2020; Hamdulay & Mash, 2011), was found to be 2.2% (95% CI=0.7, 3.6).

Sedatives

Fifteen studies reported on sedative use prevalence (tranquillisers, sedatives, and Mandrax). The pooled lifetime prevalence of sedative use was 8.9% (95% CI=7.0, 10.8), with individual study reports ranging from 0.1% (95% CI=0.1, 0.2) in Rwanda (Kanyoni et al., 2015) to 73.8% (95% CI=69.3, 78.3) (Abdurahman et al., 2019) in Nigeria. Country-specific analysis showed the highest lifetime prevalence in Nigeria at 19.0% (95% CI=9.8, 28.1), and the lowest in Rwanda at 0.1% (95% CI=0.1, 0.2). The current prevalence of sedative use, pooled from 10 studies, was 6.2% (95% CI=4.7, 7.8), while the 12-month prevalence, based on 4 studies, was 6.0% (95% CI=3.0, 10.0).

Opioid group

Of the studies included in the meta-analysis, sixteen reported on the opioid group of drug use among young people. The pooled lifetime prevalence of opioids was 15.9% (95% CI=13.2, 18.5). The current prevalence of opioid use, pooled from 10 studies, was 7.0% (95% CI=5.0, 9.0), while the 12-month prevalence, from 3 studies, was 4.0% (95% CI=1.0, 7.0).

Inhalants group

A total of ten studies reported on inhalant (e.g., benzene, glue, petrol, and solvents) use among young people. The pooled lifetime prevalence of inhalants, from 12 studies, was 6.0% (95% CI=4.0, 8.0). The lowest reported prevalence from an individual study was in Botswana at 0.1% (95% CI=0.01, 0.2) (Letamo et al., 2016), while the highest was 7.40% (95% CI=4.1, 10.7) (Abdurahman et al., 2019) in Nigeria.

The current prevalence of inhalant use, pooled from 9 studies, was 3.0% (95% CI=2.0, 4.0), while the 12-month prevalence, from 4 studies, was 2.0% (95% CI=0.1, 4.0).

Other substances (steroids and mastics)

Two studies reported on this group of substance use, one focusing on mastics in Ethiopia (Ayenew et al., 2020) and the other is on steroids in Nigeria (Johnson et al., 2017). The current prevalence of mastics was 42.0% (95% CI=36.5, 47.5), and the lifetime prevalence was 46.0% (95% CI=40.5, 51.5) (Ayenew et al., 2020). The lifetime prevalence of steroids was reported at 12.2% (95% CI=7.8, 14.6) (Johnson et al., 2017).

4.5.5. Factors associated with substance use

Out of the 60 studies reviewed, only 48 reported on factors associated with substance use among young people. For simplicity, these factors were grouped into three major categories: individual, family, and community and environmental factors.

Individual factors

Among the studies providing gender distribution data, 18 consistently show a higher prevalence of substance use among male young individuals (Abdeta et al., 2017; Adane et al., 2021; Adere et al., 2017; Alebachew et al., 2019; Deressa & Azazh, 2011; Dida et al., 2014; Dires & Soboka, 2016; Gebrehanna et al., 2014; Gebremariam et al., 2018; Gebresilassie Tesema et al., 2020; Gebreslassie et al., 2013; Kassa et al., 2017; Kassa et al., 2014; Kyei-Gyamfi et al., 2024; Letamo et al., 2016; Musyoka et al., 2020; Mutiso et al., 2022; Teni et al., 2015). In contrast, while three studies report a higher prevalence of substance use among females (Durowade et al., 2021; Ofonime. et al., 2017; Siziya et al., 2013), two studies indicate lower rates among females (Getachew et al., 2019; Olashore et al., 2022).

Ten reviewed studies indicate that substance use risk increases with age among young people (Ayenew et al., 2020; Dires & Soboka, 2016; Gebresilassie Tesema et al., 2020; Getachew et al., 2019; Kuteesa et al., 2020; Kyei-Gyamfi et al., 2024; Kyei-Gyamfi et al., 2023; Mutiso et al., 2022; Ofonime. et al., 2017; Reda et al., 2012). However, a Zambian study on cannabis use found younger individuals, below 15 years, showing higher rates than older ones (Siziya et al., 2013).

It was indicated in the reviewed studies that the risk of substance use among young people increases with advancing years of study (Adane et al., 2021; Adere et al., 2017; Astatkie et al.,

2015; Chekole, 2020; Gebresilassie Tesema et al., 2020; Letamo et al., 2016; Shegute & Wasihun, 2021; Soremekun et al., 2020). Additionally, factors such as poor academic performance (Birhanu et al., 2014), non-attendance of school (Ayenew et al., 2020; Owusu-Sarpong & Agbeshie, 2019), attending private schools (Gebremariam et al., 2018; Ogunsola & Fatusi, 2016), attending rural schools (Itanyi et al., 2020), and in-school compared to out-of-school young people (Ogunkunle et al., 2020) are associated with an increased risk of substance use. However, one study presents a different perspective, indicating a lower risk of substance use among high-academic performers (Ofonime. et al., 2017).

Furthermore, factors such as living alone during school age (Dida et al., 2014; Kassa et al., 2016), living off-campus in rented accommodation (Astatkie et al., 2015; Gebrehanna et al., 2014; Musyoka et al., 2020), low perceived risk of substance use (Birhanu et al., 2014), poor social skills (Birhanu et al., 2014), engagement in sexual activity (Chivandire & January, 2016; Dires & Soboka, 2016; Kassa et al., 2017; Kuteesa et al., 2020), being bullied (Chivandire & January, 2016; Olashore et al., 2022), and the perception that substance use improves academic achievement (Gebrehanna et al., 2014) were linked to various forms of substance use among young people.

Additionally, urban residency (Gebresilassie Tesema et al., 2020; Shegute & Wasihun, 2021), frequent watching of football games or soccer matches (Getachew et al., 2019), having internet access at home (Getachew et al., 2019), experiencing intimate partner violence (Kuteesa et al., 2020), involvement in trade and other business activities (Kyei-Gyamfi et al., 2024; Kyei-Gyamfi et al., 2023; Owusu-Sarpong & Agbeshie, 2019), exposure to substance advertisements (Olashore et al., 2022), and the presence of health conditions such as anxiety symptoms (Olashore et al., 2018; Shegute & Wasihun, 2021), human immunodeficiency virus (Kuteesa et al., 2020), suicidal ideation (Dires & Soboka, 2016; Riva et al., 2018), and low expectations for the future (Riva et al., 2018) were also associated with substance use among young people.

Family factors

Peer and family influence significantly impact substance use among young people. As reported by 17 studies in the review, substance use by close friends (Adane et al., 2021; Admasu et al., 2018; Astatkie et al., 2015; Ayenew et al., 2020; Birhanu et al., 2014; Chekole, 2020; Chivandire & January, 2016; Dida et al., 2014; Gebrehanna et al., 2014; Gebremariam et al., 2018; Gebreslassie et al., 2013; Getachew et al., 2019; Kassa et al., 2014; Ofonime. et al., 2017; Ogunsola & Fatusi, 2016; Olashore et al., 2018; Owusu-Sarpong & Agbeshie, 2019) and other

family members (Abate et al., 2021; Abdeta et al., 2017; Astatkie et al., 2015; Chivandire & January, 2016; Gebremariam et al., 2018; Gebreslassie et al., 2013; Kassa et al., 2014; Ofonime. et al., 2017; Olashore et al., 2018; Owusu-Sarpong & Agbeshie, 2019; Seid et al., 2021) were associated with substance use among young people.

Young people with negative family dynamics, such as unsatisfactory family relationships (Ofonime. et al., 2017), parental divorce (Addo et al., 2016; Shegute & Wasihun, 2021), low family monitoring (Riva et al., 2018), loss of one or more parents (Shegute & Wasihun, 2021), and those who felt poorly understood by their parents (Olashore et al., 2022) had higher odds of substance use. Conversely, a strong parent-child relationship (Seid et al., 2021), parental disapproval of substance use (Ogunsola & Fatusi, 2016), and close family supervision (Siziya et al., 2013) were associated with a lower tendency to use substances among young people. Additionally, young people whose mothers had secondary or higher education (Durowade et al., 2021; Kanyoni et al., 2015; Ogunsola & Fatusi, 2016), or were civil servants (Durowade et al., 2021) had a higher prevalence of substance use.

Community and environmental factors

Community norms supportive of substance use (Seid et al., 2021), easy access to substances (Seid et al., 2021; Soremekun et al., 2020), and lenient school regulations (Seid et al., 2021; Soremekun et al., 2020) were associated with substance use among young people.

Frequent attendance at religious places (Abdeta et al., 2017; Birhanu et al., 2014; Gebremariam et al., 2018; Teni et al., 2015), regardless of the type of religion, was associated with a lower risk of substance use among young people, while never attending was associated with an increased risk (Onya et al., 2012).

While two studies indicate low socioeconomic status increases the risk (Olashore et al., 2018; Soepnel et al., 2022), eight other reviewed studies showed higher odds of substance use among individuals from higher socioeconomic and income backgrounds compared to their counterparts (Abate et al., 2021; Adere et al., 2017; Alebachew et al., 2019; Gebremariam et al., 2018; Hirpa et al., 2021; Itanyi et al., 2020; Soremekun et al., 2020; Teni et al., 2015).

4.5.6. Reasons for substance use among young people

A total of twenty-one studies reported reasons for substance use among young people. Common reasons included alertness (Dires & Soboka, 2016; Kassa et al., 2017; Kassa et al.,

2014; Ogunkunle et al., 2020; Seid et al., 2021; Shegute & Wasihun, 2021), boosting confidence (Admasu et al., 2018; Chivandire & January, 2016; Johnson et al., 2017; Kyei-Gyamfi et al., 2024; Kyei-Gyamfi et al., 2023), exam preparation (Abdeta et al., 2017; Adane et al., 2021; Admasu et al., 2018; Astatkie et al., 2015; Dires & Soboka, 2016; Ogunkunle et al., 2020; Oshodi et al., 2010), peer influence (Abdeta et al., 2017; Adane et al., 2021; Admasu et al., 2018; Ayenew et al., 2020; Dires & Soboka, 2016; Durowade et al., 2021; Kassa et al., 2017; Kassa et al., 2014; Roble et al., 2021; Seid et al., 2021; Shegute & Wasihun, 2021)), increasing energy (Astatkie et al., 2015; Kassa et al., 2014), and stress relief (Abdeta et al., 2017; Adane et al., 2021; Admasu et al., 2018; Astatkie et al., 2015; Chivandire & January, 2016; Dires & Soboka, 2016; Durowade et al., 2021; Kassa et al., 2017; Kassa et al., 2014; Kyei-Gyamfi et al., 2024; Oshodi et al., 2010; Roble et al., 2021; Seid et al., 2021; Shegute & Wasihun, 2021).

Other reported reasons were pleasure/fun (Abdeta et al., 2017; Adane et al., 2021; Admasu et al., 2018; Astatkie et al., 2015; Chekole, 2020; Chivandire & January, 2016; Dires & Soboka, 2016; Kassa et al., 2017; Kassa et al., 2014; Kyei-Gyamfi et al., 2024; Oshodi et al., 2010; Roble et al., 2021; Seid et al., 2021; Shegute & Wasihun, 2021), stomach ache relief (Kassa et al., 2014), family influence (Abdeta et al., 2017; Kassa et al., 2014; Shegute & Wasihun, 2021), easy access (Abdeta et al., 2017; Adane et al., 2021; Ayenew et al., 2020; Seid et al., 2021; Shegute & Wasihun, 2021), and socialisation (Abdeta et al., 2017; Admasu et al., 2018; Alebachew et al., 2019; Astatkie et al., 2015; Ayenew et al., 2020; Chekole, 2020; Dires & Soboka, 2016; Shegute & Wasihun, 2021).

Additional reasons included enhanced concentration on religious activities (Abdeta et al., 2017; Alebachew et al., 2019; Astatkie et al., 2015; Oshodi et al., 2010), appetite suppression (Abdeta et al., 2017; Dires & Soboka, 2016), time-killing (Admasu et al., 2018; Astatkie et al., 2015), improving academic performance (Admasu et al., 2018), habit (Astatkie et al., 2015; Kassa et al., 2017), lack of recreational areas (Alebachew et al., 2019), affordability (Ayenew et al., 2020), curiosity (Ayenew et al., 2020; Durowade et al., 2021; Kassa et al., 2014; Oshodi et al., 2010; Roble et al., 2021) fitting in with friends (Chivandire & January, 2016; Shegute & Wasihun, 2021), media influence (Durowade et al., 2021), self-medication (Kyei-Gyamfi et al., 2023; Oshodi et al., 2010), having money to buy (Seid et al., 2021), academic dissatisfaction (Shegute & Wasihun, 2021), improving social status (Kyei-Gyamfi et al., 2023), and stimulating appetite for meals (Kyei-Gyamfi et al., 2023).

4.6. Discussion

This review provides a comprehensive overview of substance use prevalence and risk factors among young people in SSA, pooled from 60 different individual studies published between 2010 to 2024. While previous reviews often focused on specific countries (Abate et al., 2021; Jaguga et al., 2022; Jatau et al., 2021), adolescents (10-19 years of age) (Olawole-Isaac et al., 2018), or specific substances (Belete et al., 2024; Townsend et al., 2009) have provided valuable insights, this review offers a broader regional perspective on substance use among young people, covering both adolescents and youths, in SSA. This review provides the most recent evidence on the state of substance use among young people in SSA.

The pooled lifetime, 12-month, and current prevalence of any substance use among young people in SSA were 21%, 18%, and 15%, respectively. In general, the pooled prevalence estimated by the current review across different timeframes is lower than the overall prevalence of substance use reported in previous African and non-African studies. For instance, a recent review on substance use among adolescents in SSA reported a lifetime prevalence of 42% (Olawole-Isaac et al., 2018). Similarly, a review among medical students in India found an overall lifetime prevalence of 40% (Sahu et al., 2022), and a study among young people in Ethiopia reported a 32% lifetime prevalence and a 24% current prevalence (Amanuel A, 2019). Several factors could explain this difference, including the number of studies (60 in our review compared to fewer than 50 in others), the total number of participants (84,434 in our review compared to fewer in others), the characteristics of study participants (such as medical students in India who may use substances to cope with academic stress). Additionally, the scope of substances considered (we included various substances, while some studies focused on fewer substances, like those in Ethiopia, focusing only on alcohol, khat, and cigarettes), and the limited geographical focus (Ethiopia and India specifically) contribute to the differences. Other factors, such as study periods, levels of stigma, potential response bias, and other methodological, cultural, and socioeconomic factors, may also justify the observed differences.

In this study, the 12-month and current alcohol prevalence rates, at 30% and 24% respectively, closely align with findings from previous studies. Specifically, our findings are consistent with the 12-month and current alcohol prevalence rates among young people in East Africa (26% and 28%) (Francis et al., 2014), alcohol prevalence among adolescents in SSA (32%) (Olawole-Isaac et al., 2018), and current alcohol prevalence among students in Ethiopia (27.6%) (Roba et al., 2021). Additionally, our results align with the alcohol prevalence among

medical students in India (27%) (Sahu et al., 2022), the lifetime (10%) and 12-month (5%) prevalence of cannabis among adolescents in SSA (Belete et al., 2023), and the current prevalence of khat among young individuals in Ethiopia (17.3%) (Alemu et al., 2020). However, the lifetime prevalence reported in this review (21%) contrasts significantly with findings from other reviews on substance use among young people: Ethiopia (52%) (Roba et al., 2019), East Africa (52%) (Francis et al., 2014), students in India (40%) (Sahu et al., 2022), and adolescents in SSA (42%) (Olawole-Isaac et al., 2018).

Regionally, the lifetime and 12-month prevalence of any substance use were higher in the southern region, while the current prevalence was higher in the East Africa region. In country-specific analysis, Zambia had the highest lifetime prevalence of any substance use at 40%, Botswana had the highest 12-month prevalence at 32%, and Uganda had the highest current prevalence at 75%. This varying pattern of substance use prevalence among young people across study regions and countries within SSA could be attributed to the availability and variety of substances across regions, as well as the number of studies involved from each region. Additionally, the differences could be explained by factors such as production, availability, cost, regulations, social pressure, and urban/rural distinctions (Mupara et al., 2021; Onaolapo et al., 2022). Furthermore, distinct patterns of substance use observed between countries, such as the exclusive focus on khat in East Africa, highlight its origin and widespread consumption in countries like Ethiopia, Somalia, and Kenya (Ahmed et al., 2021; Gebrie et al., 2018; Onaolapo et al., 2022). Similarly, the higher prevalence of cannabis reported in South Africa (Hamdulay & Mash, 2011), aligns with the existence of indigenous plants of cannabis (known as dagga in Southern Africa) that have been used in traditional cultures for centuries (Onaolapo et al., 2022). The relatively lower prevalence observed in the Western African region could be explained by the strong regional drug control and prevention policies and regulations (West Africa Commission on Drugs, 2018), upon which Eastern and Southern Africa established the Commission for Drug Control (ESACD).

This systematic review of findings aligns with Social Norms Theory (Berkowitz, 2003), which stipulates that people's behaviours are influenced by the norms and expectations of their social groups. This theory helps explain why substance use prevalence varies across regions and countries in SSA, where cultural acceptance of substance use may be more pronounced. In environments where substance use is perceived as normative among peers, young individuals may feel pressure to engage in such behaviours to fit in (Habib et al., 2023).

The review identified that family dynamics, including positive reinforcement or discouragement of substance use, significantly shape young people's attitudes and behaviours toward substance use. Additionally, family communication, parental monitoring, and parent-child relationships were found to have associations with substance use patterns. Social Learning Theory (Bandura, 1977) also complements these findings by suggesting that individuals, particularly young people, learn behaviours through observing and imitating influential figures in their lives. Exposure to substance use behaviours among parents or older siblings normalises these behaviours and increases the likelihood of experimentation and continued use during adolescence and young adulthood. Beyond family influences, it was reported that peer relationships, community norms, and broader societal factors further shape young people's perceptions and behaviours related to substance use. Gender-disaggregated data of all specific substances from meta-analysis consistently show higher prevalence rates of substance use among males compared to females. For instance, lifetime alcohol use among males was 45.9% compared to 25.6% among females. Studies in Ethiopia and Europe similarly report higher overall substance use prevalence among male adolescents (Amanuel A, 2019; Amendola, 2022; Castelpietra et al., 2022). The variations could arise from biological and socio-cultural factors such as childcare responsibilities, addiction stigma, relationship dynamics, peer pressure, group affiliations, and cultural norms (Amanuel A, 2019; Bago, 2017; Jaguga et al., 2022).

Beyond the context of substance use variation by gender, the theories explain that children may observe their parents or older siblings using substances, which can normalise such behaviours and increase the likelihood of experimentation and continued use in adolescence and young adulthood. This observational learning process is particularly influential during developmental stages when individuals are forming their attitudes and behaviours toward substances (Trucco, 2020; Yates, 2023).

Moreover, family dynamics play a crucial role in shaping attitudes and behaviours related to substance use (Boyer et al., 2020). Positive reinforcement of substance use behaviours within the family, whether overt or subtle, can reinforce these behaviours as acceptable or even desirable. Conversely, negative attitudes or behaviours towards substance use within the family unit can serve as protective factors against substance use initiation or escalation. Family communication patterns, parental monitoring, and the quality of parent-child relationships also were identified as significantly associated with the likelihood of substance use among young people.

In addition to family influences, peer relationships, community norms, and broader societal factors further shape young people's perceptions and behaviours related to substance use (Loke & Mak, 2013).

Another important finding identified by this review is the gap in community-based substance use studies compared to those conducted in institutional settings. Out of the 60 studies reviewed, only about one-quarter involved participants were from the general community, while the rest focused on institutional settings. Community-based studies revealed significantly higher current prevalence rates (26%) than institution-based studies while showing similar lifetime rates. These findings underscore the critical importance of expanding research efforts to include young people from the general community in studies on substance use, to comprehensively understand the prevalence and factors influencing substance use in different contexts, and to develop targeted interventions that address the needs of all young people.

The current review also revealed a relative increase in publication trends on substance use over the last decade with a notable rise in the past five years in SSA. This increase, particularly during the COVID-19 era, might be attributed to an increased focus on research and write-up during the lockdown period. The lockdowns provided researchers with more time to conduct literature reviews, analyse data, and write manuscripts, potentially leading to a significant rise in academic output in this field. The pandemic may also have exacerbated substance use due to heightened stress, anxiety, and disruption of social and economic activities, thereby prompting more research interest in this area. This was supported by studies showing that there was a sharp increase in the publication of articles on different subjects (Else, 2020; Nane et al., 2023).

4.7. Strengths and limitations

This systematic review synthesised and analysed a large body of empirical evidence from various studies, providing a comprehensive overview of substance use prevalence and associated factors across the region by using a systematic approach. By including studies covering a wide age range (10-24 years) and various types of substances, the review offers a more thorough understanding of substance use prevalence among young individuals in SSA across different reporting timeframes. It also highlights the differences in substance use prevalence across countries, regions, and genders, emphasising the need for targeted interventions sensitive to cultural norms and practices.

However, this review has some limitations. Only cross-sectional studies published in peer-reviewed literature were included, missing grey literature such as government reports and unpublished data. This focus on epidemiological studies may have missed valuable insights from other sources. Although we strictly followed PRISMA guidelines, the inclusion of cross-sectional studies could introduce recall bias. Additionally, we observed higher heterogeneity in the review. Given the very high between study heterogeneity, inconsistent reporting of potential moderators, and possible small study/ publication bias, pooled estimates should be interpreted cautiously and may have limited generalisability. While the JBI-MAStARI tool is valuable for assessing study quality, we acknowledge that its subjective nature and reliance on evaluator interpretation may introduce bias.

4.8. Implications of study findings

The findings of this systematic review and meta-analysis have several important implications. The high prevalence rates of alcohol, cigarette, khat, and cannabis use among young people underscore the need for targeted interventions and policies. Identifying individual, family, and community risk factors provides a comprehensive understanding of the factors associated with substance use, which is essential for designing multifaceted prevention strategies. Significant variations in substance use prevalence by gender, region, country, and study setting call for specific prevention and treatment approaches. Early screening and identification of substance use in healthcare and educational settings are crucial for timely intervention.

4.9. Conclusions and recommendations

A substantial portion of young people in SSA use different substances at different time points with variations between genders, regions, and countries. Review findings highlight the need for interventions targeting both the broader young population and specific subgroups who may be at higher risk of substance use. Promotive, protective, and curative programs for substance use and substance use disorders in young people at the individual, family, and societal levels can play a key role in achieving sustainable development goals for their health and well-being.

Future longitudinal studies are crucial to understanding the progression of substance use and identifying causal relationships. Exploring regional and cultural differences in substance use patterns and including diverse populations beyond educational institutions, such as those in rural areas and marginalised groups, is also critical. Policy development should focus on targeted prevention programs for high-risk groups, such as males, older adolescents, and those

with poor academic performance. Increasing school-based prevention and intervention programs is critical for early detection. Integrating substance use prevention with mental health services and engaging communities in prevention efforts can effectively address local risk factors. Routine screening in healthcare and educational settings, comprehensive substance use education, family engagement, strengthening parent-child relationships, peer support programs, and improved access to youth-friendly and culturally appropriate treatment and counseling services are vital practical measures.

4.10. Notes on the systematic review and transition between primary studies

This systematic review and meta-analysis synthesised evidence from primary studies reporting on the prevalence, associated factors, and reasons for substance use among young people aged 10–24 years in sub-Saharan Africa (SSA). While the findings provided valuable insights into substance use patterns across the region, it is important to note that the pooled prevalence estimates reflect published literature rather than actual population-level data. Variations in study design, sampling strategies, and measurement tools among the included studies limit the generalisability of the results. To obtain more accurate and representative estimates, large-scale, region-wide, population-based studies are required. Nevertheless, this review identified key evidence gaps and helped shape the design of the empirical research components of this thesis.

Across included studies, between-study heterogeneity was very high, reflecting variability in settings (community vs institution-based), measurement tools and cut-offs, age bands within 10–24 years, and sampling frames. We therefore used random-effects models and conducted a priori subgroup analyses (by region, country, and study setting) to explore heterogeneity; these analyses reduced but did not eliminate residual variability. Because key study-level covariates were inconsistently reported, more granular moderator analyses (e.g., meta-regression by instrument/cut-off or sampling approach) were not feasible. Accordingly, pooled estimates should be interpreted as regional summaries rather than precise point estimates for any single population. While we screened broadly and assessed study quality, small-study effects and selective reporting cannot be ruled out; this may upwardly or downwardly bias some pooled estimates. We highlight these caveats when interpreting the findings and revisit them in the thesis-level limitations.

This thesis focuses on young people, although the age range varies across study components. The definition of *young people* was guided by international, regional, and national frameworks and was adapted to suit the methodological and ethical requirements of each study. For the systematic review (Chapter 4), we adopted the United Nations' definition of young people as those aged 10–24 years, encompassing both adolescents and youth. For the Ethiopian-based cross-sectional studies (Chapters 5 to 7), the broader national definition of 10–29 years was used, consistent with the Federal Democratic Republic of Ethiopia's Ministry of Youth and Sports. However, the lower age limit was set at 14 years due to ethical considerations and the limited prevalence of substance use among younger adolescents. For the qualitative study (Chapter 8), young participants aged 18–29 years were purposively selected for interview to ensure mature, reflective accounts of substance use experiences.

In this thesis, the sample sizes for the primary studies were scientifically determined using standard epidemiological procedures and were based on data from the West Arsi zone of Ethiopia. The general substance use screening survey (Chapter 5) employed a sample size of 427 participants. For the subsequent studies assessing mental health conditions and health-related quality of life (HRQoL) (Chapters 6 and 7), a sub-sample of 204 participants who reported substance use in Chapter 5 was analysed. This design ensured internal consistency and relevance across the different study phases.

Collectively, the chapters that follow present empirical findings grounded in rigorous methodology and adapted to the local context. Each study explores distinct yet interrelated aspects of substance use, mental health conditions, and HRQoL among young people in the West Arsi zone. This progression—from a broad regional evidence synthesis to focused, context-specific fieldwork—ensures that the thesis findings are both evidence-based and grounded in the lived experiences of the population studied.

The next chapter (Chapter 5) presents findings from a community-based cross-sectional survey conducted to estimate the prevalence of substance use and identify key associated factors among young people in the West Arsi zone.

Chapter Five: Study Findings — Substance Use Prevalence

5.1. Chapter overview

The previous chapter presented the systematic review and meta-analysis findings. This chapter reports on the findings of the substance use survey among young people and associated factors. The research question being examined in this chapter centers on the various types of substances consumed by young people in the West Arsi zone of Ethiopia.

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Candidate's contribution to this study

The PhD candidate is the first author of the manuscript and was responsible for the data analysis, drafting and finalising of the manuscript as well as responding to reviewer feedback. The second and third authors provided feedback on the overall aims of the study, during the analysis, as well as editorial feedback during the drafting and finalisation of the manuscript.

5.2. Abstract

Introduction: Substance use is a pressing public health concern in young Ethiopians, impacting their physical, psychosocial, and emotional well-being and productivity. However, there is a limited understanding of the prevalence and factors associated with substance use in this population both across Ethiopia and in the West Arsi zone specifically. This study

investigates the prevalence of substance use and associated factors among young people in the West Arsi Zone, Ethiopia.

Methods: A community-based cross-sectional survey was conducted among 427 randomly selected young people aged 14–29 in the West Arsi zone of the Oromia region, Ethiopia. Data were collected using structured interviewer-administered questionnaires. Logistic regression analysis was performed to determine the association between the outcome and independent variables. Ethical approval was obtained from the University of Technology Sydney, Australia, and Madda Walabu University, Ethiopia.

Results: A total of 424 participants were included in the analysis, giving a response rate of 99.3%. The overall lifetime prevalence of any substance use among the study participants was 48.1% (95% CI: 43.3%, 53.0%) and the prevalence of current substance use was 72.5% (95% CI: 65.9, 78.5). Among lifetime users, 76.5% reported chewing khat, 49.0% drinking alcohol, 33.3% using various forms of tobacco, and 23.0% using cannabis. Being male, having a single marital status, a family history of substance use, low perceived social support, and the presence of mental health conditions were associated with an increased likelihood of substance use.

Conclusions: About half of the study participants reported a history of use of at least one substance, from alcohol, khat, tobacco, or cannabis in their lifetime, highlighting the need for appropriate, focused interventions to help address the growing challenges of substance use amongst young people in Ethiopia.

Keywords: Young people, substance use, alcohol, khat, tobacco, cannabis, Ethiopia.

5.3. Introduction

The use of psychoactive substances such as alcohol, khat, tobacco, and cannabis remains a public health concern. Globally, an estimated 2.3 billion people consume alcohol (World Health Organisation, 2018a), 1.3 billion tobacco products (World Health Organisation, 2021b), 147 million cannabis (World Health Organisation, 2025), and 20 million khat (Corkery et al., 2011). About half a million global deaths are attributable to substance use annually, and substance use contributes 1.3% to the global burden of disease (GBD Collaborators, 2018).

Substance use is associated with various health risks, which, when left untreated, have the potential to lead to a range of personal and social problems (McLellan, 2017; Onaolapo et al., 2022). These, in turn, have a wider societal impact through lost productivity, early death,

increased healthcare spending as well as increased expenses for criminal justice and social welfare (McLellan, 2017).

Substance use and its consequences are particularly pronounced in young people (Das, Salam, Arshad, et al., 2016; Esmael, 2014; Fekadu et al., 2007; Schulte & Hser, 2014a). Within this demographic, substance use manifests as a complex phenomenon driven by multifaceted factors. Young people use substances to enhance positive emotions, foster connections or fit into social groupings, conform to social norms or peer expectations, and as a maladaptive coping mechanism for social, emotional, or physical health issues (Cooper et al., 2016). Furthermore, young individuals may use substances to experiment, to assert their independence, or to feel more mature (Cooper et al., 2016; Sher, 2014).

While substance use is a global concern, some countries are disproportionately affected. In Ethiopia, a country marked by economic hardships, political tensions, and stark social disparities, young people may resort to substances like alcohol, khat, tobacco, or cannabis to overcome these stressors. In Ethiopian culture, chewing khat and drinking alcohol are commonly seen as a way to connect with others during social gatherings and social ceremonies, and to foster a sense of belonging with the local community (Debele et al., 2023; Manghi et al., 2009). Furthermore, Ethiopia has a long history of cultivating, producing, trading, and consuming various homegrown plants and herbs with psychoactive properties such as *Catha edulis* (known as khat/chat in Ethiopia), cannabis (known as hashish or ganja in Ethiopia), and alcohol (locally produced *tella, tej*, and *areke*) (Fentie et al., 2020; Mavura et al., 2022; Onaolapo et al., 2022; Roba et al., 2019).

The growing urbanisation and globalisation in Ethiopia and increasing exposure to global consumer culture contribute to shifting societal norms, potentially increasing risks associated with increased substance use (John-Langba et al., 2006; Pankhurst, 2019; Roba et al., 2021). Further, perceptions that khat and tobacco boost concentration and working memory, that khat breaks alcohol intoxication, and that cigarettes complement the alcohol effect, have all contributed to increased substance use among young people in Ethiopia (Debele et al., 2023; Duresso et al., 2018; A. Mihretu et al., 2022).

Despite the widespread nature of substance use, previous studies on this matter in Ethiopia have predominantly concentrated on schools or higher education settings, providing insights into the prevalence and factors associated with substance use among students. For instance, four reviews conducted in recent years have estimated the magnitude of substance use and its

associated factors among young people attending schools (Abate et al., 2021; Roba et al., 2019; Roba et al., 2021; Tefera, 2018), while only one addresses the problem among young people, aged 10-24 years, in the general community (Abajobir & Kassa, 2019). There are also limitations due to a lack of utilising standardised tools to assess substance use, and a lack of coverage for the wider young population, especially in rural or semi-urban areas. Thus, there is a need to comprehensively examine the prevalence of substance use among young people beyond educational settings, encompassing a diverse range of substances and socio-cultural contexts, covering both adolescents and youth in the general community. In direct response to this gap, this cross-sectional study aims to examine the prevalence of substance use and associated factors among young people in the West Arsi zone, Ethiopia. Such work is important as one means by which to help inform, design, and implement targeted interventions and public health policies on this topic in Ethiopia (Roba et al., 2019; Roba et al., 2021).

5.4. Materials and methods

5.4.1. Study design

A cross-sectional study was conducted from May 18, 2023, to September 22, 2023, to assess the prevalence of substance use and associated factors among young people in the West Arsi zone.

5.4.2. Study setting

The study was conducted in the West Arsi zone in the Oromia Regional State. The zone comprises 13 districts (woredas) and two town administrations, Ethiopia, which comprises 13 districts (woredas) and three town administrations. In 2022, the total population of this zone was approximately three million, with young people (aged 10-29 years) accounting for 1.2 million (Central Statistical Agency of Ethiopia, 2022).

The region is known for its substantial production and distribution of various psychoactive substances, including alcohol, khat, cannabis, and tobacco, which are both widely available and culturally integrated. Additionally, West Arsi experiences a high unemployment rate, reflecting the broader economic challenges across Ethiopia (Mokona et al., 2020), which may further heighten vulnerability. Healthcare infrastructure in West Arsi, particularly for mental health or substance-related services, is limited, restricting access to necessary support. Given these combined factors, assessing substance use among young people in this setting is important to inform targeted interventions and policy responses.

5.4.3. Study population and recruitment

The study considered all young people living in the West Arsi Zone of the Oromia region, Ethiopia, as a source population. The target population included young people aged 14-29 years, residents of the study area who had lived there for at least six months at the time of the survey (In the Ethiopian context, six months is widely regarded as the minimum period required for recognising residency in a neighborhood), could provide informed consent and/or assent, and were willing to participate. Young people who were critically ill and unable to provide information, and individuals absent during the data collection period, were excluded.

The sample size for this study was determined using a 95% CI with a Z-value of 1.96, a 5% level of precision (d = 0.05), an estimated proportion of substance use (P = 50%), and a 10% non-response rate. The proportion of 50% was considered to ensure the inclusion of the maximum possible sample size for this study. Based on these parameters, the required sample size was determined to be 427 participants**.**

To further ensure adequate statistical power and account for key factors associated with substance use, such as sex, family history of substance use, and peer substance use reported in previous literature, additional sample size calculations were conducted using the double population proportion formula. However, a comparison of all independently calculated sample sizes revealed that the single proportion formula based on a 50% prevalence provided the largest sample size (Kadam & Bhalerao, 2010). Consequently, the sample size of 427 participants was adopted as the final sample size for this study.

The study was conducted in the West Arsi zone of the Oromia Regional State, Ethiopia. A convenient and purposive sampling method was applied to select the study setting. This zone was chosen due to the researcher's familiarity with the area, the significant production, distribution, and accessibility of various psychoactive substances, and the high unemployment rate in the region (Mokona et al., 2020), which has been identified as a potential risk factor for substance use.

Among the 13 woredas in the West Arsi zone, four woredas were purposively selected, representing approximately 30% of the woredas in the zone to ensure representativeness while maintaining feasibility. From each selected woreda, four kebeles (the smallest administrative unit in Ethiopia) were also selected based on their accessibility and the concentration of the young population, with two kebeles drawn from urban and two from rural areas (**Table 1**). The

urban-rural stratification was included to facilitate comparisons, given documented variations in substance use between urban and rural communities in Ethiopia (Zenbaba et al., 2022).

Following the initial step that involved the identification of the selected kebeles, and to prepare for data collection, a one-week census of households with young individuals was conducted. Each household was given a unique number to establish a sampling frame. The numbering process began at a central or predefined landmark in each kebele, such as the kebele administration office, mosque, church, school, or another prominent feature, depending on the setting. From this starting point, households were numbered systematically, ensuring full coverage within the kebele boundary until the last household to be included in the study was reached.

Local young individuals, capable of writing, participated voluntarily in the process of household identification and numbering, assisted by local law enforcement personnel assigned from the kebele administration office to ensure the safety and smooth execution of the process, particularly to address the local security concerns. This was necessary due to the challenge of obtaining comprehensive information about the target population from local government sources.

The unique household identification number formed the basis for a lottery system used to randomly select households for participation. Samples were proportionally allocated among the selected kebeles to ensure representation based on the total number of young people in each kebele. Once households were identified, data collectors conducted interviews with young individuals in the selected households. In situations where more than one eligible individual was present in a household, a lottery method was applied to select one participant, ensuring randomisation and avoiding clustering effects.

5.4.4. Data collection process

A face-to-face interview was conducted door-to-door to administer the questionnaire. The overall data collection took place from May 18, 2023, to September 22, 2023. Face-to-face data collection was adopted to counter the potential for information contamination due to the low literacy rate in the region (World Bank, 2020). Experience with research in the Ethiopian context shows that, in the case of remotely administered and self-reported questionnaires, young people tend to share information with their friends and relatives, leading to potentially biased responses in addition to ethical concerns. This information sharing, a critical problem

in research, could result from low literacy, the unfamiliarity of the community with the concept of research, and communication problems that interfere with information comprehension. Additionally, online surveys were not considered viable due to the limited and inconsistent internet access and use across the country. Given these challenges, face-to-face interviews were determined to be the most appropriate and effective method for data collection, ensuring reliable and accurate responses from the study participants.

The questionnaire used in the survey data collection was structured into sections, including items (I) assessing the sociodemographic characteristics of respondents, (II) screening substance use, III) assessing mental health conditions, and IV) examining perceived social support.

Most of the tools used in the study were standardised questionnaires with prior validation in Ethiopia and other African settings. Previously translated versions of these tools, used in various earlier studies, were adapted for the current study. For some tools, additional translation from Amharic to Afan Oromo was necessary to cater to the local language needs of the study site. This translation process was conducted collaboratively by the primary researcher, an expert from Madda Walabu University's English department, and the data collectors. The process included iterative back-and-forth translation to ensure linguistic consistency and cultural relevance. This meticulous approach ensured that the questionnaires captured the intended information while respecting the cultural and linguistic nuances of the target population.

Data collection was carried out by a team of four experts who were proficient in both Afan Oromoo and Amharic. They were assisted by local law enforcement personnel assigned by the Kebele administration office to address the safety concerns and smooth implementation, particularly in areas with potential security concerns. The primary researcher supervised the overall data collection process, providing oversight and assisting in data collection when necessary.

Before data collection began, a training session was conducted for the data collectors to ensure a shared understanding of the study objectives, the data collection tools, and the overall process.

During data collection, participants were given a detailed explanation of the study as included in the information sheet, and those meeting the eligibility criteria were asked for informed consent. Most participants provided written consent, while those with functional illiteracy gave

verbal consent. For participants under the age of 18, written consent was obtained from parents or caregivers after explaining the study's purpose in detail, as outlined in the translated parent information sheet. Participants under 18 also provided written consent, apart from three individuals within this age group who declined to do so. The reason cited for declining consent was a privacy concern, stating that they did not wish to disclose their substance use to their families. Their decisions were respected, and the next eligible participants were included instead.

Interviews were conducted in locations chosen based on the preferences of participants, ensuring a comfortable and private setting. The duration of each interview ranged from 35 to 60 minutes.

5.4.5. Variables and measurements

Substance use

The primary outcome variable was substance use, including alcohol, khat, tobacco, and cannabis, measured in the lifetime and current use categories. Lifetime substance use referred to the use of a substance at least once in a lifetime, whereas current substance use was defined as the use of any substance within the past 30 days preceding the survey.

In this study, the variable *substance use* was derived from the specific types of substances consumed, including alcohol, khat, tobacco, and cannabis. This dichotomous variable, *substance use,* with yes/no options, was subsequently created, and participants were classified as substance users if they responded "yes" to having used at least one of the listed substances, and as nonusers if they responded "no" to all listed substances.

Each substance was measured using a combination of locally validated standard tools alongside certain author-developed questions tailored to align with the cultural and contextual specifics of the study, detailed as follows.

Alcohol- to assess alcohol use, we initially asked two straightforward and general questions with "yes" or "no" response options, which were also adapted to screen other substances—khat, tobacco, and cannabis use. These questions were as follows:

- Lifetime use: Have you ever drunk [alcohol/chewed khat/used cannabis]?
- Current use (past 30 days): Are you currently drinking [alcohol/chewing khat/using cannabis]?

The Alcohol Use Disorders Identification Test (AUDIT) was used to determine the risk profile of participants who reported consuming alcohol in the initial assessment. The AUDIT was developed by the World Health Organisation (WHO) for screening excessive alcohol consumption and to assist in brief assessments (Saunders et al., 1993), and has been validated for use in Ethiopia, as well as across various genders, target populations, and a diverse range of racial and ethnic groups ((Habtamu et al., 2022; Awoke Mihretu et al., 2022; Saunders et al., 1993; Soboka et al., 2014).

The AUDIT comprises 10 items to evaluate alcohol consumption, drinking patterns, and alcohol-related issues within the preceding 12 months. Each item is rated on a four-point scale, and the cumulative score ranges from zero to 40. Scores between 1 and 7 indicate low risk, scores from 8 to 14 suggest hazardous alcohol use, and a score of 15 or higher indicates alcohol dependence. Typically, a score of eight or above serves as the threshold for diagnosing probable alcohol use disorder, which was applied in this study (de Meneses-Gaya et al., 2009). The current study obtained a good level of internal consistency, Cronbach's $\alpha = 0.87$, in line with a previous local study (Zewdu et al., 2019).

Khat- among those who indicated using khat in the "yes/no" screening questions for lifetime and current khat use, the Problematic Khat Use Screening Test (PKUST-17) was administered to examine problematic use. The PKUST-17 was recently developed and validated in the Ethiopian context (Awoke Mihretu et al., 2022), and contains 17 items, with response options on a 5-point Likert scale, resulting in an overall score ranging from 0 to 68 (Awoke Mihretu et al., 2022). Findings were presented based on the overall median score. Individuals scoring below the median were categorised as having lower problematic khat use, while those scoring equal to or above the median were considered to exhibit higher problematic khat use. The Cronbach's alpha in our study was excellent (0.96) and similar to the 0.93 reported in a previous Ethiopian study (A. Mihretu et al., 2022).

Tobacco- to assess tobacco use, we adopted the definition of "tobacco use" as defined by the Ethiopian Demographic and Health Survey (EDHS), that an individual is classified as a "tobacco user" if they report using any of the various forms or types of tobacco listed in the EDHS database such as cigarette smoking, piped tobacco smoking, chewing tobacco, snuff/suret, shisha, gaya (local traditional smoking tobacco leaves) or any other type (Defar et al., 2017; Lakew & Haile, 2015). The use of any form of tobacco was assessed by asking respondents about their ever and current use of any form of tobacco.

Cannabis- to measure the lifetime and current use of cannabis among study participants, a simple yes/no question developed by the authors was utilised. Participants were classified as "cannabis users" if they responded 'yes' to the cannabis screening question and as "nonusers" if they responded 'no'.

Mental health conditions

Mental health conditions were assessed using previously used and validated instruments: the Patient Health Questionnaire (PHQ-9) for depression (Gelaye et al., 2013; Woldetensay et al., 2018), the Generalised Anxiety Disorder (GAD-7) for anxiety disorder (Manzar et al., 2021), the (Trauma Screening Questionnaire) TSQ-10 for Post-traumatic Stress Disorder (PTSD) (Alenko et al., 2019), and items from previous studies on suicide behaviour (Tessema et al., 2024). These tools are standard and have demonstrated reliability across various demographics and settings (Habtamu et al., 2022; Kroenke et al., 2010; Osman et al., 2001). In this study, participants were classified as positive for mental health conditions if they responded affirmatively to at least one of these conditions, and negative otherwise.

Perceived social support

Social support was measured using the 12-item Multidimensional Scale of Perceived Social Support (MSPSS), previously used in Ethiopia and other similar settings across Africa. The MSPSS has demonstrated strong internal consistency (Cronbach's alpha values typically above 0.8) and test-retest reliability, making it a robust instrument for assessing perceived social support across different cultural and demographic contexts (Dambi et al., 2018). This study followed adaptations from comparable settings in Africa, such as Uganda and Malawi, where slight language and context adjustments were made to preserve the instrument's cultural relevance while maintaining its original three-factor structure (Family, Friends, Significant Other) (Nakigudde et al., 2009; Stewart et al., 2014). In this study, perceived social support was classified using the commonly applied descriptive bands to summarise support levels as low (<2.0), moderate (2.0–3.99), and high (≥4.0) based on the mean score (Nakigudde et al., 2009; Stewart et al., 2014; Zimet et al., 1988). In the present study, internal consistency was excellent (Cronbach's $\alpha = 0.93$).

Other demographic, social, and family factors

Other independent variables such as age, sex, education, religion, ethnicity, marital status, occupation, place of residence, children status, number of children, family size, spouse

education, spouse education, family income, and source of income, family history of substance use, and family history of mental illness were assessed using a combination of author-constructed questions and adapted items from previous studies (Kassew, 2023; Tarekegn et al., 2022).

5.4.6. Data management and statistical analysis

Data analysis was carried out by using Stata, Version 18.0. Variables were described using frequency, percentage, and tables. For continuous variables, normality was checked using histograms, and median and inter-quartile ranges were reported.

Simple binary logistic regression analysis for each independent variable was performed against the dependent variable to see the impact of each factor on substance use among young people, without adjusting for the effect of other variables.

Independent variables found to be significant in the simple binary logistic regression analysis at a cut-off point of p-value <0.25 with a 95% confidence interval were included in a multiple binary logistic regression model. In the multiple binary logistic regression model, the effect of each independent variable on substance use was assessed by controlling for the possible confounders. Factors that remained insignificant in the final model at a p-value above 0.05 were removed.

Multicollinearity was assessed in the final model using the variance inflation factor (VIF), and no significant issues were found (VIF < 5). The overall model fit was evaluated using the likelihood ratio chi-squared test, which was statistically significant (Prob>chi^2 = 0.000), suggesting that the included variables collectively contribute to explaining variation in substance use among the participants. While the model demonstrates strong explanatory power, it is important to note that, due to the cross-sectional design of the study, no causal inferences can be drawn from the observed associations.

5.5. Ethical considerations

The study was conducted in accordance with the Declaration of Helsinki's ethical principles and guidelines, ensuring that all potential participants were fully informed about the study and given enough time to make informed decisions about participation. Ethics approval was obtained from the Health and Medical Research Ethics Committee at the University of Technology Sydney (reference number: ETH23-7890) and the Campus Research Ethics

Review Committee of Madda Walabu University, Shashemene Campus, Ethiopia (reference number: RCSTT/34/2015). A support letter was obtained from Madda Walabu University and the Woreda administration offices.

5.6. Results

5.6.1. Study sample characteristics

Table 4 shows the sociodemographic characteristics of the N=424 participants included in the analysis, with a response rate of 99.3%. The sample was comprised of 63.9% (n= 271) males and 36.1% (n= 153) females, with a median age of 23 years. About one-third (34.7%, n= 147) had attended basic formal education (grades 1-8), 58.0% (n= 246) were single, and 37.5% (n= 159) were employed. The majority identified as Oromo 71.9% (n= 305) in ethnicity, over half were Muslim, while 20.8% (n= 88) reported low perceived social support.

Table 4: Distribution of the sociodemographic characteristics of the study sample, Ethiopia, 2023, (n=424)

Variable	Frequency	Percentage
Sex:		
Female	153	36.1
Male	271	63.9
Age in years:		
14-19	103	24.3
20-24	124	29.2
25-29	197	46.5
Participant Education:		
Not attended formal education	61	14.4
Attended basic formal education	147	34.7
Attended secondary school	119	28.0
Attended higher education	97	22.9
Marital Status:		
Single	246	58.0
Ever married	178	42.0
Participant Occupation:		
Farmer	62	14.6
Employed	159	37.5
Student	104	24.5
Unemployed	99	23.4
Place of residence:		
Rural	193	45.5
Urban	231	54.5
Ethnicity:		
Oromo	305	71.9
Amharic	40	9.4

Sidama	46	10.9
Wolaita	18	4.3
Others	15	3.5
Religion:		
Orthodox	87	20.5
Muslim	221	52.1
Protestant	105	24.8
Catholic	11	2.6
Spouse Education:		
Not attended formal education	32	18.0
Attended basic formal education	56	31.5
Attended secondary school	54	30.3
Attended higher education	36	20.2
Spouse Occupation:		
Farmer	35	19.7
Employed	87	48.9
Student	4	2.2
Unemployed	52	29.2
Children Status:		
No	276	65.1
Yes	148	34.9
Number of children:		
Less than 4 children	151	84.8
Greater than 4 children	27	15.2
Household size:		
Small family	98	23.1
Medium family	208	49.1
Large family	118	27.8
Family income per year:		
Low income	161	38.0
Medium income	179	42.2
High income	84	19.8
Source of family income:		
Agriculture	191	45.1
Trade	57	13.4
Private business	83	19.6
Salary	93	21.9
Level of social support:		
Low perceived social support	88	20.8
Moderate perceived social support	299	70.5
High perceived social support	37	8.7
Family history of substance use:		
No	292	68.9
Yes	132	31.1
Family history of mental illness:		
No	374	88.2
Yes	50	11.8
Any mental health condition:		
No	271	63.9
Yes	153	36.1

5.6.2. Distribution of substance use by demographic characteristics

Overall, 48.1% (204/424) of participants reported having used substances in their lifetime, and among them, 72.5% (148/204) were currently using substances (within the 30 days preceding the survey). A gender difference in lifetime substance use was observed, with 79.1% (n = 163) of males reporting use compared to 20.9% (n = 41) of females. Additional analyses looking at the relationship between various demographic and social factors and the prevalence of substance use among participants are provided as supplementary material (**Table 5).**

Disparities in the levels of substance use among specific demographics and social groups were also identified, including individuals aged 25-29 years old (48.5%), singles (64.2%), employed individuals (41.7%), those with basic formal education (grades 1-8) (28.9%), urban residents (56.9%), and those identifying as Muslim (43.6%), when compared to their counterparts. Additionally, participants who reported having children, those with moderate perceived social support status, a family history of any substance use, and those belonging to medium-sized families (4-6 members) had relatively higher levels of substance use than their respective counterparts. Among the study participants who reported substance use, 16.7% (n=34) had a family history of mental illness, while 83.3% (n=170) did not. Similarly, among the study participants who reported substance use, 47.1% (n=96) reported the presence of any mental health condition, while 52.9% (n=108) did not (**Table 5**).

5.6.3. Substance use prevalence

In this study, the overall lifetime and current prevalence of any substance use among young people were 48.1% (95% CI: 43.3%, 53.0%) and 72.5% (95% CI: 65.9%, 78.5%), respectively.

The lifetime and current prevalence of alcohol among the study participants were 49.0% (95% CI: 42.0, 56.0) and 80.0% (95% CI: 70.8, 87.3), respectively. In a further analysis of the alcohol use risk levels in the last 12 months, assessed through the AUDIT-10 items among young individuals, 48.0% (n=48), 30.0% (n=30), and 22.0% (n=22) exhibited low risk, probable hazardous use, and probable alcohol dependence, respectively.

The lifetime and current prevalence of khat use among the study participants were 76.5% at (95% CI: 70.0, 82.0) and 91.7% (95% CI: 86.2, 95.5), respectively. The study identified an overall mean score of 1.28 of the PKUST-17 for problematic khat use among the study

participants. Using this mean score as the reference for categorisation into higher and lower problematic use, the findings indicated that 56.4% (n=88) reported low problematic khat use, while 43.6% (n=68) reported high problematic khat use.

The lifetime prevalence of tobacco use was 33.3% (95% CI: 26.9, 40.2), while the current prevalence was 76.5% (95% CI: 64.6, 85.9) (**Table 6**). Lifetime tobacco use was calculated among individuals who reported lifetime use of any substance in the list (68/204), whereas current use was derived from lifetime users (52/68). Notably, both the current and lifetime prevalence of substance use were higher among males, individuals in the age group 20-24 years old, and those who reported at least one mental health condition. Among the lifetime tobacco users, 47% smoked cigarettes, 44% smoked shisha, and the remaining used other forms of tobacco. Among current tobacco users, 51.9% (n=27) reported smoking cigarettes, 38.5% (n=20) used shisha, 1.9% (n=1) used in the form of snuff (chewing tobacco), 3.8% (n=2) used both cigarettes and shisha and 3.8% (n=2) reported using both cigarettes and chewing tobacco.

The lifetime and current prevalence of cannabis use were 23.0% (95% CI: 17.4, 29.4) and 68.1% (95% CI: 52.9, 80.9), respectively. Among the current users in the study, 87.5% (n=28) were males, 40.6% (n=13) were in the age range of 25-29 years old, and 34.4% (n=11) had completed basic formal education (grades 1-8). Additionally, over half of the current cannabis user samples reported low perceived social support, while approximately two-thirds reported at least one mental health condition (**Table 6**).

Table 5: The relationship between various sociodemographic factors and substance use among the study sample, Ethiopia, 2023, (n=424)

Variable	Level	Total	No	Yes	P-value
N		424	220 (51.9%)	204 (48.1%)	
Sex of participants	Female	153	112 (50.9%)	41 (20.1%)	<0.001
	Male	271	108 (49.1%)	163 (79.9%)	
Age of the participant	14-19	103	64 (29.1%)	39 (19.1%)	0.050
	20-24	124	58 (26.4%)	66 (32.4%)	

	25-29	197	98 (44.5%)	99 (48.5%)	
Participant marital status	Single	246	115 (52.3%)	131 (64.2%)	0.013
	Ever married	178	105 (47.7%)	73 (35.8%)	
Place of residence	Rural	193	105 (47.7%)	88 (43.1%)	0.343
	Urban	231	115 (52.3%)	116 (56.9%)	
Participant occupational status	Farmer	62	35 (15.9%)	27 (13.2%)	0.168
	Employed	159	74 (33.6%)	85 (41.7%)	
	Student	104	62 (28.2%)	42 (20.6%)	
	Unemployed	99	49 (22.3%)	50 (24.5%)	
Spouse occupational status	Farmer	35	25 (23.8%)	10 (13.7%)	0.327
	Employed	87	51 (48.6%)	36 (49.3%)	
	Student	4	2 (1.9%)	2 (2.7%)	
	Unemployed	52	27 (25.7%)	25 (34.3%)	
Participant Educational Status	Not attended formal education	61	26 (11.8%)	35 (17.2%)	0.020
	Attended basic formal education	147	88 (40.0%)	59 (28.9%)	
	Attended secondary school	119	65 (29.5%)	54 (26.5%)	
	Attended higher education	97	41 (18.6%)	56 (27.4%)	
	Not attended formal education	32	17 (16.2%)	15 (20.5%)	0.290

Spouse Educational Status	Attended basic formal education	56	29 (27.6%)	27 (37.0 %)	
	Attended secondary school	54	37 (35.2%)	17 (23.3%)	
	Attended higher education	36	22 (21.0%)	14 (19.2%)	
Children Status	No	276	132 (60.0%)	144 (70.6%)	0.022
	Yes	148	88 (40.0%)	60 (29.4%)	
Number of children	< 4 children	151	87 (82.9%)	64 (87.7%)	0.379
	≥ 4 children	27	18 (17.1%)	9 (12.3%)	
Household size	Small family	98	43 (19.5%)	55 (27.0%)	0.174
	Medium family	208	115 (52.3%)	93 (45.6%)	
	Large family	118	62 (28.2%)	56 (27.4%)	
Family income per year	Small income	161	78 (35.4%)	83 (40.2%)	0.538
	Medium income	179	97 (44.1%)	82 (40.7%)	
	High income	84	45 (20.5%)	39 (19.1%)	
Source of family income	Agriculture	191	103 (46.8%)	88 (47.7%)	0.069
	Trade	57	25 (11.4%)	32 (15.7%)	
	Private business	83	51 (23.2%)	32 (15.7%)	
	Salary	93	41 (18.6%)	52 (25.5%)	
Participant religion	Orthodox	87	28 (12.7%)	59 (28.9%)	<0.001

	Muslim	221	132 (60.0%)	89 (43.6%)	
	Protestant	105	57 (25.9%)	48 (23.5%)	
	Catholic	11	3 (1.4%)	8 (3.9%)	
Ethnicity	Oromo	305	167 (75.9%)	138 (67.6%)	0.388
	Amhara	40	16 (7.3%)	24 (11.8%)	
	Sidama	46	22 (10.0%)	24 (11.8%)	
	Wolaita	18	8 (3.6%)	10 (4.9%)	
	Others	15	7 (3.2%)	8 (3.9%)	
Level of social support	Low social support	88	18 (8.2%)	70 (34.3%)	<0.001
	Moderate social support	299	172 (78.2%)	127 (62.3%)	
	High social support	37	30 (13.6%)	7 (3.4%)	
Any mental health condition	No	271	163 (74.1%)	108 (52.9%)	<0.001
	Yes	153	57 (25.9%)	96 (47.1%)	
Family history of substance use	No	292	201 (91.4%)	91 (44.6%)	<0.001
	Yes	132	19 (8.6%)	113 (55.4%)	
Family history of mental illness	No	374	204 (92.7%)	170 (83.3%)	0.001
	Yes	50	16 (7.3%)	34 (16.7%)	

Table 6: Lifetime and current substance use distribution by various sociodemographic characteristics of the study samples, Ethiopia 2023, (n=424)

Variable	**Current use (YES)**				**Ever use (YES)**			
	Alcohol	Khat	Tobacco	Cannabis	Alcohol	Khat	Tobacco	Cannabis
Sex:								
Female	18(22.5%)	21(14.7%)	4(7.7%)	4(12.5%)	27(27.0%)	26(16.7%)	7(10.3%)	6(12.8%)
Male	62(77.5%)	122(85.3%)	48(92.3%)	28(87.5%)	73(73.0%)	130(83.3%)	61(89.7%)	41(87.2%)
Age in years:								
14-19	14(17.5%)	30(21.0%)	6(11.5%)	6(18.8%)	15(15.0%)	33(21.2%)	9(13.3%)	9(19.1%)
20-24	25(31.3%)	44(30.8%)	14(26.9%)	13(40.6%)	33(33.0%)	49(31.4%)	23(33.8%)	18(38.3%)
25-29	41(51.2%)	69(48.2%)	32(61.6%)	13(40.6%)	52(52.0%)	74(47.4%)	36(52.9%)	20(42.6%)
Participant Education								
Not attended formal education	13(16.2%)	22(15.4%)	15(28.8%)	5(15.6%)	16(16.0%)	22(14.1%)	16(23.5%)	6(12.8%)
Attended basic formal education	19(23.8%)	41(28.6%)	13(25.0%)	11(34.4%)	27(27.0%)	48(30.8%)	17(25.0%)	15(31.9%)
Attended secondary school	27(33.8%)	42(29.4%)	12(23.1%)	7(21.9%)	31(31.0%)	42(26.9%)	15(22.1%)	12(25.5%)

Attended higher education	21(26.2%)	38(26.6%)	12(23.1%)	9(28.1%)	26(26.0%)	44(28.2%)	20(29.4%)	14(29.8%)
Marital Status:								
Single	51(63.8%)	99(69.2%)	30(57.7%)	26(81.2%)	61(61.0%)	107(68.6%)	45(66.2%)	33(70.2%)
Ever married	29(36.2%)	44(30.8%)	22(42.3%)	6(18.8%)	39(39.0%)	49(31.4%)	23(33.8%)	14(29.8%)
Participant Occupation:								
Farmer	4(5.0%)	18(12.6%)	13(25.0%)	2(6.3%)	7(7.0%)	20(12.8%)	14(20.6%)	5(10.6%)
Employed	41(51.3%)	58(40.6%)	19(36.5%)	10(31.3%)	46(46.0%)	65(41.7%)	23(33.8%)	18(38.3%)
Student	14(17.5%)	32(22.4%)	7(13.5%)	10(31.3%)	19(19.0%)	34(21.8%)	17(25.0%)	12(25.5%)
Unemployed	21(26.2%)	35(24.5%)	13(25.0%)	10(31.3%)	28(28.0%)	37(23.7%)	14(20.6%)	12(25.6%)
Place of residence:								
Rural	30(37.5%)	64(44.8%)	17(32.7%)	14(43.8%)	38(38.0%)	71(45.5%)	24(35.3%)	23(48.9%)
Urban	50(62.5%)	79(55.2%)	35(67.3%)	18(56.2%)	62(62.0%)	85(54.5%)	44(64.7%)	24(51.1%)
Ethnicity:								
Oromo	35(43.7%)	106(74.1%)	31(59.6%)	20(62.5%)	48(48.0%)	116(74.4%)	41(60.4%)	30(63.8%)
Amhara	20(25.0%)	8(5.6%)	7(13.5%)	5(15.6%)	23(23.0%)	9(5.8%)	9(13.2%)	7(14.9%)
Sidama	14(17.5%)	16(11.2%)	6(11.5%)	2(6.3%)	17(17.0%)	17(10.9%)	9(13.2%)	4(8.5%)
Wolaita	5(6.3%)	8(5.6%)	6(11.5%)	4(12.5%)	6(6.0%)	8(5.1%)	6(8.8%)	4(8.5%)
Others	6(7.5%)	5(3.5%)	2(3.9%)	1(3.1%)	6(6.0%)	6(3.8%)	3(4.4%)	2(4.3%)

Religion:								
Orthodox	47(58.8%)	21(14.7%)	13(25.0%)	10(31.3%)	57(57.0%)	25(16.0%)	15(22.1%)	13(27.7%)
Muslim	8(10.0%)	79(55.2%)	16(30.8%)	12(37.5%)	13(13.0%)	85(54.5%)	26(38.2%)	22(46.8%)
Protestant	23(28.7%)	36(25.2%)	20(38.5%)	9(28.1%)	28(28.0%)	39(25.0%)	23(33.8%)	11(23.4%)
Catholic	2(2.5%)	7(4.9%)	3(5.7%)	1(3.1%)	2(2.0%)	7(4.5%)	4(5.9%)	1(2.1%)
Spouse Education:								
Not attended formal education	6(20.7%)	9(20.4%)	9(40.9%)	1(16.7%)	8(20.5%)	10(20.4%)	9(39.1%)	5(35.8%)
Attended basic formal education	11(37.9%)	15(34.1%)	7(31.8%)	3(50.0%)	16(41.0%)	17(34.7%)	7(30.4%)	3(21.4%)
Attended secondary school	5(17.3%)	12(27.3%)	4(18.2%)	1(16.7%)	6(15.4%)	13(26.5%)	4(17.4%)	3(21.4%)
Attended higher education	7(24.1%)	8(18.2%)	2(9.1%)	1(16.7%)	9(23.1%)	9(18.4%)	3(13.1%)	3(21.4%)
Spouse Occupation:								
Farmer	1(3.4%)	6(13.6%)	3(13.6%)	1(16.7%)	3(7.7%)	7(14.3%)	3(13.0%)	2(14.3%)
Employed	18(62.1%)	24(54.6%)	8(36.4%)	3(50.0%)	23(59.0%)	26(53.1%)	9(39.1%)	6(42.9%)
Student	0(0.0%)	2(4.5%)	11(50.0%)	0(0.0%)	0(0.0%)	2(4.1%)	0(0.0%)	1(7.1%)

Unemployed	10(34.5%)	12(27.3%)	0(0.0%)	2(33.3%)	13(33.3%)	14(28.6%)	11(47.9%)	5(35.7%)
Children Status:								
No	57(71.2%)	105(73.4%)	33(63.5%)	27(84.4%)	69(69.0%)	114(73.1%)	49(72.1%)	36(76.6%)
Yes	23(28.8%)	38(26.6%)	19(36.5%)	5(15.6%)	31(31.0%)	42(26.9%)	19(27.9%)	11(23.4%)
Number of children:								
<four children	25(86.2%)	39(88.6%)	16(72.7%)	6(100.0%)	33(84.6%)	44(89.8%)	17(73.9%)	14(100.0%)
≥four children	4(13.8%)	5(11.4%)	6(27.3%)	0(0.0%)	6(15.4%)	5 (10.2%)	6(26.1%)	0(0.0%)
Household size:								
Small family	19(27.7%)	42(29.4%)	14(26.9%)	8(25.0%)	23(23.0%)	45(28.9%)	18(26.5%)	11(23.4%)
Medium family	43(53.8%)	56(39.2%)	24(46.2%)	16(50.0%)	53(53.0%)	64(41.0%)	30(44.1%)	23(48.9%)
Large family	18(22.5%)	45(31.6%)	14(26.9%)	8(25.0%)	24(24.0%)	47(30.1%)	20(29.4%)	13(27.7%)
Family income per year:								
Low income	35(43.8%)	56(39.2%)	25(48.1%)	16(50.0%)	43(43.0%)	60(38.5%)	34(50.0%)	19(40.4%)
Medium income	28(35.0%)	60(42.0%)	19(36.5%)	11(34.4%)	38(38.0%)	66(42.3%)	25(36.8%)	19(40.4%)
High income	17(21.2%)	27(18.9%)	8(15.4%)	5(15.6%)	19(19.0%)	30(19.2%)	9(13.2%)	9(19.2%)
Source of family income:								
Agriculture	23(28.8%)	67(46.8%)	19(36.5%)	12(37.5%)	32(32.0%)	71(45.5%)	30(44.1%)	19(40.4%)

Trade	18(22.5%)	21(14.7%)	11(21.2%)	9(28.1%)	21(21.0%)	24(15.4%)	12(17.6%)	10(21.3%)
Private business	11(13.8%)	24(16.8%)	6(11.5%)	2(6.3%)	16(16.0%)	25(16.0%)	8(11.8%)	5(10.6%)
Salary	28(35.0%)	31(21.7%)	16(30.8%)	9(28.1%)	31(31.0%)	36(23.1%)	18(26.5%)	13(27.7%)
Level of social support:								
Low	33(41.25%)	54(37.8%)	31(59.6%)	18(56.25%)	40(40.0%)	56(35.9%)	40(58.8%)	24(51.1%)
Moderate	46(57.50%)	84(58.7%)	20(38.5%)	14(43.75%)	57(57.0%)	95(60.9%)	27(39.7%)	23(48.9%)
High	1(1.25%)	5(3.5%)	1(1.9%)	0	3(3.0%)	5(3.2%)	1(1.5%)	0
Mental health conditions:								
No	32(40.0%)	79(55.2%)	20(38.5%)	12(37.5%)	42(42.0%)	85(54.5%)	27(39.7%)	17(36.2%)
Yes	48(60.0%)	64(44.8%)	32(61.5%)	20(62.5%)	58(58.0%)	71(45.5%)	41(60.3%)	30(63.8%)
Family history of substance use:								
No	33(41.25%)	63(44.1%)	16(30.8%)	6(18.75%)	40(40.0%)	68(43.6%)	22(32.3%)	13(27.7%)
Yes	47(58.75%)	80(55.9%)	36(69.2%)	26(81.25%)	60(60.0%)	88(56.4%)	46(67.7%)	34(72.3%)
Family history of mental illness:								
No	63(78.7%)	123(86.0%	39(75.0%)	24(75.0%)	77(77.0%)	132(84.6%)	52(76.5%)	37(78.7%)
Yes	17(21.3%)	20(14.0%)	13(25.0%)	8(25.0%)	23(23.0%)	24(15.4%)	16(23.5%)	10(21.3%)

5.6.4. Factors associated with substance use

In the preliminary unadjusted bivariate model analysis, various covariates were examined independently for their potential association with substance use. These covariates included sex, age, marital status, education, occupation, religion, place of residence, level of social support, mental health condition, family size, source of income, family history of any substance use, and family history of mental illness (**Table 7**).

In the adjusted model analysis, controlling for potential confounders, participant sex, marital status, family history of substance use, perceived social support, and the presence of any reported mental health condition remained significantly associated with the likelihood of substance use (**Table 7**).

Notably, male study participants exhibited a significantly higher likelihood (6.37 times higher odds) of substance use compared to their female counterparts, showing gender-based disparities in substance use (AOR=6.37, 95% CI:3.35, 12.12, $p < 0.001$).

Marital status also played a significant role, with singles demonstrating a significantly higher likelihood (2.12 times) of substance use in comparison to those who were ever married (AOR = 2.12, 95% CI: 1.06, 4.23, $p = 0.033$).

Individuals with low perceived social support had approximately 6.5 times higher odds of any substance use compared to those with moderate and high perceived social support (AOR=6.55, 95% CI:2.02, 21.30, $p< 0.001$).

Participants who reported a history of substance use in their family had 11.66 times higher odds of substance use than those with no family history of substance use (AOR = 11.66, 95% CI: 6.04, 22.55, $p < 0.001$). Furthermore, young individuals with any reported mental health conditions (depression, anxiety, post-traumatic stress disorder, suicidal behaviour) had significantly higher odds of substance use (AOR = 1.99, 95% CI: 1.05, 3.80, $p = 0.036$).

From the final adjusted multivariable model analysis, age, religion, occupation, education, family history of mental illness, and source of family income did not demonstrate an independent association with the outcome variable substance use.

Table 7: Multivariable logistic regression model output indicating predictors of substance use among young people in West Arsi, Ethiopia, 2023, (n=424)

Variable	Substance use prevalence (%) (row %)	COR 95%CI	P-Value	AOR, 95% CI	P-Value
Sex:					
Female	26.8	Ref	Ref	Ref	Ref
Male	60.1	4.12(2.67, 6.35)	0.000*	6.37(3.35, 12.11)	0.000*
Age in years:					
14-19	37.9	Ref	Ref	Ref	Ref
20-24	53.2	1.87(1.10, 3.18)	0.021	1.34(0.63, 2.83)	0.443
25-29	50.3	1.66(1.02, 2.70)	0.042	1.48(0.62, 3.58)	0.378
Participant Education					
Not attended formal education	57.4	1.00(0.51, 1.88)	0.965	1.06(0.38, 2.93)	0.906
Attended basic formal education	40.1	0.49(0.29, 0.83)	0.007*	0.48(0.21, 1.13)	0.093
Attended secondary school	45.4	0.61(0.35, 1.04)	0.072	0.62(0.27, 1.42)	0.256
Attended higher education	57.7	Ref	Ref	Ref	Ref
Marital Status:					
Single	53.3	1.64(1.11, 2.42)	0.013*	2.12(1.06, 4.22)	0.033*
Ever married	41.0	Ref	Ref	Ref	Ref
Participant Occupation:					
Farmer	43.5	Ref	Ref	Ref	Ref
Employed	53.5	1.49(0.82, 2.69)	0.187	1.41(0.54, 3.67)	0.483
Student	40.4	0.88(0.46, 1.66)	0.689	0.75(0.26, 2.13)	0.587
Unemployed	50.5	1.32(0.70, 2.50)	0.390	1.24(0.46, 3.36)	0.669
Place of residence:					
Rural	45.6	Ref	Ref	Ref	Ref

Urban	50.2	1.20(0.82, 1.77)	0.343	0.95(0.55, 1.64)	0.853
Religion:					
Orthodox	67.8	3.36(1.98, 5.69)	0.000*	0.62(0.10, 3.93)	0.617
Islam	40.3	Ref	Ref	Ref	Ref
Protestant	45.7	1.32(0.83, 2.11)	0.242	0.24(0.04, 1.45)	0.120
Catholic	72.7	4.03(1.04, 15.61)	0.044*	0.22(0.04, 1.27)	0.092
Household size:					
Small family	56.1	Ref	Ref	Ref	Ref
Medium family	44.7	0.63(0.39, 1.03)	0.063	0.75(0.37, 1.50)	0.414
Large family	47.5	0.71(0.41, 1.21)	0.205	0.87(0.37, 2.02)	0.744
Source of family income:					
Agriculture	46.1	Ref	Ref	Ref	Ref
Trade	56.1	1.50(0.83, 2.72)	0.183	1.78(0.72, 4.39)	0.209
Private business	38.6	0.73(0.43, 1.24)	0.250	0.76(0.34, 1.70)	0.511
Salary	55.9	1.48(0.90, 2.44)	0.120	1.26(0.55, 2.89)	0.580
Level of perceived social support:					
Low	79.5	16.67(6.30, 44.06)	0.000*	6.55(2.01, 21.30)	0.002*
Moderate	42.5	3.16(1.35, 7.43)	0.008*	2.40(0.88, 6.54)	0.088
High	18.9	Ref	Ref	Ref	Ref
Any mental health conditions:					
No	39.9	Ref	Ref	Ref	Ref
Yes	62.7	2.54(1.81, 4.12)	0.000*	1.99(1.05, 3.80)	0.036*
Family history of substance use:					
No	31.2	Ref	Ref	Ref	Ref
Yes	85.6	13.14(7.61, 22.66)	0.000*	11.66(6.03, 22.54)	0.000*
Family history of mental illness:					
No	45.5	Ref	Ref	Ref	Ref
Yes	68.0	2.55(1.36, 4.78)	0.003*	0.84(0.30, 2.37)	0.750

*=P-value less than 0.05 Ref= Referent category

5.7. Discussion

Overall, 48.1% and 72.5% of the participants reported lifetime and current substance use, respectively. Factors such as being male, having a single marital status, experiencing mental health conditions, having a family history of substance use, and lower perceived social support were associated with substance use among young people. The findings provide a broad analysis of the context relevant to substance use amongst young people in the West Arsi general community, Ethiopia.

The prevalence of substance use identified in this study was similar to that found in previous Ethiopian studies among young people, 47.0% (Kassew, 2023), and a review of studies examining substance use among adolescents in East Africa, 49.0% (Olawole-Isaac et al., 2018). However, the prevalence of substance use in this study was lower compared to various previous Ethiopian and international studies. For instance, higher prevalences were reported among high school adolescents in Woreta town (65.0%) (Birhanu et al., 2014), young people in the Northern Shewa zone, 66.0% (Admasu Basha et al., 2023), students at Addis Ababa University (74.0%) (Shegute & Wasihun, 2021), college students in Kenya, 70% (Atwoli et al., 2011), and Ghanaian young adults in Accra, 71% (Osei Asibey et al., 2023). Conversely, the prevalence in this study exceeds that reported in previous studies among young people in Ethiopia (32.0%) (Abajobir & Kassa, 2019), students in Ethiopia (38.0%) (Roba et al., 2021), street children in Jimma town (39.0%) (Ayenew et al., 2020), Nigerian high school students (32.9%) (Anyanwu et al., 2016) and University Students in Sudan (31.0%) (Osman et al., 2016). Observed differences in substance use prevalence between this and previous studies could stem from various factors, including sociocultural influences, environmental conditions, and methodological disparities (such as sample size, study duration, and the specific target population).

Along with the Ethiopian sociocultural practices that encourage communal gatherings, environmental factors conducive to psychoactive substance production can likely increase the risk of substance use (David Anderson & Klein, 2007; Onaolapo et al., 2022). In accordance with this, some parts of the current study setting, particularly Negelle Arsi and Wondo woredas, are known for producing substances such as *Arekie* (a potent local alcohol drink) (Yohannes, 2013) and *Wondo Balache khat* (a popular variety of khat among many Ethiopians) (Juju et al., 2018). This might increase the tendency of young people to engage in the cultivation and

production of these substances, thereby increasing the risk of substance use, given that over 85% of the population in this area is dependent on agricultural activities (Belay et al., 2017).

The geographic location of the study setting and unique cultural practices might also be attributed to the observed prevalence of substance use in this study. For example, Shashemene town (the zonal capital of the West Arsi zone) is located at a crossroads for the major roads that connect various parts of the country, as well as with some neighbouring countries, such as Kenya (Bjerén, 2012). As the transient population, particularly long-distance drivers, often engage in substance use, young people in the town might be more likely to be exposed to substance use and drug trafficking (Yosef et al., 2021). Furthermore, Shashemene is known to host a large community of *Rastafarians*, a religious group of Jamaican origin, which considers the town a *Land of Promise* (Bonacci, 2011; Niaah, 2017). The communal gatherings of this community are marked by activities such as smoking cannabis (ganja), which additionally exposes young people to substance use (Tullu et al., 2018).

Moreover, the specific characteristics of the target population in this study may account for the higher prevalence of substance use observed. Substance use and its consequences are particularly pronounced in young people, as this age marks a critical developmental stage characterised by significant physical and psychological changes (Blakemore & Choudhury, 2006; Cortina et al., 2012; Li et al., 2021). During this transitional phase from childhood to adulthood, individuals often engage in risk-taking and sensation-seeking behaviours. This pursuit of novelty and excitement may lead to experimentation with substances. As postulated by the affect heuristic theory, decision-making during this period is often driven by emotions rather than rational analysis (Bernaola et al., 2020).

Consistent with previous Ethiopian (Abajobir & Kassa, 2019; Abate et al., 2021; Birhanu et al., 2014) and international research (Amendola, 2022; Asuni & Pela, 1986; Castelpietra et al., 2022; Nawi et al., 2021), this study shows significant gender differences in substance use, with men showing high risk as compared to women. Ethiopian studies highlighted the gendered disparities in access to, use of, and control over resources, economic assets, physical mobility, decision-making power, and community expectations (Jirata, 2019; Mekonnen, 2022). They explained a different social definition and understanding of 'being young' for men and women, that young women in Ethiopia are part of the 'inner circle' of their parents' lives. Compared to young men, they have less or no leisure time and take on adult responsibilities earlier in life, such as taking on more household responsibilities and looking after younger siblings. In

contrast, young men in Ethiopia have a 'public life' – they leave the house and spend their leisure time with friends, engaging in activities that could expose them to different substances (for instance, chewing khat or enjoying alcoholic drinks). These gendered socialisation norms in Ethiopia encourage boys to be assertive and risk-taking, traits often associated with substance use experimentation (Ganji et al., 2022). This cultural practice of imposing more restrictions on women, particularly during their early age, compared to men, is common in the Arsi community, the dominant tribe in the West Arsi zone (Hussein, 2004). This tradition of associating substance use with masculinity, while stigmatising it among women as a deviation from traditional gender roles, may have contributed to the observed high prevalence among men in our study. Additionally, young men may perceive substance use as a path to enhance their social status or peer conformity (Cooper et al., 2016; Kassew, 2023).

The current study found a significant association between substance use and marital status, with being single found to increase the odds of substance use. This finding aligns with previous studies conducted in Ethiopia and other countries (Bachman et al., 2008; Heinz et al., 2009; Heinze et al., 2021; Melkam et al., 2023; Zenbaba et al., 2022). In Ethiopia, marriage is a significant cultural institution, associated with heightened levels of family responsibility and personal security (Hailemariam et al., 2019; Telila, 2020). Having someone to share responsibilities, provide emotional support, and offer guidance can reduce feelings of isolation and stress, which are factors that may contribute to substance use. Married individuals may feel a greater sense of responsibility toward their spouse and family, which could protect them from engaging in risky behaviours like substance use (Salvatore et al., 2020). Conversely, single individuals may have more social interactions outside of familial circles, potentially exposing them to environments where substance use is more common (Kassew, 2023). However, it is important to note that social desirability bias may play a role here, with participants who are married potentially underreporting substance use due to societal pressure and fear of judgment.

Our study found that experiencing mental health conditions like depression, anxiety, PTSD, and suicidal behaviours increased the odds of substance use among young people, consistent with previous studies (Castelpietra et al., 2022; Nawi et al., 2021). This association likely arises from changes during adolescence and underlying stressors such as poverty, unemployment, violence, or social marginalisation. Individuals with mental health conditions may turn to substances as self-medication or coping behaviour, providing temporary relief from psychological pain or discomfort (Cortina et al., 2012; Richert et al., 2020). Limited access to mental health resources and the stigma surrounding mental health conditions may further drive

young people to substance use as a temporary relief (Knaak et al., 2017). However, substance use can, in some cases, further disrupt neurobiological pathways, exacerbating existing mental health problems or triggering the emergence of new ones (Kessler, 2004).

It was also found that a history of family substance use is a predictor of substance use prevalence among young people in the West Arsi zone, consistent with previous research (Birhanu et al., 2014; Melkam et al., 2023; Wubetu et al., 2020). Consistent with social learning theory, children learn behaviours by observing and imitating family members (Bandura, 1977; Tadayon Nabavi & Bijandi, 2012). When family members engage in substance use, it normalises the behaviour, making young people more likely to view substance use as acceptable or desirable, thus prompting experimentation (Lander et al., 2013; Nawi et al., 2021). Furthermore, family environments with substance may lack supervision, discipline, and support, potentially leading to stress and maladaptive coping like substance use among young people, frequently in the context of parental conflict or neglect (Amaro et al., 2021; Nawi et al., 2021).

The current study also found higher substance use prevalence among participants with lower perceived social support, compared to those with moderate to higher support, highlighting the potential influence of social support on substance use patterns. This aligns with previous findings from Ethiopia (Ewnetu et al., 2022; Kassew, 2023) and elsewhere (Kecojevic et al., 2019; Walsh et al., 2018; Wills & Vaughan, 1989), indicating that individuals who receive higher levels of social support were at lower odds of reporting substance use. The extensive support networks within Ethiopian communities often play a vital role in an individual's life (Endris et al., 2017; Wedajo et al., 2019), and enhancing the protective role of these social networks in addressing substance use could be beneficial.

Overall, this substance use research highlights the importance of targeted interventions addressing substance use among young people, focusing on promoting their mental well-being, enhancing their coping skills to different life challenges, and the importance of strengthening the family and social support dynamics.

5.8. Strengths and limitations

A major strength of this study is the comprehensive exploration of factors that may shape substance use behaviours, such as gender, marital status, mental health conditions, family history of substance use, and perceived social support. Further, our research methodology

ensured broad participation regardless of literacy levels, employing face-to-face interviews with a standard questionnaire. We thoroughly selected participants to ensure diversity and achieved a high response rate (99.3%), indicative of strong engagement. Importantly, our approach minimised self-selection bias, enhancing the reliability and inclusivity of our findings.

A major limitation of this study pertains to its cross-sectional nature, limiting the establishment of causal relationships between variables. Additionally, as with any survey-based research, there is a potential for self-reporting bias, where participants may underreport or overreport substance use behaviours due to social desirability or other factors that could impact the accuracy and interpretation of results. Furthermore, it is important to note that the findings of this study are specific to the West Arsi zone and might not entirely reflect substance use patterns in other regions of Ethiopia or different socio-cultural contexts.

5.9. Conclusion and recommendations

In conclusion, this study sheds light on the prevalence and associated factors of substance use among young people in the West Arsi zone, Ethiopia. The study provides valuable insights into the complexities of substance use behaviours among young people in the region.

Approximately half of the study participants reported at least one substance use in their lifetime, from alcohol, khat, tobacco, and cannabis, with variations across different factors such as gender, marital status, mental health conditions, family history of substance use, and perceived social support. These findings underscore the need for targeted interventions and public health policies that address the specific needs of young individuals and the diversity of substances used in the West Arsi zone and similar regions in Ethiopia.

Targeted community-based intervention strategies are essential to address substance use among young people in Ethiopia, focusing on their mental well-being, fostering their coping skill development, and strengthening family and social support systems as positive influences on their lives. Additionally, comprehensive research is needed to deepen the understanding of substance use among young people in Ethiopia, exploring diverse risk factors, causality, associated harms, and intervention effectiveness, facilitating more informed and effective prevention and intervention efforts.

Chapter Six: Finding — Mental health conditions and associated factors

6.1. Chapter overview

The previous chapter presented the substance use survey among young people and associated factors. This chapter reports on the findings of the mental health conditions among young people who reported substance use in the preceding substance use survey. The research question being examined in this chapter centers on the key associated factors with mental health conditions among young substance users in the West Arsi zone of Ethiopia.

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Candidate's contribution to this study

The PhD candidate is the first author of the manuscript and was responsible for the data analysis, drafting, and finalisation of the manuscript, as well as responding to reviewer feedback. The second and third authors provided feedback on the overall aims of the study during the analysis and editorial feedback during the drafting and finalisation of the manuscript.

6.2. Abstract

Background: Mental health conditions among young Ethiopians present a pressing public health concern, posing risks to their well-being and productivity. However, there is a limited understanding of the prevalence and associated factors among young people who use substances in the West Arsi Zone, Ethiopia. This study investigated the prevalence of mental

health conditions and associated factors among young people who use substances in the West Arsi Zone, Ethiopia.

Methods: A community-based cross-sectional survey was conducted among 427 randomly selected young people aged 14-29 years in the West Arsi Zone of the Oromia region, Ethiopia, from May 18, 2023, to September 22, 2023. Data were collected through structured interviewer-administered questionnaires. Logistic regression analysis was performed to determine the associations between the outcome and the independent variables. Ethical approval was obtained from the University of Technology Sydney, Australia, and Madda Walabu University, Ethiopia.

Results: A total of 424 participants were included in the analysis, giving a response rate of 99.3%. The prevalence of mental health conditions was 47% (95% CI: 40.1%, 54.2%) among substance users and 26% (95% CI: 20.3%, 32.2%) among nonusers.

In the final model, among substance users, participant sex, education level, family history of substance use, and family history of mental illness remained significantly associated with mental health conditions. Among nonusers, participant sex, perceived social support, and family history of mental illness remained significant predictors of mental health conditions.

Conclusions: Approximately half of the participants who used substances reported experiencing mental health conditions. This result highlights the need for appropriately focused interventions to address the growing challenges of mental health conditions and substance use among young people in Ethiopia.

Keywords: young people, substance use, mental health, youth mental health, anxiety, depression, West Arsi, Ethiopia

6.3. Introduction

Young people, defined as individuals aged 10-24 years (United Nations, 1995), constitute 24% of the global population (United Nations Pupulation Fund, 2024). In Africa, the proportion is greater, with 60% of the population being under 25 years old (United Nations, 2022). Ethiopia mirrors this trend, with 42% of its population aged 10-29 (Admassu et al., 2022; EPHI & ICF., 2021). Adolescence and young adulthood represent critical phases in human development,

marked by significant physical, psychological, and social changes, making people particularly vulnerable to various health challenges during these periods. These challenges include substance use and mental health conditions, as well as the comorbid intersection between substance use and mental health conditions (National Academies of Sciences, 2019; Wood et al., 2018).

Young age is a time of experimentation, exploration, curiosity, and identity search, often involving an increase in risk-taking behaviour such as substance use (Defoe et al., 2022; Nawi et al., 2021). Similarly, young age is also the stage at which many mental health conditions first emerge or develop. Approximately half of all mental health conditions begin by age 14, and 75% have emerged by the mid-20s (Jorns-Presentati et al., 2021; United Nations Children's Fund, 2021).

The burden of mental health conditions and substance use among young people is significant and varies globally. Approximately one in seven young people is affected, representing 13% of the global burden of disease (GBD) for this age group (United Nations Children's Fund, 2021). The global prevalence of mental health conditions among adolescents is estimated to be 28% for anxiety disorders and 13% for depressive disorders (United Nations Children's Fund, 2021). In sub-Saharan Africa (SSA), including Ethiopia, research has shown high prevalence rates: 26.9% for depression, 29.8% for anxiety disorders, 21.5% for posttraumatic stress disorder (PTSD), and 20.8% for suicidal ideation (Jorns-Presentati et al., 2021). In Ethiopia, mental health conditions are the leading non-communicable burden, with a prevalence of 12.3%, representing 1.3% of disability-adjusted life years (DALYs) (GBD Mental Disorders Collaborators, 2022). The Ethiopian National Mental Health Strategy 2020–2025 highlights that mental health conditions in young people, with a prevalence of 12–25%, place a significant burden on the country’s health system (Federal Ministry of Health of Ethiopia, 2020).

A comorbid diagnosis of substance use and mental health conditions among young people is not uncommon, and the relationship is complex and multifaceted (Harris et al., 2019; Schuckit, 2006). Anxiety disorders, depression, PTSD, and suicide are the most common comorbidities (Conway et al., 2018; Jorns-Presentati et al., 2021). This comorbidity can arise from independent conditions, shared risk factors, or one influencing the other (Volkow, 2004). In some cases, mental health symptoms may be temporary and induced by substance intoxication or withdrawal. Substance use may develop before, concurrently with, or after the onset of a mental health condition, with an additive or cumulative interaction between the two.

The presence of mental health conditions can lead to earlier onset and more severe substance dependency and negative outcomes (Harris et al., 2019). Similarly, substance use in those with mental health conditions can exacerbate symptoms, including suicide and suicidal ideation (Morisano et al., 2017; Schuckit, 2006). Young people with comorbid mental health conditions and substance use often experience more negative outcomes, such as family difficulties, stigma, discrimination, homelessness, involvement in crimes, decreased competence, support, social responsiveness, education, employment participation, and compliance with treatment (McLellan, 2017; Morisano et al., 2017; Schuckit, 2006; Volkow, 2004).

Several factors increase the risk of comorbid substance use and mental health conditions among young people in Ethiopia. Socioeconomic factors like poverty, unemployment, violence, poor education, and limited access to mental health services contribute to the co-occurrence (Mossie et al., 2016; Roba et al., 2021). Additionally, social factors such as family dynamics, peer pressure, and societal stigma also play crucial roles (Hunduma et al., 2017; Kerebih & Soboka, 2016; Mossie et al., 2016; Yimam, 2014). Further, young people may use substances to self-medicate, experience euphoria, relax, cope, fit in, or feel normal (Back et al., 2014; McLellan, 2017).

Previous studies in Ethiopia have highlighted the prevalence and individual impacts of mental health conditions and substance use among young individuals (Abate et al., 2021; Mossie et al., 2016; Roba et al., 2019; Roba et al., 2021; Tefera, 2018). While the comorbidity of these conditions has been observed in Africa, including Ethiopia, it has not been well documented, underscoring a critical need for rigorous research (Mitiku, Amsalu, et al., 2024). For example, a study revealed that khat users, one of the most commonly used substances in Ethiopia, were ten times more likely to develop depression than nonchewers were (Mossie et al., 2016). To address this gap, this study aims to determine the prevalence of mental health conditions and associated sociodemographic factors among young people who use substances in Ethiopia, thereby informing the development of integrated intervention strategies.

6.4. Methods and materials

6.4.1. Study design

A cross-sectional study was conducted from May 18, 2023, to September 22, 2023, to investigate mental health conditions among young substance users.

6.4.2. Study setting

The study was conducted in the West Arsi zone of the Oromia Regional State, Ethiopia, which comprises 13 districts (woredas) and three town administrations. In 2022, the total population was approximately three million, with young people (aged 10-29 years) making up 42% or 1.2 million of this population (Central Statistical Agency of Ethiopia, 2022). This demographic predominance, combined with significant socio-environmental factors, makes West Arsi a particularly relevant setting for assessing the effects of substance use on mental health conditions.

The region is known for its substantial production and distribution of various psychoactive substances, including alcohol, khat, cannabis, and tobacco, which are both widely available and culturally integrated. Additionally, West Arsi experiences a high unemployment rate, reflecting broader economic challenges across Ethiopia (Mokona et al., 2020), which may further heighten vulnerability. Healthcare infrastructure in the West Arsi zone, particularly for mental health or substance-related services, is limited, restricting access to necessary support (Hanlon et al., 2019). A recent study showed that nearly half of young people in the West Arsi zone are involved in substance use (Shifa et al., 2025b), underscoring the critical need to understand mental health conditions and related factors among this group. Given these combined factors, assessing the mental health conditions among young substance users in this setting is important to inform targeted interventions and policy responses.

6.4.3. Study population

The source population for this study included all young people residing in the West Arsi Zone. The target population consisted of individuals aged 14-29 years who had lived in the area for at least six months, were able to provide informed consent, and had reported using at least one substance in their lifetime. Young people were defined as adolescents aged 10-19 (World Health Organisation, 2017a) and youth aged 15-29 (FDRE Ministry of Youth and Sports, 2004). Young individuals with severe mental disorders or cognitive impairments that prevented them from providing reliable information or informed consent were excluded from this study.

6.4.4. Sample size determination and sampling procedure

This study is part of a larger research project designed to investigate substance use and mental health conditions among young people in the West Arsi Zone, Ethiopia. The sample size for the broader project was determined using a single population formula, with a 95% confidence interval, a 5% margin of error, a 10% non-response rate, and an estimated 50% prevalence of

substance use among young people (Naing et al., 2022). The full description of the sample size determination is provided elsewhere (Shifa et al., 2025b).

For the present research, we specifically focused on assessing the mental health conditions among young substance users. A total of 204 young individuals, aged 14 to 29 years, who reported substance use in the first phase of the project were included as the primary study sample. Mental health conditions such as depression, anxiety, PTSD, and suicidality were assessed using locally validated standard instruments (*see variables and measurements section*). Additionally, a comparison was made with a group of nonusers to provide context.

The study was conducted in the West Arsi zone of the Oromia Regional State, Ethiopia. A convenient and purposive sampling method was applied to select the study setting. This zone was chosen due to the researcher's familiarity with the area, the significant production, distribution, and accessibility of various psychoactive substances, and the high unemployment rate in the region (Mokona et al., 2020), which has been identified as a potential risk factor for substance use.

Among the 13 woredas in the West Arsi zone, four woredas were purposively selected, representing approximately 30% of the woredas (Cochran, 1953). This proportion is considered scientifically sound for ensuring representativeness while maintaining feasibility. From each selected woreda, four kebeles (the smallest administrative unit in Ethiopia) were also selected based on their accessibility and the concentration of the young population, with two kebeles drawn from urban and two from rural areas. The urban-rural stratification was included to facilitate comparisons, given documented variations in substance use between urban and rural communities in Ethiopia (Zenbaba et al., 2022).

Following the initial step that involved the identification of the selected kebeles, and to prepare for data collection, a one-week census of households with young individuals was conducted.

Each household was given a unique number to establish a sampling frame. The numbering process began at a central or predefined landmark in each kebele, such as the kebele administration office, mosque, church, school, or another prominent feature, depending on the setting. From this starting point, households were numbered systematically, ensuring full coverage within the kebele boundary until the last household to be included in the study was reached.

Local young individuals, capable of writing, participated voluntarily in the process of household identification and numbering, assisted by local law enforcement personnel assigned from the kebele administration office to ensure the safety and smooth execution of the process, particularly to address the local security concerns. This was necessary due to the challenge of obtaining comprehensive information about the target population from local government sources.

The unique household identification number formed the basis for a lottery system used to randomly select households for participation. Samples were proportionally allocated among the selected kebeles to ensure representation based on the total number of young people in each kebele. Once households were identified, data collectors conducted interviews with young individuals in the selected households. In situations where more than one eligible individual was present in a household, a lottery method was applied to select one participant, ensuring randomisation and avoiding clustering effects.

6.4.5. Data collection process

A face-to-face interview was conducted door-to-door to administer the questionnaire. Four experts fluent in local languages conducted the data collection. Face-to-face data collection was chosen to counter the potential for information contamination as well as to ensure that participation was not inhibited by the availability of technology or literacy. Research

experience in Ethiopia shows that young people tend to share information with friends and relatives when remotely administered or self-report questionnaires are used, leading to potentially biased responses and ethical concerns (Kassa et al., 2024).

Following a brief introduction to the study, the participants provided both verbal and written informed consent. For participants under 18, additional written informed consent was obtained from parents and/or caregivers. The interviews lasted approximately 35-60 minutes.

6.4.6. Measurements and variables

The dependent variable was mental health condition, defined as the current experience of depression, anxiety disorders, PTSD, or suicidal behaviour. In this study, participants were classified as positive for mental health conditions if they responded affirmatively to at least one of these conditions, and negative otherwise. The specific mental health conditions were defined and measured as follows:

Depression is measured using the Patient Health Questionnaire-9 (PHQ-9), a nine-item tool for screening for depressive disorder and assessing symptom severity (Kroenke et al., 2001). The PHQ-9 scores range from 0 (absence of symptoms) to 27 (severe symptoms). Scores of 0–4 indicate no depression, 5–9 indicate mild depression, 10–14 indicate moderate depression, 15–19 indicate moderate-severe depression, and 20–27 indicate severe depression (Kroenke et al., 2001). In this study, probable depression was defined as PHQ-9 ≥10, following the standard threshold (Kroenke et al., 2001). The PHQ-9 was validated for use in Ethiopia (Gelaye et al., 2013; Woldetensay et al., 2018). Cronbach's alpha for the scale was calculated to be 0.865, indicating a high level of internal consistency.

Anxiety was measured using the Generalised Anxiety Disorder-7 (GAD-7), a seven-item tool that assesses anxiety symptoms over the past two weeks. Scores range from 0-21, with 0-4 indicating minimal anxiety, 5-9 indicating mild anxiety, 10-14 indicating moderate anxiety,

and 15-21 indicating severe anxiety (Beard & Bjorgvinsson, 2014). In this study, probable anxiety was defined as GAD-7 ≥8, aligning with sensitivity-oriented thresholds for screening any anxiety disorder (Spitzer et al., 2006). The GAD-7 has been previously used in Ethiopia (Manzar et al., 2021) and shows adequate internal consistency, as evidenced by a Cronbach's alpha coefficient of 0.80 (Alghadir et al., 2020). In this study, GAD-7 demonstrated high internal consistency, with a Cronbach's alpha of 0.964, indicating that the items were well-correlated and measured a common construct.

PTSD – Assessed using the Trauma Screening Questionnaire (TSQ), a ten-item tool with five "re-experiencing" and five" arousal" items. The respondents who screened positive for PTSD answered "yes" to at least six items that they experienced at least twice in the past week (Walters et al., 2007) and has been used in Ethiopia before (Alenko et al., 2019). The 10-item PTSD scale (PTSD1 to PTSD10) showed good internal consistency, with a Cronbach's alpha of 0.847.

Suicidal behaviour - Assessed through questions on suicidal ideation, plans, and attempts. The participants were asked if they had thought about, planned, or attempted to take their own life in the past 12 months. These questions were adapted from the World Mental Health (WMH) Survey Initiative version of the WHO CIDI (Kessler & Ustun, 2004) and have been used in Ethiopian studies (Fekadu et al., 2016). In the present study, we considered an affirmative response for any of the components of suicidal behaviour (ideation, plan, or attempt) when counting the prevalence of suicidal behaviour (Fekadu et al., 2016).

Perceived social support

Social support was measured using the 12-item Multidimensional Scale of Perceived Social Support (MSPSS) (Zimet et al., 1988), previously used in Ethiopia (Sidamo et al., 2024) and other similar settings across Africa (Nakigudde et al., 2009; Stewart et al., 2014). The MSPSS

has demonstrated strong internal consistency (Cronbach's alpha values typically above 0.8) and test-retest reliability, making it a robust instrument for assessing perceived social support across different cultural and demographic contexts (Dambi et al., 2018). This study followed adaptations from comparable settings in Africa, such as Uganda (Nakigudde et al., 2009) and Malawi (Stewart et al., 2014), where slight language and context adjustments were made to preserve the instrument's cultural relevance while maintaining its original three-factor structure (Family, Friends, Significant Other) (Nakigudde et al., 2009; Stewart et al., 2014). In this study, perceived social support was classified using the commonly applied descriptive bands to summarise support levels as low (<2.0), moderate (2.0–3.99), and high (≥4.0) based on the mean score (Nakigudde et al., 2009; Stewart et al., 2014; Zimet et al., 1988). In the present study, internal consistency was excellent (Cronbach's $\alpha = 0.93$).

Other demographic, social, and family factors

Other independent variables such as age, sex, education, religion, ethnicity, marital status, occupation, place of residence, children status, number of children, family size, spouse education, spouse education, family income, and source of income, family history of substance use, and family history of mental illness were assessed using a combination of author-constructed questions and adapted items from previous studies (Kassew, 2023; Tarekegn et al., 2022).

6.4.7. Data management and analysis

Data analysis was performed using Stata, version 18.0. Descriptive statistics were used to summarise the sociodemographic, psychosocial, and clinical characteristics of participants.

To identify candidate variables for the multivariable model, simple binary logistic regression was conducted for each independent variable with the dependent variable (presence of any

mental health conditions). Variables with p values less than 0.25 in the simple bivariate analysis were considered for inclusion in a multivariable binary logistic regression model.

Multivariable analysis was conducted to assess the independent effects of each variable on mental health conditions, adjusting for potential confounders. Nonsignificant factors (p-value>0.05) were removed stepwise from the final model only if their exclusion did not substantially alter the effect estimates of other predictors. This process combined statistical significance with conceptual relevance based on prior research.

Multicollinearity was assessed in the final model with a variance inflation factor (VIF) value, with a cutoff of less than 5 indicating an acceptable level. The Hosmer–Lemeshow test showed good model fit ($p > 0.05$), and the ROC curve indicated good discrimination.

6.5. Ethical considerations

Ethics approval was obtained from the Health and Medical Research Ethics Committee at the University of Technology Sydney (ETH23-7890) and the Campus Research Ethics Review Committee of Madda Walabu University, Shashemene Campus, Ethiopia (RCSTT/34/2015). A support letter was obtained from Madda Walabu University and the Woreda administration offices.

6.6. Results

6.6.1. Study sample characteristics

Table 8 shows the sociodemographic characteristics of the 424 participants included in the analysis, yielding a 99.3% response rate. The sample comprised (80%, n=163) males and (20%, n=41) females, with a median age of 23 years. Approximately (17%, n= 35) of the study samples had received basic formal education (grades 1-8), (64%, n= 131) were single, and

(42%, n= 85) were employed. The majority identified as Oromo (68%, n= 138), (44%, n= 89) were Muslim, and (34%, n= 70) reported low perceived social support.

Table 8: Sociodemographic characteristics of the study sample, Ethiopia, 2024

Variable	Substance users	Nonusers
	Frequency(percentage)	Frequency(percentage)
Sex:		
Female	41(20)	112(51)
Male	163(80)	108(49)
Age in years:		
14-19	39(19)	64(29)
20-24	66(32)	58(26)
25-29	99(49)	98(45)
Participant Education:		
Not attended formal education	35(17)	26(12)
Attended basic formal education	59(29)	88(40)
Attended secondary school	54(27)	65(29)
Attended higher education	56(27)	41(19)
Marital Status:		
Single	131(64)	115(52)
Ever married	73(36)	105(48)
Participant Occupation:		
Farmer	27(13)	35(16)
Employed	85(42)	74(34)
Student	42(21)	62(28)
Unemployed	50(24)	49(22)
Place of residence:		
Rural	88(43)	105(48)
Urban	116(57)	115(52)
Ethnicity:		
Oromo	138(68)	167(76)
Amharic	24(12)	16(7)
Sidama	24(12)	22(10)
Wolaita	10(5)	8(4)
Others	8(4)	7(3)
Religion:		
Orthodox	59(29)	28(13)
Muslim	89(44)	132(60)
Protestant	48(23)	57(26)
Catholic	8(4)	3(1)
Spouse Education:		
Not attended formal education	15(21)	17(16)
Attended basic formal education	27(37)	29(28)
Attended secondary school	17(23)	37(35)
Attended higher education	14(19)	22(21)
Spouse Occupation:		
Farmer	10(14)	25(24)
Employed	36(49)	51(48)
Student	2(3)	2(2)
Unemployed	25(34)	27(26)
Children Status:		
No	144(71)	132(60)

Yes	60(29)	80(40)
Number of children:		
Less than 4 children	64(88)	87(83)
Greater than 4 children	9(12)	18(17)
Household size:		
Small family	55(27)	43(20)
Medium family	93(46)	115(52)
Large family	56(27)	62(28)
Family income per year:		
Low income	83(41)	78(35)
Medium income	82(40)	97(44)
High income	39(19)	45(21)
Source of family income:		
Agriculture	88(43)	103(47)
Trade	32(16)	25(11)
Private business	32(16)	51(23)
Salary	52(25)	41(19)
Level of social support:		
Low perceived social support	70(34)	18(8)
Moderate perceived social support	127(62)	172(78)
High perceived social support	7(4)	30(14)
Family history of substance use:		
No	91(45)	201(93)
Yes	34(17)	16(7)
Family history of mental illness:		
No	170(83)	204(93)
Yes	34(17)	16(7)
Mental health condition:		
No	108(53)	163(74)
Yes	96(47)	57(26)

6.6.2. Prevalence of mental health conditions and sociodemographic distribution

The results, as illustrated in **Tables 9 and 10**, present the prevalence of mental health conditions and their relationships with various sociodemographic factors, respectively.

Table 9: Distribution of mental health conditions among young substance users and non-users in the West Arsi zone, Ethiopia, 2024 (N=204)

Mental health condition	**Young substance users (n=96/204)**	**Young nonusers (n=57/220)**
Depression		
No Depression	111(54.0)	167(75.9%)
Mild	57(28.0%)	39(17.7%)
Moderate	30(15.0%)	9(4.1%)
Moderate-severe	6(3.0%)	5(2.3%)
GAD	40(19.6%)	12(5.5%)
PTSD	14(7.0%)	15(6.8%)
Suicidal behaviour	31(15.2%)	14(6.4%)

Suicidal ideation	31(15.2%)	14(6.4%)
Suicidal plan	0	2(0.9%)
Attempted suicide	2(1.0%)	1(0.5%)

6.6.2.1. Mental health conditions among substance users

The overall prevalence of mental health conditions among participants who reported substance use (n=204) was 47% (n=96; 95% CI: 40.1, 54.2), with (3%, n=6) moderate-severe depression, (20%, n=40) GAD, (7%, n=14) PTSD, and (15%, n=31) suicidal behaviour (**Table 9**).

A higher prevalence was observed among males (63%, n=26) than in females (43%, n=70). Higher rates of mental health conditions were also reported among young substance users aged 25-29 years (58%, n=56), single individuals (59%, n=57), and those who attended secondary school (29%, n=28) than in their counterparts. Additionally, young substance users with a family history of substance use and lower perceived social support experienced mental health conditions at rates of (67%, n=64) and (53%, n=51), respectively, whereas (32%, n=31) of participants with a family history of mental illness reported similar conditions compared to their counterparts (**Table 8**).

6.6.2.2. Mental health conditions among nonusers

The overall prevalence of mental health conditions among young participants who were not using substances (n=220) was 26% (n=57; 95% CI: 20.3, 32.2), with (2%, n=5) moderate-severe depression, (6%, n=12) GAD, (7%, n=15) PTSD, and (6%, n=14) suicide behaviour (**Table 9**).

The prevalence was reported to be higher among females (37.5%, n=42) than among males (14%, n=15). Higher rates of mental health conditions were also reported among young nonsubstance users aged 25-29 years (54%, n=31), single (59%, n=57), and those who attended basic formal education (grades 1-8) (37%, n=21) than in their counterparts. Additionally,

young nonsubstance users with a family history of substance use and lower perceived social support experienced mental health conditions at rates of (10%, n=6) and (21%, n=12), respectively, whereas (25%, n=14) of participants with a family history of mental illness reported mental health conditions compared with their counterparts (**Table 8**).

Table 10: Factors associated with mental health conditions among young substance users and nonusers in West Arsi, Ethiopia, 2024.

Variable	**Mental health conditions among substance users (N = 204)**				**Mental health conditions among nonusers (N = 220)**		
	Prevalence	COR (95% CI, p-value)	AOR (95% CI, p-value)		Prevalence	COR (95% CI, p-value)	AOR (95% CI, p-value)
Sex:							
Female	26 (27.1%)	2.30 (95% CI [1.14, 4.67], p = 0.021*)	3.20 (95% CI [1.12, 9.14], p = 0.030*)		42 (73.7%)	3.72 (95% CI [1.91, 7.24], p < 0.001*)	3.19 (95% CI [1.51, 6.74], p = 0.002*)
Male	70 (72.9%)	Ref	Ref		15 (26.3%)	Ref	Ref
Age in years:							
14-19	12 (12.5%)	Ref	Ref		10 (17.5%)	Ref	Ref
20-24	28 (29.2%)	1.66 (95% CI [0.72, 3.83], p = 0.237)	1.78 (95% CI [0.55, 5.74], p = 0.335)		16 (28.1%)	2.06 (95% CI [0.85, 4.99], p = 0.111)	2.27 (95% CI [0.81, 6.35], p = 0.120)
25-29	56 (58.3%)	2.93 (95% CI [1.33, 6.44], p = 0.007*)	2.70 (95% CI [0.75, 9.70], p = 0.129)		31 (54.4%)	2.50 (95% CI [1.13, 5.55], p = 0.024*)	1.52 (95% CI [0.50, 4.64], p = 0.466)
Participant Education							
Not attended formal education	23 (24.0%)	2.96 (95% CI [1.23, 7.14], p = 0.016*)	4.67 (95% CI [1.13, 19.27], p = 0.033*)		9 (15.8%)	1.28 (95% CI [0.48, 3.66], p = 0.646)	1.26 (95% CI [0.28, 5.68], p = 0.764)
Attended basic formal education	23 (24.0%)	0.99 (95% CI [0.47, 2.09], p = 0.973)	1.57 (95% CI [0.49, 5.05], p = 0.452)		21 (36.8%)	0.76 (95% CI [0.33, 1.74], p = 0.513)	0.89 (95% CI [0.30, 2.66], p = 0.838)
Attended secondary school	28 (29.1%)	1.66 (95% CI [0.78, 3.55], p = 0.183)	2.23 (95% CI [0.73, 6.78], p = 0.158)		15 (26.3%)	0.73 (95% CI [0.30, 1.76], p = 0.477)	0.86 (95% CI [0.29, 2.56], p = 0.782)
Attended higher education	22 (22.9%)	Ref	Ref		12 (21.1%)	Ref	Ref
Marital Status:							
Single	57 (59.4%)	0.67 (95% CI [0.38, 1.19], p = 0.175)	1.49 (95% CI [0.57, 3.86], p = 0.413)		23 (40.4%)	0.52 (95% CI [0.28, 0.96], p = 0.038*)	0.61 (95% CI [0.24, 1.54], p = 0.295)
Ever married	39 (40.6%)	Ref	Ref		34 (59.6%)	Ref	Ref
Participant Occupation:							
Farmer	14 (14.6%)	Ref	Ref		6 (10.5%)	Ref	Ref

Employed	41 (42.7%)	0.87 (95% CI [0.36, 2.06], p = 0.743)	0.88 (95% CI [0.19, 3.78], p = 0.839)		20 (35.1%)	1.79 (95% CI [0.65, 4.95], p = 0.262)	2.18 (95% CI [0.59, 8.12], p = 0.245)
Student	14 (14.6%)	0.46 (95% CI [0.17, 1.25], p = 0.129)	0.58 (95% CI [0.12, 2.97], p = 0.517)		10 (17.5%)	0.93 (95% CI [0.31, 2.82], p = 0.897)	1.76 (95% CI [0.38, 8.10], p = 0.468)
Unemployed	27 (28.1%)	1.09 (95% CI [0.43, 2.78], p = 0.857)	1.23 (95% CI [0.30, 5.07], p = 0.774)		21 (36.9%)	3.63 (95% CI [1.27, 10.31], p = 0.016*)	2.81 (95% CI [0.74, 10.62], p = 0.128)
Place of residence:							
Rural	38 (39.6%)	Ref	Ref		26 (45.6%)	Ref	Ref
Urban	58 (60.4%)	1.32 (95% CI [0.75, 2.30], p = 0.334)	0.92 (95% CI [0.40, 2.11], p = 0.849)		31 (54.4%)	1.12 (95% CI [0.61, 2.05], p = 0.711)	0.79 (95% CI [0.35, 1.79], p = 0.577)
Religion:							
Orthodox	34 (35.4%)	1.91 (95% CI [0.98, 3.72], p = 0.057)	0.53 (95% CI [0.17, 1.61], p = 0.259)		8 (14.0%)	1.30 (95% CI [0.52, 3.25], p = 0.570)	0.89 (95% CI [0.14, 5.61], p = 0.901)
Islam	37 (38.5%)	Ref	Ref		31 (54.4%)	Ref	Ref
Protestant	23 (24.0%)	1.29 (95% CI [0.64, 2.62], p = 0.476)	1.60 (95% CI [0.55, 4.62], p = 0.389)		17 (29.8%)	1.38 (95% CI [0.69, 2.78], p = 0.359)	1.39 (95% CI [0.45, 4.28], p = 0.567)
Catholic	2 (2.1%)	0.47 (95% CI [0.10, 2.45], p = 0.369)	0.17 (95% CI [0.01, 2.13], p = 0.170)		1 (1.8%)	1.63 (95% CI [0.14, 18.60], p = 0.694)	0.17 (95% CI [0.00, 8.10], p = 0.368)
Household size:							
Small family	23 (24.0%)	Ref	Ref		15 (26.3%)	Ref	Ref
Medium family	51 (53.1%)	1.69 (95% CI [0.86, 3.31], p = 0.127)	1.19 (95% CI [0.45, 3.15], p = 0.726)		31 (54.4%)	0.69 (95% CI [0.33, 1.46], p = 0.330)	0.74 (95% CI [0.29, 1.93], p = 0.542)
Large family	22 (22.9%)	0.90 (95% CI [0.42, 1.92], p = 0.786)	0.95 (95% CI [0.31, 2.94], p = 0.929)		11 (19.3%)	0.40 (95% CI [0.16, 0.99], p = 0.049*)	0.61 (95% CI [0.18, 2.05], p = 0.423)
Source of family income:							
Agriculture	36 (37.5%)	Ref	Ref		26 (45.6%)	Ref	Ref

Trade	21 (21.8%)	2.76 (95% CI [1.19, 6.41], p = 0.019*)	3.43 (95% CI [0.92, 12.80], p = 0.066)		6 (10.5%)	0.94 (95% CI [0.34, 2.59], p = 0.898)	0.70 (95% CI [0.18, 2.77], p = 0.610)
Private business	16 (16.7%)	1.44 (95% CI [0.64, 3.26], p = 0.375)	1.96 (95% CI [0.51, 7.57], p = 0.331)		12 (21.1%)	0.91 (95% CI [0.42, 2.00], p = 0.816)	0.75 (95% CI [0.26, 2.16], p = 0.598)
Salary	23 (24.0%)	1.46 (95% CI [0.57, 2.29], p = 0.701)	1.67 (95% CI [0.47, 5.91], p = 0.427)		13 (22.8%)	1.38 (95% CI [0.62, 3.04], p = 0.432)	0.44 (95% CI [0.13, 1.52], p = 0.195)
Level of perceived social support:							
Low	51 (53.1%)	6.71 (95% CI [1.20, 37.56], p = 0.030*)	4.32 (95% CI [0.30, 62.34], p = 0.282)		12 (21.1%)	8.00 (95% CI [2.12, 30.15], p = 0.002*)	6.07 (95% CI [1.32, 27.99], p = 0.021*)
Moderate	43 (44.8%)	1.28 (95% CI [0.24, 6.87], p = 0.774)	0.57 (95% CI [0.04, 7.86], p = 0.678)		39 (68.4%)	1.17 (95% CI [0.45, 3.07], p = 0.745)	1.25 (95% CI [0.42, 3.76], p = 0.689)
High	2 (2.1%)	Ref	Ref		6 (10.5%)	Ref	Ref
Family history of substance use:							
No	32 (33.3%)	Ref	Ref		51 (89.5%)	Ref	Ref
Yes	64 (66.7%)	2.41 (95% CI [1.36, 4.25], p = 0.002*)	2.64 (95% CI [1.19, 5.84], p = 0.017*)		6 (10.4%)	1.36 (95% CI [0.49, 3.76], p = 0.556)	0.72 (95% CI [0.19, 2.72], p = 0.632)
Family history of mental illness:							
No	65 (67.7%)	Ref	Ref		43 (75.4%)	Ref	Ref
Yes	31 (32.3%)	16.69 (95% CI [4.90, 56.81], p < 0.001*)	11.89 (95% CI [2.64, 53.60], p < 0.001*)		14 (24.6%)	26.20 (95% CI [5.70, 119.80], p < 0.001*)	15.91 (95% CI [3.14, 80.73], p < 0.001*)
Annual family income in Ethiopian Birr:							
Low	44 (45.8%)	0.97 (95% CI [0.45, 2.07], p = 0.931)	0.94 (95% CI [0.33, 2.67], p = 0.910)		24 (42.1%)	2.06 (95% CI [0.83, 5.07], p = 0.118)	1.93 (95% CI [0.63, 5.96], p = 0.251)
Medium	31 (32.3%)	0.52 (95% CI [0.24, 1.13], p = 0.098)	0.40 (95% CI [0.13, 1.18], p = 0.096)		25 (43.9%)	1.61 (95% CI [0.66, 3.91], p = 0.297)	1.70 (95% CI [0.57, 5.06], p = 0.337)

High	21 (21.9%)	Ref	Ref		8 (14.0%)	Ref	Ref
Participants' ethnicity:							
Oromo	58 (60.4%)	Ref	Ref		40 (70.2%)	Ref	Ref
Amhara	17 (17.7%)	3.35 (95% CI [1.30, 8.60], p = 0.012*)	2.04 (95% CI [0.46, 9.08], p = 0.351)		5 (8.8%)	1.44 (95% CI [0.47, 4.40], p = 0.519)	0.83 (95% CI [0.17, 4.08], p = 0.823)
Sidama	13 (13.6%)	1.63 (95% CI [0.68, 3.90], p = 0.272)	0.92 (95% CI [0.22, 3.80], p = 0.906)		6 (10.5%)	1.19 (95% CI [0.44, 3.25], p = 0.733)	0.74 (95% CI [0.20, 2.76], p = 0.654)
Wolaita	3 (3.1%)	0.59 (95% CI [0.15, 2.38], p = 0.460)	0.03 (95% CI [0.00, 0.36], p = 0.007*)		4 (7.0%)	3.18 (95% CI [0.76, 13.28], p = 0.114)	1.98 (95% CI [0.38, 10.43], p = 0.421)
Others	5 (5.2%)	2.30 (95% CI [0.53, 10.00], p = 0.267)	0.33 (95% CI [0.04, 2.47], p = 0.278)		2 (3.5%)	1.27 (95% CI [0.24, 6.80], p = 0.780)	0.98 (95% CI [0.12, 8.91], p = 0.984)

- *Ref = reference category. * p < 0.05.*
- *Note: Results for categories with small n (e.g., Catholic, Wolaita) should be interpreted with caution due to wide confidence intervals.*
- **=P value less than 0.05*

6.6.4. Factors associated with mental health conditions

In the preliminary unadjusted bivariate model analysis, various covariates were examined independently for their potential associations with mental health conditions across substance users and nonuser participants. These covariates include sex, age, marital status, education, occupation, religion, place of residence, level of social support, mental health condition, family size, family income, source of income, family history of substance use, family history of mental illness, participant place of residence, and participant ethnic affiliation.

Upon conducting an adjusted model analysis, controlling for potential confounders, covariates showed a statistically significant association with the likelihood of experiencing a mental health condition across substance users and nonusers, as presented below:

Among substance users, sex, education level, family history of substance use, and family history of mental illness remained statistically significant predictors of mental health conditions. Compared with males, females had greater odds of having mental health conditions (AOR=1.75, 95% CI: 1.12, 9.14; p = 0.007). Participants with lower education levels (grades 1-8) had approximately five times greater odds of having mental health conditions than those with higher education levels (college and above) (AOR=4.67, 95% CI: 1.13, 19.27; p=0.033). Moreover, participants with a family history of mental illness (AOR=11.89, 95% CI: 2.64, 53.6; p = 0.001) and a family history of substance use (AOR=2.64, 95% CI: 1.19, 5.84; p = 0.017) had substantially higher odds of having mental health conditions than did those without such a history (**Table 10**).

Similarly, for nonusers, sex, perceived social support, and family history of mental illness were significantly associated with the likelihood of experiencing mental health conditions. Among nonusing participants, females had approximately three times greater odds of having mental health conditions than males did (AOR=3.19, 95% CI: 1.51, 6.74, p = 0.002). Compared

with those reporting high perceived social support, those reporting low perceived social support had significantly greater odds of having mental health conditions (AOR=6.07, 95% CI: 1.32, 27.99; $p < 0.021$). Additionally, participants who had a family history of mental illness were significantly more likely to have mental health conditions than those without such a history (AOR=15.91, 95% CI: 3.14, 80.73; $p = 0.001$) (**Table 10**).

6.7. Discussion:

6.7.1. Mental health conditions among young people who use substances

Nearly half (47%) of the study participants who reported substance use had experienced at least one mental health condition compared to 26% among nonusers. In countries such as Ethiopia, where access to mental healthcare services is limited (Hailemariam et al., 2016) and stigma around mental health remains high (Girma et al., 2022), individuals may turn to substances to cope with mental health conditions. This behaviour creates a cycle of temporary relief that increases dependence and, in the long term, worsens mental health symptoms (Cortina et al., 2012; Richert et al., 2020). The social environment, including family dynamics and community norms, may also play a significant role (Kassew, 2023). The widespread use or acceptance of substances such as alcohol and khat in some communities in the West Arsi Zone may encourage young people to engage in substance use, increasing their risk of developing mental health conditions. Family stress, poverty, lack of parental guidance, unemployment, violence, and the social marginalisation of substance users all contribute to the exacerbation of both substance use and mental health conditions (Girma et al., 2022; McLellan, 2017; Mitiku, Amsalu, et al., 2024; Paul et al., 2024). Moreover, the negative impact of substance use on behaviours and lifestyles— such as irregular sleep, poor nutrition, and risky behaviours— elevates the risk of developing further mental health conditions (Anbesu et al., 2023; Moonajilin et al., 2021; Nawi et al., 2021).

Comparison with other studies

The prevalence of mental health conditions among substance users in our study (47%) is higher than that reported in several Ethiopian studies: 25% among Ethiopian children (Kassa et al., 2024), 32% among high school students in Debre Markos (Melkam, Nenko, & Demilew, 2022), 31% among unemployed youth in the Gedio zone (Mokona et al., 2020), and 24% among students in eastern Ethiopia (Hunduma, Dessie, Geda, Assebe Yadeta, & Deyessa, 2024). International studies have shown varying rates: 44% in Nepal (Bhattarai et al., 2020), 36% in Bangladesh (Anjum et al., 2022), 17% in South Africa (Kleintjes et al., 2006), and 24% in China (Tang et al., 2019). However, our prevalence is lower than the 55% reported among street children in Tigray (Mekonen et al., 2020), 58% among students in India (Urmila et al., 2017), and 59% among students in conflict-affected areas in Ethiopia (Madoro et al., 2020). This finding closely aligns with the 48% rate reported in another Ethiopian study (Melkam et al., 2024) and the 50% reported in Australia (Lubman et al., 2007).

Factors contributing to variations in prevalence

The variation in the prevalence of mental health conditions among substance-using participants may be due to geographical, sociocultural, and methodological factors and other characteristics of the study participants. Methodologically, the use of different screening and diagnostic tools to measure specific mental health conditions could contribute to the variations in prevalence rates. For example, studies in Tigray, Ethiopia, used a general health questionnaire (GHQ-12), whereas studies in Kenya, Nigeria, and Ghana employed the Beck Depression Inventory (BDI) scale. In contrast, studies in Nepal and India used the Center for Epidemiological Studies Depression Scale (CES-D) to measure depression, whereas we used the PHQ-9.

The mental health conditions of the substance users in our study were significantly associated with participant sex, education level, and family history of substance use and mental illness.

Compared with their male counterparts, females, those with basic education (grades 1-8), and individuals with a family history of substance use or mental illness were found to have greater mental health conditions.

The higher prevalence of mental health conditions among female substance users in our study may be related to a combination of biological, sociocultural, and environmental factors. Biologically, females have a lower tolerance for substances, leading to quicker intoxication and a greater risk of adverse effects, including mental health conditions (Fonseca et al., 2021; Mumenthaler et al., 1999; NIDA, 2021). In our study area, as in many parts of Ethiopia, substance use by females is often perceived as deviating from societal expectations for females (Geleta et al., 2022; Shifa et al., 2025b). The stress resulting from greater societal disapproval may be associated with increased mental health conditions. An internalised stigma may disproportionately discourage females from seeking help and support, exacerbating their mental health conditions. Moreover, high levels of gender-based violence in Ethiopia, worsened by substance use, may increase the likelihood of mental health conditions among substance-using young females (Deyessa et al., 2009; Kassa & Abajobir, 2020). Traditional gender roles and societal expectations may create stress and pressure for females, affecting their mental health. For example, the expectation of balancing work, caregiving, and household responsibilities can lead to increased stress levels (Erulkar, 2013; Gebeyehu et al., 2023). In Ethiopia, economic disparities where males are more dominant and females are dependent (Lailulo et al., 2015), along with lower help-seeking behaviour (Muluneh et al., 2021) and lower literacy rates among females (World Bank, 2023), may also contribute to the higher prevalence of mental health conditions among young substance-using females.

The higher prevalence of mental health conditions among substance-using young people in this study, who were in grades 1-8, may be related to several factors. Young people in this age group are at a critical stage of cognitive, emotional, and social development (National

Academies of Sciences, 2019). Substance use during this period can disrupt brain development, increasing vulnerability to mental health conditions. Furthermore, in rural areas such as the West Arsi Zone, limited access to mental health education and support services, including those in school areas, means that young people may not fully understand the risks of substance use or have access to necessary resources for mental health care, leading to untreated conditions (Habib et al., 2023).

This study revealed that a family history of substance use and mental illness was also associated with higher rates of mental health conditions among substance-using young people. A combination of genetic predispositions and adverse social and environmental factors may explain the high prevalence of mental health conditions in this group. A family history of substance use and mental illness may disrupt family dynamics, leading to conflict and a lack of emotional support (Iseselo et al., 2016; Lander et al., 2013). These disruptions create a stressful environment that negatively impacts the socialisation of young people, which in turn negatively impacts their mental well-being, increasing their susceptibility to mental health conditions. Additionally, children with a family member with a history of substance use or mental illness are often subjected to stigma and discrimination within their communities (Yang et al., 2017). In Ethiopia, widespread misconceptions about mental illness, such as beliefs in supernatural causes such as evil spirits or curses, contribute to the perception of affected individuals as dangerous or contagious (Girma et al., 2022; Teferra & Shibre, 2012). This stigma leads to social exclusion, discrimination, and increased stress, which significantly increases the risk of anxiety, depression, and other mental health conditions in these young people. This social pressure can increase stress and contribute to anxiety, depression, and other mental health conditions. Furthermore, financial burdens from medical expenses and income loss add to mental health challenges, especially when combined with a young person's own substance use (Hailemichael et al., 2019). Several previous studies in Ethiopia reported similar

findings, showing that a family history of substance use is associated with mental health conditions among those who use substances (Birhanu et al., 2014; Melkam et al., 2023; Wubetu et al., 2020).

6.7.2. Mental health conditions among nonsubstance user participants

The prevalence of mental health conditions among nonsubstance users was 26%, with 4% reporting moderate depression, 2% reporting moderate-severe depression, 6% reporting anxiety, 7% reporting PTSD, and 6% reporting suicidal behaviour. Mental health conditions among nonusers were statistically associated with sex, perceived social support, and family history of mental illness.

In this study, women's gender was associated with higher odds of having mental health conditions. This may be explained by high levels of gender-based violence in Ethiopia (Deyessa et al., 2009; Gossaye et al., 2004; Kassa & Abajobir, 2020), traditional gender roles and expectations in Ethiopia (Erulkar, 2013; Gebeyehu et al., 2023), and emotion-focused coping strategies in women that increase vulnerability to depression and anxiety (Cholankeril et al., 2023). In Ethiopia, the economic situation between men and women (Lailulo et al., 2015), lower help-seeking behaviour (Muluneh et al., 2021), and lower literacy rates among women (World Bank, 2023) may also contribute to the higher prevalence of mental health conditions among women.

This study revealed that a family history of mental illness was also associated with higher rates of mental health conditions among nonusers. Genetic predispositions and adverse social and environmental factors may explain this condition, which disrupts family dynamics and increases stress (Iseselo et al., 2016; Lander et al., 2013). In Ethiopia, stigma and misconceptions about mental illness may contribute to social exclusion and stress (Girma et

al., 2022), further impacting mental health. Financial burdens from medical expenses and income loss add to these challenges (Hailemichael et al., 2019).

The participants with lower perceived social support presented a greater prevalence of mental health conditions, which aligns with previous findings from Ethiopia (Kassew et al., 2023; Tarekegn et al., 2022) and other studies (Kecojevic et al., 2019; Walsh et al., 2018). Enhancing social support networks in Ethiopian communities could be beneficial for addressing mental health issues.

6.7.3. Summary and Implications

Mental health conditions are significantly more prevalent among substance users than nonusers in our study, highlighting a strong link between substance use and mental health issues. Our data show that substance users are affected primarily by factors directly related to substance use, whereas nonusers are more influenced by social and familial support. Gender was found to be a key factor among both groups, with women being more vulnerable to mental health conditions, although the reasons may differ between groups. Family history is crucial for both groups, with substance use fueling the occurrence of mental health conditions.

The findings highlight the need for integrating mental health services into substance use programs, exploring the substance use-mental health link through further research, and providing holistic, culturally tailored care for affected individuals.

6.7.4. Strengths and limitations

A major limitation of this study is its cross-sectional nature, which limits the establishment of causal relationships. Additionally, as with any survey-based research, there is a potential for self-reporting bias, where participants may underreport or overreport substance use and mental health behaviours due to social desirability or other factors that could impact the accuracy and

interpretation of results. Furthermore, it is important to note that the findings of this study are specific to the West Arsi zone and might not entirely reflect the pattern of mental health conditions in other regions of Ethiopia or different sociocultural contexts.

A major strength of this study is the extensive exploration of key factors associated with mental health conditions, such as gender, age, education, social support, and family history of substance use and mental illness. Furthermore, our research methodology ensured broad participation regardless of literacy level, employing face-to-face interviews with a standard questionnaire. We selected participants to ensure diversity and achieved a high response rate (99.3%), indicative of strong engagement. Importantly, our approach minimised self-selection bias, enhancing the reliability and inclusivity of our findings.

6.7.5. Conclusion and recommendations

This study sheds light on the prevalence and associated factors of mental health conditions among substance users and nonusers in young people in the West Arsi Zone, Ethiopia. Nearly half of the substance users experienced mental health conditions, whereas approximately one-fourth of the nonusers experienced mental health conditions. The key associated factors included the participant's sex, age, education, social support, and family history of substance use and mental illness.

Addressing these issues requires a comprehensive approach. Integrating mental health services into educational and community settings, focusing on early intervention and prevention. Community outreach initiatives (e.g., awareness campaigns and stigma reduction programs involving local media and religious organisations) are essential. Culturally sensitive programs to address societal expectations and support gender-specific needs, such as trauma recovery, stress management, and empowerment programs for women, are needed. Enhancing social support networks and access to mental health resources is crucial for mental health prevention

and promotion programs. Programs such as vocational training, educational support, and recreational activities can provide alternatives to substance use and build resilience. Family-based interventions (e.g., family counseling and parenting workshops) are also recommended because of the strong association between a family history of substance use and mental illness with mental health conditions.

Future research should further explore the causal relationships between substance use and mental health conditions to develop targeted strategies.

Chapter Seven: Finding — Health-related quality of life and associated factors

7.1. Chapter overview

The previous chapter presented the mental health conditions among young people and associated factors. This chapter reports on the findings of the health-related quality of life (HRQoL) among young people who reported substance use in the preceding substance use survey. The research question being examined in this chapter centers on the key factors associated with health-related quality of life among young substance users in the West Arsi zone of Ethiopia.

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Candidate's contribution to this study

The PhD candidate is the first author of the manuscript and was responsible for the data analysis, drafting and finalising of the manuscript as well as responding to reviewer feedback. The second and third authors provided feedback on the overall aims of the study, during the analysis, as well as editorial feedback during the drafting and finalisation of the manuscript.

7.2. Abstract

Purpose: Substance use among young people is a growing public health concern with a substantial impact on health-related quality of life (HRQoL). This study investigated HRQoL and associated factors among young individuals in the West Arsi Zone, Ethiopia.

Methods: A community-based cross-sectional study was conducted among 204 young substance users aged 14-29 in the West Arsi Zone, Ethiopia. The sample was drawn from a larger study examining substance use and mental health conditions among young Ethiopians. Data were collected using structured, interviewer-administered questionnaires, which included the World Health Organisation Quality of Life – BREF (WHOQOL-BREF) instrument to assess HRQoL. Linear regression analysis was used to assess the association between HRQoL and independent variables. Ethical approval was obtained from the University of Technology Sydney, Australia, and Madda Walabu University, Ethiopia.

Results: The analysis included 204 participants who use substances. The overall mean HRQoL score was 54.8 (±16.7SD), with mean scores across domains as follows: physical (60.9 ±21.8SD), psychological (70.2 ±11.3SD), social (50.0 ±25.4SD), and environmental (38.2 ±12.8SD).

The presence of mental health conditions (β=-18.66, t=-9.78, $p < 0.001$) and a family history of mental illness (β=-9.80, t=-4.08, $p < 0.001$) were significantly associated with lower HRQoL.

Conclusions: The study found that young substance users in the West Arsi zone had a low overall HRQoL, with the social and environmental domains notably lower than the overall mean. Mental health conditions and a family history of mental illness were negatively associated with HRQoL. These findings highlight the importance of addressing mental health when designing interventions to improve the quality of life among substance users.

Keywords: young people, substance use, substance users, quality of life, West Arsi, Ethiopia

7.3. Introduction

Substance use is a major public health concern, with young people particularly at risk (Schulte & Hser, 2014a). Among young individuals, substance use disrupts critical areas of life, including relationships, educational attainment, and overall physical and mental well-being, thereby exacerbating long-term socioeconomic consequences and impairing health-related quality of life (HRQoL) (Armoon et al., 2022; Volkow & Blanco, 2023). The adverse effects of substance use are multidimensional: it exacerbates physical health issues through increased susceptibility to chronic conditions and amplifies psychological risks such as anxiety, depression, and other mental health conditions (Assari & Jafari, 2010). Socially, substance use often leads to isolation, strained relationships, and stigma, further hindering young people's ability to build supportive connections (Morojele et al., 2021). These HRQoL impairments are

particularly concerning, as they affect young people during a crucial developmental period, limiting their potential to achieve educational, occupational, and personal goals (Saba et al., 2021).

HRQoL, a measure of an individual's perception of their well-being across physical, mental, social, and environmental domains, is increasingly recognised as a valuable indicator for assessing the impact of chronic health conditions, including substance use disorders (Birkeland et al., 2018; Laudet, 2011). It provides a holistic measure of an individual's well-being from their own perspective (Assari & Jafari, 2010), evaluating key domains relevant for those with chronic health issues, such as substance use (The WHOQOL Group, 1995). Studies show that individuals with substance use experience lower HRQoL than the general population, likely due to the chronic and relapsing nature of substance use disorder, coupled with physical, psychological, and social comorbidities, which contribute to a reduced life expectancy (Armoon et al., 2022; Tarekegn et al., 2022). Additionally, demographic, cultural, economic, family, and clinical factors have been reported to influence various aspects of HRQoL among substance users (Assari & Jafari, 2010).

In Ethiopia, substance use among young people, a significant demographic group, has shown increasing trends (Kassew, 2023; Roba et al., 2021), with commonly used substances including khat, alcohol, and cannabis (Tarekegn et al., 2022). Driven by socio-cultural and economic factors like peer pressure, unemployment, and the wide availability of substances such as alcohol and khat, substance use is becoming increasingly normalised among young Ethiopians (Ebrahim J et al., 2024; Tarekegn et al., 2022), resulting in significant health and social implications. Studies conducted in Ethiopia, including in the setting of this research, report a high prevalence of substance use and related complications, such as depression and anxiety, in both urban and rural settings (Atnafie et al., 2020; Damena et al., 2011; Shifa et al., 2025b). Substance use significantly affects HRQoL by increasing risks of poor physical health, social isolation, and reduced productivity (Tarekegn et al., 2022). Quantifying the extent of HRQoL impairments among substance users and identifying key factors can serve as a valuable benchmark for policymakers and program evaluators seeking to improve treatment and prevention programs (Maremmani et al., 2007; Torrens et al., 1997).

Despite growing recognition of the impact of substance use on HRQoL, studies focusing on young Ethiopians remain limited. Existing research in Ethiopia targets different populations or contexts, such as a study conducted in northern Ethiopia focusing solely on students (Tarekegn

et al., 2022) or others examining HRQoL among adults with different exposure factors (Alemu et al., 2024; Shumye et al., 2019). This study aimed to address this gap by assessing HRQoL and its association with demographic, clinical, family, and socioeconomic factors among young substance users in Ethiopia's West Arsi zone. The study findings aim to help guide policymakers and stakeholders in designing targeted interventions to improve the quality of life for young Ethiopians affected by substance use.

7.4. Materials and methods

7.4.1. Study design

A cross-sectional study was conducted from May 18, 2023, to September 22, 2023, to assess the overall HRQoL among young individuals engaging in substance use.

7.4.2. Study setting

The study was conducted in the West Arsi Zone, Oromia Regional State, Ethiopia, which consists of 13 districts and three town administrations. As of 2022, the population was approximately three million, with young people (aged 10-29 years) comprising 42% (1.2 million) (Central Statistical Agency of Ethiopia, 2022).

West Arsi is a significant hub for psychoactive substances such as alcohol, khat, cannabis, and tobacco, which are deeply ingrained in social and cultural practices (Shifa et al., 2025b; Wood et al., 2024). For example, Khat chewing is common in social and religious gatherings, while alcohol is often linked to traditional celebrations (Abate et al., 2021; Teferra et al., 2016).

Additionally, West Arsi experiences a high unemployment rate, reflecting broader economic challenges across Ethiopia (Mokona et al., 2020), which may further heighten vulnerability. Healthcare infrastructure in West Arsi, particularly for mental health or substance-related services, is limited, restricting access to necessary support (Hanlon et al., 2019). Nearly half of the young people in the area engage in substance use (Shifa et al., 2025b), highlighting the need to assess HRQoL and associated factors to inform targeted interventions.

7.4.3. Study population

The source population comprised all young people residing in the West Arsi Zone, while the target population included individuals aged 14-29 years who had lived in the area for at least six months, provided informed consent, and reported using at least one substance in their

lifetime. Young people were defined as adolescents aged 10-19 (WHO, 2018) and youth aged 15-29 (FDRE Ministry of Youth and Sports, 2004). Young individuals with severe mental disorders or cognitive impairments that prevented them from providing reliable information or informed consent were excluded from this study.

7.4.4. Sample size determination

This study is part of a larger research project designed to investigate substance use and mental health conditions among young people in the West Arsi Zone, Ethiopia. The sample size for the broader project was determined using a single population formula, with a 95% confidence interval, a 5% margin of error, a 10% non-response rate, and an estimated 50% prevalence of substance use among young people (Kadam & Bhalerao, 2010; Taherdoost, 2017). The full description of the sample size determination is provided elsewhere (Shifa et al., 2025b).

For the present research, we specifically focused on assessing the HRQoL among young substance users. A total of 204 young individuals, aged 14 to 29 years, who reported substance use in the first phase of the project were included as the primary study sample. HRQoL was measured using the WHOQOL-BREF instrument (World Health Organisation, 1996), which evaluates physical, psychological, social, and environmental domains of well-being. Additionally, a comparison was made with a group of nonusers to provide context.

7.4.5. Study variables and definitions

The dependent variable in this study was HRQoL, defined by the World Health Organisation as an *"individual's perceptions of their position in life in the context of their culture and value systems, and about their goals, expectations, standards, and concerns"* (World Health Organisation, 1996). This concept encompasses physical health, psychological state, level of independence, social relationships, personal beliefs, and interactions with key environmental factors. In recent years, HRQoL has become a vital measure of the impact of health and related conditions (Group Whoqol, 2015).

The independent variables included sociodemographic characteristics (age, sex, education, religion, ethnicity, marital status, occupation, place of residence, children status, number of children, family size, spouses' education, spouse education, family income, and source of income), family history of substance use, family history of mental illness, mental health conditions, and perceived social support.

7.4.6. Data collection tools

HRQoL measure

WHOQOL-BREF, a well-established instrument, assessed the quality of life across four domains based on 26 items (World Health Organisation, 1996). Respondents rated their experiences over the past two weeks on a 5-point Likert scale. Out of the 26 items, the first two items address the general perception of HRQoL and overall satisfaction with health, while the remaining 24 items evaluate HRQoL across four distinct domains: physical health (Domain 1; 7 items) and psychological health (Domain 2; 6 items), social relationships (Domain 3; 3 items), and environmental health (Domain 4; 8 items). The WHOQOL-BREF is a widely validated tool across various demographic and sociocultural settings, including Ethiopia (Jikamo et al., 2021; Reba et al., 2019). A locally validated Amharic version of the WHOQOL-BREF was employed in this study (Reba et al., 2019; Tesfaye et al., 2016).

In this study, the Cronbach's alpha for the WHOQOL-BREF was 0.92, indicating excellent internal consistency.

Raw scores for each domain were first determined by summing scores of items within each domain, dividing by the number of items to obtain a mean score, and then multiplying the raw score by four. For comparability and interpretability, domain scores were transformed to a standardised 0-100 scale according to WHOQOL group guidelines (Group Whoqol, 2015). The overall HRQoL score was computed by aggregating transformed scores from all four domains, reflecting an individual's general HRQoL across physical, psychological, social, and environmental dimensions. Most items in the WHOQOL-BREF are positively phrased, with higher scores indicating better HRQoL. However, items 3, 4, and 26 are negatively phrased and require reverse scoring to ensure consistency, so higher scores consistently reflect better HRQoL across all items. In the final interpretation, higher scores indicate better quality of life, while lower scores suggest poorer HRQoL (Group Whoqol, 2015; Murphy et al., 2000; World Health Organisation, 1996).

Mental health conditions assessment

Mental health conditions were assessed using previously used and validated instruments: the PHQ-9 for depression, with a Cronbach's alpha of 0.865 (Gelaye et al., 2013; Woldetensay et al., 2018), the GAD-7 for anxiety disorder, with a Cronbach's alpha of 0.964 (Manzar et al.,

2021), the TSQ-10 for PTSD with Cronbach's alpha of 0.847 (Alenko et al., 2019), and items from previous studies for suicide behaviour (Tessema et al., 2024). These tools are standard and have demonstrated reliability across various demographics and settings (Habtamu et al., 2022; Kroenke et al., 2010; Osman et al., 2001). In this study, participants were classified as positive for mental health conditions if they responded affirmatively to at least one of these conditions, and negative otherwise.

Perceived social support

Perceived social support was assessed using the 12-item Multidimensional Scale of Perceived Social Support (MSPSS) (Cronbach's alpha of 0.895), which has demonstrated strong internal consistency (Cronbach's alpha = 0.895) and test-retest reliability in Ethiopia and similar African settings. The MSPSS typically reports Cronbach's alpha values above 0.8, confirming its reliability across diverse cultural and demographic contexts (Dambi et al., 2018).

This study followed adaptations from Uganda and Malawi, where minor linguistic and contextual modifications were made while preserving the original three-factor structure (Nakigudde et al., 2009; Stewart et al., 2014). Perceived social support was categorised as low, moderate, and high, based on the mean score (Zimet et al., 1988). In the present study, internal consistency was excellent (Cronbach's $\alpha = 0.93$).

Other demographic, social, and family factors

Independent variables, including age, sex, education, religion, ethnicity, marital status, occupation, place of residence, children status, number of children, family size, spouse education, spouse education, family income, and source of income, family history of substance use, and family history of mental illness were assessed using a mix of author-constructed questions and adapted items from previous studies (Kassew, 2023; Tarekegn et al., 2022).

7.4.7. Data collection process

A door-to-door, face-to-face interview approach was used to administer the questionnaire. Trained experts fluent in the local languages conducted the data collection. Face-to-face interviews were chosen to minimise information contamination and to ensure participation was not restricted by technology access or literacy levels. Research experience in Ethiopia shows that young people tend to share information with friends and relatives when remotely

administered or self-reported questionnaires are used, which can lead to biased responses and ethical concerns (Kassa et al., 2024).

Following a brief introduction about the study, participants provided verbal and written informed consent. For participants under 18, additional written informed consent was obtained from parents or caregivers. Interviews lasted between 35 to 60 minutes.

7.4.8. Data management and analysis

Data were cleaned, coded, and analysed using Stata version 18.0. Mean and standard deviations were computed for continuous variables, while frequencies and percentages were determined for categorical variables. Differences in means were assessed using independent sample t-tests, specifically comparing HRQoL between substance users and non-users (Ross & Willson, 2017).

Simple and multivariable linear regression analyses were conducted to identify factors associated with HRQoL. Variables with $p < 0.25$ in simple regression were included in the multivariable model (Aiken et al., 2003). Beta coefficients and 95% confidence intervals were reported, with $p < 0.05$ considered statistically significant. Effect sizes (Beta coefficients and R^2) were used to assess the practical significance of predictors.

Multicollinearity was checked using the variance inflation factor (VIF), with a cutoff point of 10 (Vatcheva et al., 2016). Model fit was evaluated using R^2, adjusted R^2, F-statistics, and p-values (Aiken et al., 2003). Results were presented using tables and narrative descriptions.

7.5. Result

7.5.1. Study sample characteristics

Table 11 shows the sociodemographic characteristics of the 424 participants included in the larger project, yielding a 99.3% response rate (Shifa et al., 2025b). The 204 sample (substance users) for the present study comprised 80% (n=163) males and 20% (n=41) females, with a median age of 23. About 17% (n=35) of study samples had attended basic formal education (grades 1-8), 64% (n=131) were single, and 42% (n=85) were employed. The majority identified as Oromo 68% (n= 138), 44% (n= 89) were Muslim, and 34% (n= 70) reported low perceived social support.

Table 11: Sociodemographic characteristics of the study sample, Ethiopia, 2024

Variable	Substance users	Nonusers
	Frequency(percentage)	Frequency(percentage)
Sex:		
Female	41(20)	112(51)
Male	163(80)	108(49)
Age in years:		
14-19	39(19)	64(29)
20-24	66(32)	58(26)
25-29	99(49)	98(45)
Participant Education:		
Not attended formal education	35(17)	26(12)
Attended basic formal education	59(29)	88(40)
Attended secondary school	54(27)	65(29)
Attended higher education	56(27)	41(19)
Marital Status:		
Single	131(64)	115(52)
Ever married	73(36)	105(48)
Participant Occupation:		
Farmer	27(13)	35(16)
Employed	85(42)	74(34)
Student	42(21)	62(28)
Unemployed	50(24)	49(22)
Place of residence:		
Rural	88(43)	105(48)
Urban	116(57)	115(52)
Ethnicity:		
Oromo	138(68)	167(76)
Amharic	24(12)	16(7)
Sidama	24(12)	22(10)
Wolaita	10(5)	8(4)
Others	8(4)	7(3)
Religion:		
Orthodox	59(29)	28(13)
Muslim	89(44)	132(60)
Protestant	48(23)	57(26)
Catholic	8(4)	3(1)
Spouse Education:		
Not attended formal education	15(21)	17(16)
Attended basic formal education	27(37)	29(28)
Attended secondary school	17(23)	37(35)
Attended higher education	14(19)	22(21)
Spouse Occupation:		
Farmer	10(14)	25(24)
Employed	36(49)	51(48)
Student	2(3)	2(2)
Unemployed	25(34)	27(26)
Children Status:		
No	144(71)	132(60)
Yes	60(29)	80(40)
Number of children:		
Less than 4 children	64(88)	87(83)
Greater than 4 children	9(12)	18(17)
Household size:		
Small family	55(27)	43(20)
Medium family	93(46)	115(52)

Large family	56(27)	62(28)
Family income per year:		
Low income	83(41)	78(35)
Medium income	82(40)	97(44)
High income	39(19)	45(21)
Source of family income:		
Agriculture	88(43)	103(47)
Trade	32(16)	25(11)
Private business	32(16)	51(23)
Salary	52(25)	41(19)
Level of social support:		
Low perceived social support	70(34)	18(8)
Moderate perceived social support	127(62)	172(78)
High perceived social support	7(4)	30(14)
Family history of substance use:		
No	91(45)	201(93)
Yes	34(17)	16(7)
Family history of mental illness:		
No	170(83)	204(93)
Yes	34(17)	16(7)
Any mental health condition:		
No	108(53)	163(74)
Yes	96(47)	57(26)

7.5.1. HRQoL and its sociodemographic distribution

Nearly three-quarters of the study participants rated their overall quality of life as good, about a quarter rated it as poor, 3% as very poor, and 1% as neither poor nor good. Similarly, around two-thirds rated their satisfaction with overall health as satisfied, 29% as dissatisfied, 4% neither satisfied nor dissatisfied, and 1% very satisfied.

As shown in **Table 12,** over half scored below the mean HRQoL across all domains. The overall mean HRQoL score was 54.78 (SD = 16.73), ranging from 15 to 77. The highest score was in the psychological domain (Mean = 70, SD = 11), while the lowest was in the environmental domain (mean = 38, SD = 13). Women users reported lower HRQoL (mean = 51.11) than men (mean = 55.71). Younger participants (ages 14–19) had higher HRQoL (mean = 59.63) than older participants (ages 25–29, mean = 51.65). Additionally, substance users with mental health conditions (mean = 41.96) and lower social support (mean = 46.12) had lower HRQoL compared to those without mental conditions (mean = 66.18) and higher social support (mean = 57.39) (**Table 13**).

Table 12: Mean HRQoL score among young substance users in West Arsi Zone, Ethiopia 2024, (N=204)

Domains	Observation	(Min, Max) mean score	Mean ±SD	Proportions below the mean	95% CI
Physical	204	(7.1, 85.7)	60.8±21.8	51.47%	(44.39, 58.51)
Psychological	204	(37.5, 87.5)	70.2±11.3	53.43%	(46.33, 60.43)
Social	204	(0, 75)	50.0±25.4	49.51%	(42.45, 56.58)
Environmental	204	(3.1, 62.5)	38.2±12.8	54.41%	(47.31, 61.38)
Overall	204	(14.8, 76.9)	54.78 ±16.7	51.47%	(43.42, 57.54)

CI= Confidence Interval SD= Standard Deviation Min= Minimum Max= Maximum

7.5.2. Factors associated with HRQoL among substance-using young people

Independent variables considered for multiple linear regression analysis included sex, age, marital status, education, occupation, social support status, recent experience of mental health condition, family history of substance use, family history of mental illness, place of residence, children status, number of children, family size, spouse education, family income, source of income, religion, ethnicity, and household size. To address collinearity concerns, variables with a variance inflation factor (VIF) ≥ 10 (Vatcheva et al., 2016) were excluded; thus, age and perceived social support were removed before re-estimating the model (**Table 13)**.

The multiple linear regression analysis indicated that mental health conditions and a family history of mental illness were statistically significant factors associated with the overall HRQoL among substance users, F (30,173) =10.63, $p < 0.0001$, with an Adjusted R^2=0.5873, suggesting that the model's independent variables explained approximately 59.0% of the variation in the HRQoL, **Table 13**.

Specifically, having a mental health condition among substance users was associated with an 18.66 unit decrease in the overall HRQoL score, holding all other variables constant (β=-18.66, t=-9.78, $p < 0.001$. Similarly, a family history of mental illness was associated with a 9.80 unit decrease in HRQoL, again holding other variables constant (β=-9.80, t=-4.08, $p < 0.001$), **Table 13**.

Several variables did not show statistically significant associations with HRQoL ($p > 0.05$) when accounting for other factors, including sex, marital status, education, occupation, recent experience of mental health condition, family history of substance use, family history of mental

illness, place of residence, children status, number of children, family size, spouse education, spouse education, family income, source of income, ethnicity, and household size, (**Table 13**).

Table 13: Multiple linear regression model output for HRQoL among young substance users in West Arsi Zone, Ethiopia, 2024, (N = 204)

Variables	Factors associated with the HRQoL among young substance users (n=204)				
	Physical health	**Psychological health**	**Social relationships**	**Environmental health**	**Overall quality of life**
	Unstandardised B Coefficient with 95% CI, P-value	Unstandardised B Coefficient with 95% CI, P-value	Unstandardised B Coefficient with 95% CI, P-value	Unstandardised B Coefficient with 95% CI, P-value	Unstandardised B Coefficient with 95% CI, P-value
Sex:					
Female	Ref	Ref	Ref	Ref	Ref
Male	-0.38 (95% CI [-5.75, 4.98], p = 0.888)	-1.36 (95% CI [-4.45, 1.72], p = 0.385)	-2.66 (95% CI [-8.91, 3.60], p = 0.403)	-1.93 (95% CI [-5.96, 2.10], p = 0.345)	-1.78 (95% CI [-5.03, 6.37], p = 0.398)
Age in years:					
14-19	Ref	Ref	Ref	Ref	Ref
20-24	-1.77 (95% CI [-7.98, 4.44], p = 0.574)	0.90 (95% CI [-2.73, 4.53], p = 0.626)	-1.81 (95% CI [-9.16, 5.54], p = 0.627)	3.80 (95% CI [-0.94, 8.54], p = 0.115)	0.38 (95% CI [-4.50, 5.26], p = 0.879)
25-29	-4.66 (95% CI [-11.41, 2.09], p = 0.175)	-0.39 (95% CI [-4.34, 3.55], p = 0.844)	-4.03 (95% CI [-12.02, 3.95], p = 0.320)	4.80 (95% CI [-0.34, 9.95], p = 0.067)	-0.97 (95% CI [-6.27, 4.33], p = 0.719)
Participant Education					
Not attended formal education	-0.46 (95% CI [-7.65, 6.73], p = 0.900)	1.72 (95% CI [-2.52, 5.96], p = 0.425)	-0.47 (95% CI [-9.05, 8.11], p = 0.914)	1.66 (95% CI [-3.87, 7.19], p = 0.554)	0.67 (95% CI [-5.03, 6.37], p = 0.817)
Attended basic formal education	-3.60 (95% CI [-9.85, 2.65], p = 0.257)	-0.46 (95% CI [-4.09, 3.16], p = 0.802)	-4.53 (95% CI [-11.87, 2.80], p = 0.224)	0.86 (95% CI [-3.87, 5.59], p = 0.720)	-1.94 (95% CI [-6.81, 2.93], p = 0.433)
Attended secondary school	-0.77 (95% CI [-7.00, 5.34], p = 0.804)	-0.40 (95% CI [-3.94, 3.14], p = 0.823)	-1.21 (95% CI [-8.38, 5.96], p = 0.740)	2.15 (95% CI [-2.47, 6.77], p = 0.360)	0.01 (95% CI [-4.75, 4.77], p = 0.997)
Attended higher education	Ref	Ref	Ref	Ref	Ref
Marital Status:					
Single	-1.01 (95% CI [-6.05, 4.03], p = 0.693)	-1.17 (95% CI [-4.09, 1.74], p = 0.427)	-0.68 (95% CI [-6.58, 5.22], p = 0.821)	-0.69 (95% CI [-4.49, 3.11], p = 0.721)	-0.79 (95% CI [-4.71, 3.13], p = 0.691)
Ever married	Ref	Ref	Ref	Ref	Ref
Participant Occupation:					
Farmer	3.01 (95% CI [-4.81, 10.84], p = 0.449)	2.14 (95% CI [-6.64, 2.37], p = 0.350)	7.81 (95% CI [-1.31, 16.93], p = 0.093)	-2.55 (95% CI [-8.43, 3.33], p = 0.393)	2.60 (95% CI [-3.46, 8.66], p = 0.398)
Employed	Ref	Ref	Ref	Ref	Ref
Student	-1.40 (95% CI [-7.99, 5.18], p = 0.675)	-0.09 (95% CI [-3.70, 3.88], p = 0.963)	3.09 (95% CI [-4.59, 10.77], p = 0.429)	-0.57 (95% CI [-5.52, 4.38], p = 0.821)	0.30 (95% CI [-4.80, 5.40], p = 0.907)

Unemployed	0.03 (95% CI [-5.75, 5.81], p = 0.993)	-0.50 (95% CI [-3.83, 2.83], p = 0.768)	4.60 (95% CI [-2.15, 11.34], p = 0.180)	-0.38 (95% CI [-4.73, 3.96], p = 0.861)	0.93 (95% CI [-3.54, 5.41], p = 0.681)
Place of residence:					
Rural	-0.77 (95% CI [-5.16, 3.63], p = 0.731)	-0.11 (95% CI [-2.63, 2.41], p = 0.931)	-1.39 (95% CI [-6.50, 3.71], p = 0.590)	-2.92 (95% CI [-6.21, 0.36], p = 0.081)	-1.19 (95% CI [-4.58, 2.20], p = 0.490)
Urban	Ref	Ref	Ref	Ref	Ref
Religion:					
Orthodox	-12.19 (95% CI [-23.37, -1.02], p = 0.033*)	-5.61 (95% CI [-12.74, 1.51], p = 0.122)	-11.93 (95% CI [-26.36, 2.50], p = 0.105)	-6.78 (95% CI [-16.09, 2.51], p = 0.152)	-8.78 (95% CI [-18.36, 0.80], p = 0.072)
Islam	-9.83 (95% CI [-20.99, 1.33], p = 0.084)	-4.47 (95% CI [-11.62, 2.68], p = 0.219)	-9.96 (95% CI [-24.45, 4.52], p = 0.176)	-8.39 (95% CI [-17.73, 0.94], p = 0.078)	-7.81 (95% CI [-17.43, 1.81], p = 0.111)
Protestant	-13.94 (95% CI [-25.38, -2.50], p = 0.017*)	-6.18 (95% CI [-12.92, 0.56], p = 0.072)	-14.55 (95% CI [-28.20, -0.90], p = 0.037*)	-9.06 (95% CI [-17.86, -0.26], p = 0.044*)	-10.76 (95% CI [-19.82, -1.69], p = 0.020*)
Catholic	Ref	Ref	Ref	Ref	Ref
Household size:					
Small family	Ref	Ref	Ref	Ref	Ref
Medium family	-1.19 (95% CI [-6.32, 3.94], p = 0.648)	0.36 (95% CI [-2.58, 3.31], p = 0.808)	-3.08 (95% CI [-9.05, 2.88], p = 0.309)	-3.07 (95% CI [-6.92, 0.77], p = 0.116)	-1.78 (95% CI [-5.74, 2.18], p = 0.377)
Large family	2.82 (95% CI [-3.23, 8.88], p = 0.359)	1.04 (95% CI [-2.47, 4.56], p = 0.558)	0.16 (95% CI [-6.96, 7.28], p = 0.965)	-1.62 (95% CI [-6.21, 2.97], p = 0.488)	0.44 (95% CI [-4.29, 5.14], p = 0.854)
Source of family income:					
Agriculture	3.50 (95% CI [-3.06, 10.06], p = 0.294)	3.50 (95% CI [-0.42, 7.43], p = 0.080)	5.07 (95% CI [-2.87, 13.03], p = 0.210)	7.20 (95% CI [2.07, 12.32], p = 0.006*)	5.31 (95% CI [0.03, 10.59], p = 0.049*)
Trade	6.61 (95% CI [-0.63, 13.86], p = 0.073)	5.32 (95% CI [1.05, 9.59], p = 0.015*)	8.00 (95% CI [-0.63, 16.45], p = 0.069)	3.05 (95% CI [-2.52, 8.62], p = 0.282)	6.06 (95% CI [0.32, 11.80], p = 0.038*)
Private business	1.29 (95% CI [-5.29, 7.88], p = 0.699)	1.60 (95% CI [-2.23, 5.43], p = 0.411)	3.37 (95% CI [-4.38, 11.14], p = 0.392)	2.12 (95% CI [-2.88, 7.12], p = 0.404)	2.49 (95% CI [-2.66, 7.64], p = 0.341)
Salary	Ref	Ref	Ref	Ref	Ref
Level of perceived social support:					
Low	-1.49 (95% CI [-13.42, 10.44], p = 0.806)	1.34 (95% CI [-5.51, 8.20], p = 0.699)	-1.65 (95% CI [-15.54, 12.23], p = 0.814)	9.18 (95% CI [0.23, 18.13], p = 0.044*)	1.95 (95% CI [-7.27, 11.17], p = 0.677)
Moderate	4.44 (95% CI [-7.06, 16.00], p = 0.447)	4.28 (95% CI [-2.36, 10.93], p = 0.205)	4.00 (95% CI [-9.48, 17.45], p = 0.560)	11.80 (95% CI [3.07, 20.43], p = 0.008*)	6.34 (95% CI [-2.60, 15.28], p = 0.163)
High	Ref	Ref	Ref	Ref	Ref
Mental health conditions					
No	Ref	Ref	Ref	Ref	Ref
Yes	-23.93 (95% CI [-28.69, -19.17], p < 0.001*)	-7.32 (95% CI [-10.85, -3.80], p < 0.001*)	-31.86 (95% CI [-37.54, -26.19], p < 0.001*)	-9.15 (95% CI [-12.81, -5.50], p < 0.001*)	-18.66 (95% CI [-22.43, -14.89], p < 0.001*)
Family history of substance use:					

No	Ref	Ref	Ref	Ref	Ref
Yes	-2.15 (95% CI [-6.44, 2.14], p = 0.324)	-1.93 (95% CI [-4.42, 0.55], p = 0.126)	-2.81 (95% CI [-7.85, 2.23], p = 0.273)	-2.20 (95% CI [-5.45, 1.04], p = 0.182)	-2.40 (95% CI [-5.75, 0.94], p = 0.159)
Family history of mental illness:					
No	Ref	Ref	Ref	Ref	Ref
Yes	-14.42 (95% CI [-20.42, -8.43], p < 0.001*)	-7.33 (95% CI [-10.85, -3.80], p < 0.001*)	-8.75 (95% CI [-15.89, -1.60], p = 0.017*)	-8.04 (95% CI [-12.64, -3.43], p < 0.001*)	-9.80 (95% CI [-14.54, -5.06], p < 0.001*)
Annual family income in Birr:					
Low	-4.39 (95% CI [-10.15, 1.37], p = 0.134)	-0.97 (95% CI [-4.29, 2.34], p = 0.563)	-4.50 (95% CI [-11.22, 2.22], p = 0.188)	0.17 (95% CI [-4.16, 4.50], p = 0.939)	-2.42 (95% CI [-6.89, 2.04], p = 0.285)
Medium	-0.03 (95% CI [-5.96, 5.90], p = 0.993)	1.31 (95% CI [-2.10, 4.72], p = 0.451)	0.37 (95% CI [-6.54, 7.29], p = 0.915)	0.80 (95% CI [-3.65, 5.26], p = 0.723)	0.61 (95% CI [-3.98, 5.20], p = 0.792)
High	Ref	Ref	Ref	Ref	Ref
Participants' ethnicity:					
Oromo	Ref	Ref	Ref	Ref	Ref
Amhara	1.32 (95% CI [-6.37, 9.02], p = 0.734)	-0.90 (95% CI [-5.34, 3.53], p = 0.687)	2.28 (95% CI [-6.69, 11.26], p = 0.616)	-2.93 (95% CI [-8.73, 2.73], p = 0.318)	-0.05 (95% CI [-6.02, 5.90], p = 0.985)
Sidama	-0.97 (95% CI [-8.49, 6.55], p = 0.800)	-2.50 (95% CI [-6.83, 1.84], p = 0.257)	0.30 (95% CI [-8.48, 9.08], p = 0.946)	-6.71 (95% CI [-12.37, -1.05], p = 0.020)	-2.46 (95% CI [-8.30, 3.36], p = 0.405)
Wolaita	9.68 (95% CI [-1.79, 21.15], p = 0.097)	3.88 (95% CI [-2.72, 10.49], p = 0.247)	10.06 (95% CI [-3.31, 23.44], p = 0.140)	1.76 (95% CI [-6.86, 10.39], p = 0.687)	6.34 (95% CI [-2.54, 15.23], p = 0.160)
Others	-7.04 (95% CI [-18.17, 4.10], p = 0.214)	-4.13 (95% CI [-10.55, 2.28], p = 0.205)	-9.95 (95% CI [-22.94, 3.04], p = 0.132)	-5.02 (95% CI [-13.39, 3.35], p = 0.238)	-6.53 (95% CI [-15.16, 2.09], p = 0.137)

=P-value less than 0.05

7.6. Discussion

This study investigated the HRQoL among young substance users in the West Arsi zone, Ethiopia. The overall HRQoL score was 54.78 ± 16.73(SD), with the highest mean observed in the psychological domain and the lowest in the environmental domain. The lower scores in the social and environmental domains likely reflect challenges such as financial instability, limited job opportunities, restricted access to essential services, and ongoing political instability in the region (Bratu et al., 2023; Simirea et al., 2022; Tarekegn et al., 2022). Substance use itself may also contribute to these lower scores, as it is often associated with social stigma, isolation, and strained relationships, which weaken social support networks and further diminish HRQoL in these domains (Ebrahim J et al., 2024; Volkow & Blanco, 2023). Interestingly, the relatively higher scores in the psychological domain may suggest that some protective factors, such as coping mechanisms, resilience, or peer support, exist among this population.

Our findings align with previous studies, both locally (Tarekegn et al., 2022) and internationally (Alsubaie et al., 2019; Lee et al., 2020; Sadeghi et al., 2017), which have reported that socioeconomic and cultural factors are closely linked to poor quality of life among substance users. However, the overall HRQoL score in our study (54.8) was slightly higher than that reported in a Northern Ethiopian study (50.2) (Tarekegn et al., 2022). This discrepancy may be attributed to differences in study design and population characteristics; the Northern Ethiopian study focused on younger individuals aged 15–24 from predominantly rural areas, while our study included a broader age range (14–29) and participants from both urban and rural settings. Additionally, regional differences in access to resources, education, and healthcare services may explain the observed discrepancies.

The lower overall HRQoL score among young substance users in this study is consistent with findings from other international studies, which have highlighted the negative impact of substance use on quality of life (Bastiaansen et al., 2005; Sadeghi et al., 2017; Stevanovic et al., 2015). Substance use not only impairs physical and mental well-being but also exacerbates difficulties in social relationships and environmental adaptability, leading to reduced overall quality of life.

In our study, both mental health conditions and a family history of mental illness were significantly associated with HRQoL among young substance users. The combination of substance use and mental health conditions tends to exacerbate difficulties with social engagement and managing

environmental stress (Kassew et al., 2023; Shumye et al., 2019). These compounded challenges can impair social interactions and functionality, and heighten vulnerability, leading to reduced HRQoL (Shumye et al., 2019; Tarekegn et al., 2022). These effects are likely intensified in low-resource settings such as the West Arsi zone, where access to health services, economic constraints, and cultural factors present additional challenges (Kassa et al., 2024; Tarekegn et al., 2022).

In the West Arsi zone, substance use—particularly khat and alcohol—is in some areas rooted in community life, often linked to social gatherings, religious practices, and coping with personal and societal challenges (Mihretu et al., 2020; Wubetu et al., 2020). Many young people perceive substance use as a way to fit in with modern society or manage stress, which can lead to increased consumption (Mihretu et al., 2020; Wondemagegn et al., 2017). This normalisation of substance use can exacerbate underlying mental health conditions, a key contributor to lower HRQoL. In more conservative parts of the region, however, substance use and mental health conditions are often perceived through a lens of stigma, seen as sources of social shame or moral failure (Belete et al., 2021; Douglass et al., 2022). This stigma often prevents young people from seeking support, resulting in isolation and further reductions in HRQoL. As a result, some may turn to substance use as self-medication, creating a cycle of dependency that deepens distress and weakens social well-being (Hunduma, Dessie, Geda, Yadeta, & Deyessa, 2024).

Economic hardship exacerbates these sociocultural challenges, as poverty and unemployment limit access to health services and increase stress levels, especially for young people with limited opportunities (Knifton & Inglis, 2020). These socioeconomic pressures can drive substance use as a coping mechanism. This continued substance use, coupled with the limited availability of health services in the region (Hailemariam et al., 2016; Mitiku, Amsalu, et al., 2024; Tarekegn et al., 2022), restricts timely care, resulting in poorer mental health, and consequently, lower HRQoL. These findings align with broader research linking the combinations of mental health conditions and substance use to reduced HRQoL (Assari & Jafari, 2010; Birkeland et al., 2018; Lee et al., 2020).

Our study found that a family history of mental illness was associated with lower HRQoL among young substance users. While Ethiopian culture values strong family and community support, the stigma surrounding substance use and mental illness can hinder affected individuals and family

members from accessing these networks (Girma et al., 2024). Additionally, a family history of mental illness may increase vulnerability due to genetic predispositions, placing individuals at higher risk of anxiety, depression, and related conditions, which weakens coping mechanisms and resilience (Chinyere Assumpta et al., 2024; Defar et al., 2023; van Sprang et al., 2022). Mental health care in Ethiopia relies heavily on out-of-pocket payments, placing significant financial stress on families already facing limited resources (Arias et al., 2022; Hailemichael et al., 2019). Additionally, in Ethiopia, caregiving responsibilities for mentally ill family members often rest entirely on family members, as there are no government-funded or institutional care centers offering comprehensive support (Andualem et al., 2024; Ayalew et al., 2019). The stigma, biological vulnerability, caregiving responsibilities, limited access to social and institutional support, and economic pressures may explain the decline in HRQoL observed in our study among young substance users with a family history of mental illness. These findings align with several local and international studies (Alemu et al., 2024; Birkeland et al., 2018; Saatcioglu et al., 2008; Tarekegn et al., 2022), which similarly highlight family mental health history as a significant factor associated with the quality of life.

7.7. Strengths and limitations

A key limitation of this study is its cross-sectional nature, which prevents causal inferences. Additionally, self-reporting bias may have influenced responses, as participants might have underreported or overreported substance use, mental health behaviours, and quality of life due to social desirability or recall issues. Furthermore, since the sample of substance users was drawn from a larger research project, the findings are specific to young substance users in the West Arsi zone and may not be fully generalised to other regions of Ethiopia or different socio-cultural contexts. Thus, results should be interpreted and generalised with caution.

A major strength of this study is its comprehensive examination of factors associated with HRQoL. The study also ensured broad participation regardless of literacy levels, employing face-to-face interviews with a standard questionnaire. Additionally, the selection process promoted diversity, and the study achieved a high response rate (99.3%), minimising self-selection bias and enhancing the reliability of findings.

7.8. Conclusion and recommendations

This study assessed HRQoL among young substance users in the West Arsi zone, finding significantly lower scores in the social and environmental domains. Mental health conditions and a family history of mental illness emerged as key contributors.

Future research should include larger samples and explore additional sociocultural, clinical, and environmental factors (e.g., cultural norms, types of substances, access to healthcare, stigma, and family environment) to better understand influences on HRQoL. Longitudinal studies are also needed to uncover causal effects and assess the long-term impact of social and psychological support on HRQoL.

Policy efforts should integrate mental health services with substance use treatment, provide family-focused programs, combat stigma through community awareness, and improve access to affordable care, especially in rural areas. Strengthening social support networks, particularly involving families, is vital for enhancing well-being among young substance users.

Chapter Eight: Finding — Substance users and stakeholders' perspectives

8.1. Chapter overview

The previous chapter presented the health-related quality of life (HRQoL) and its associated factors among young substance users, based on the findings from the preceding substance use survey. This chapter focuses on the qualitative findings of the study. It explores the narratives of young substance users and key stakeholders regarding the initiation of substance use, contributing factors, patterns of escalation and continued use, and the perceived consequences. These insights are presented from the perspectives of young Ethiopian substance users and relevant stakeholders.

8.2. Abstract

Background: Substance use among young people is a growing public health issue in Ethiopia, with significant social, economic, and health consequences. Despite existing interventions, the factors driving substance use and the lived experiences of young users have not been thoroughly explored.

Objective: This study aims to explore the motivations, patterns, and consequences of substance use among Ethiopian youth, as well as the perspectives of key stakeholders involved in substance use prevention and intervention.

Methods: A qualitative study was conducted using semi-structured interviews with young substance users (18-29 years) and focus group discussions with stakeholders, including health professionals, educators, social workers, community elders, and policymakers. Thematic analysis was applied to identify key themes related to substance use initiation, continuation, and consequences.

Results: Seven major themes emerged from the data: early exposure and normalisation of substance use, peer influence and social networks, coping with family conflicts and trauma, economic hardship and unemployment, escalation of use and dependency, and gender roles. Findings highlight that substance use is often introduced within families, reinforced by cultural acceptance and peer networks, and exacerbated by socio-economic challenges. Consequences include deteriorating mental and physical health, social isolation, criminal involvement, and financial instability.

Conclusion: The study provides crucial insights into the socio-cultural and economic drivers of substance use among Ethiopian youth. The findings emphasise the need for integrated, multi-sectoral interventions that address both prevention and harm reduction. Strengthening community-based initiatives, enhancing policy enforcement, and expanding access to mental health services are critical for effective substance use management. The study contributes to evidence-based policymaking and intervention strategies tailored to the Ethiopian context.

Keywords: substance use, young people, youth, Ethiopia, qualitative,

8.3. Introduction

Ethiopia has a predominantly young population (United Nations Population Fund, 2023), presenting a critical opportunity for socioeconomic development (Admassu et al., 2022; FDRE Ministry of Youth and Sports, 2004). While the health and well-being of these young people are vital not only for their personal development but also for the nation's overall progress, the increasing use of psychoactive substances among young Ethiopians has become a growing public health concern, with significant social, economic, and health significance (Kassew, 2023; Roba et al., 2021).

Substance use among young Ethiopians is on the rise, with khat, alcohol, cannabis, and tobacco being the most widely used (Roba et al., 2021; Shifa et al., 2025b). A meta-analysis of 32 studies found that 37.63% of students currently use substances, with alcohol (27.6%), khat (17.2%), and tobacco (9.7%) being the most prevalent (Roba et al., 2021). Another review showed a lifetime prevalence of 52.5%, with khat (24.7%), alcohol (46.2%), and cigarettes (14.7%) being the most common (Roba et al., 2019). Additionally, a review indicated lifetime and current substance use rates of 31.5% and 23.9%, respectively, with lifetime rates of alcohol (33.9%), khat (24.7%), and cigarettes (20.4%) (Abajobir & Kassa, 2019). A recent study in the West Arsi zone found a 48.1% lifetime prevalence, with 76.5% using khat, 49.0% consuming alcohol, 33.3% using tobacco, and 23.0% using cannabis (Shifa et al., 2025b).

Though less common, there is evidence of illicit drug use in Ethiopia, including benzene, mastish, cocaine, opioids, cannabis, sleeping pills, amphetamines, and shisha (Belete et al., 2023; Gebremariam et al., 2018; Hunduma, Dessie, Geda, Assebe Yadeta, & Deyessa, 2024; Sorato et al., 2020; Tullu et al., 2018). Ethiopia is also recognised as one of the main illicit drug trafficking routes to some African countries, Europe and certain Asian countries (Onaolapo et al., 2022;

Sorato et al., 2020). It is believed that Ethiopia serves not only as a transit point but also as a destination for some of these drugs, particularly heroin and cocaine, which have begun to penetrate the local market.

Studies in Ethiopia have identified various interconnected factors that contribute to young people's substance use, including sociocultural norms, economic hardship, family dynamics, and peer influences (Hailemariam, 2021; Roba et al., 2021). Substances like khat and alcohol are deeply embedded in Ethiopian social traditions, often consumed during social and cultural gatherings (Fentie et al., 2020; Fentie et al., 2022). Financial stress and unemployment also drive many toward substance use as a coping mechanism (Hailemariam, 2021; Mokona et al., 2020). Demographic factors such as age, gender, marital status, education, and residence also play a role, with urban youth facing greater access and limited education or being unmarried increasing their susceptibility to substance use (Roba et al., 2021).

Moreover, psychoactive substances such as khat, cannabis (ganja), alcohol, and tobacco are not only widely consumed but also locally produced in Ethiopia. Khat, a green leafy stimulant native to East Africa, is widely cultivated and exported in Ethiopia (Onaolapo et al., 2022). Additionally, traditional alcoholic beverages like *tej*, *tella*, and *arekie* are integral to Ethiopian culture, often associated with weddings, festivals, and other communal events (Fentie et al., 2020; Fentie et al., 2022). While these substances are culturally significant, their widespread availability and social acceptance contribute to increasing use among young people.

Substance use among young people affects physical health and mental health as well as social and economic stability. In Ethiopia, studies have linked substance use to malnutrition (Nigatu et al., 2024), tuberculosis (30%) (Necho et al., 2021), mental health conditions (48%) (Shifa et al., 2025a), anxiety (48%) (Melkam et al., 2024), and psychotic symptoms (24%) (Kassew et al., 2023) among substance users. Socially, substance use often results in isolation from family and society, involvement in criminal activities, poor academic and occupational performance, and engagement in risky sexual behaviours (Berhanu et al., 2017; Mekonen et al., 2017). Economically, it is associated with unemployment, financial instability, and limited career opportunities (Mokona et al., 2020).

In response to the growing burden of substance use, various stakeholders, including government agencies, non-governmental organisations, and community-based initiatives, have attempted to

address substance use and related mental health conditions in Ethiopia (Federal Ministry of Health of Ethiopia, 2020; Fekadu & Thornicroft, 2014). Public awareness campaigns, school-based interventions, and limited rehabilitation works have been implemented, but their coverage, impact, and sustainability remain insufficient due to limited resources, weak institutional frameworks, and short-term implementation. Cultural barriers and a lack of evaluation also reduce their effectiveness. The Ethiopian Food and Drug Authority has made regulatory efforts to control the distribution of substances like tobacco and alcohol. However, enforcement remains challenging due to limited resources, weak monitoring systems, poor stakeholder coordination, and the influence of corruption and informal markets (Weldeyohanes et al., 2021). The Federal Ministry of Health of Ethiopia (FMoH-E) has integrated substance use prevention into its broader national mental health strategy, focusing on early intervention, rehabilitation, and regulatory enforcement (Federal Ministry of Health of Ethiopia, 2020). Efforts are also being made to regulate substance sales, strengthen community-based interventions, and improve access to mental health services.

Despite the growing concern, there is limited research on the qualitative experiences of young substance users and their social contexts. Most studies focus on prevalence rates and health impacts but fail to deeply explore the underlying social, economic, and psychological drivers of substance use (Abajobir & Kassa, 2019; Roba et al., 2019; Roba et al., 2021). This study addresses this gap by providing insights from semi-structured interviews and focus group discussions with young substance users and key stakeholders. By highlighting personal narratives and lived experiences, this research contributes to a more comprehensive understanding of substance use patterns, motivators, and consequences. The findings will inform more culturally relevant, evidence-based interventions and policy recommendations tailored to the Ethiopian context.

8.4. Methods

8.4.1. Study setting, context, and design

This study was conducted in the West Arsi zone of Oromia Regional State, Ethiopia, located in the central-southern part of the country, from May to September 2022. Shashemene, the zonal capital, is situated approximately 250 kilometres south of Ethiopia's capital, Addis Ababa. The zone comprises thirteen districts and two town administrations, with an estimated population of three million as of mid-2022. Young people aged 10-29 years make up approximately 1.2 million of the population (Central Statistical Agency of Ethiopia, 2022). The zone's public health

infrastructure includes seven hospitals and eighty-seven health centres, providing essential health services, including mental health and substance use-related interventions.

This research explored the experiences of young substance users and the perceptions of stakeholders regarding substance use and its consequences. Through semi-structured interviews with young substance users and focus group discussions (FGDs) with stakeholders, the study aimed to explore the perceived drivers, patterns, and impacts of substance use among young people. A framework approach was employed to guide the thematic analysis of the data (Gale et al., 2013).

8.4.2. Recruitment and sampling

Two participant groups (young substance users and stakeholders) were recruited for data collection in this study. Young substance users were identified through a prior quantitative survey that screened for substance use among young people aged 14-29 years (Shifa et al., 2025b). Young participants were selected based on reported substance use in the survey, while stakeholders were identified based on their expertise and involvement in substance use prevention, health, education, law enforcement, and religious and community leadership. A non-probability purposive and convenient sampling technique was employed to select semi-structured interviews and FGD respondents.

Although an initial sample size was considered for ethical and logistical purposes, the final number of participants for both interviews and FGDs was not fixed in advance. Instead, recruitment was guided by the principle of data saturation, whereby data collection continued until no substantially new themes or insights emerged. This approach ensured that the qualitative data were both adequate in breadth (capturing diverse perspectives) and rich in depth (allowing nuanced exploration of the phenomenon) (Saunders et al., 2018). A total of eight interviews and five FGDs were conducted.

Semi-structured interview

Participants for the semi-structured interviews were recruited from the survey population of the preceding substance use survey (Shifa et al., 2025b). Young people identified as substance users were contacted through a confidential pool of addresses following preliminary survey analysis. Eligibility criteria included reporting the use of at least two substances, being aged 18-29 years,

and residing in the study area for at least six months (Ethiopian neighbourhood residency standard) (Alamirew et al., 2025) and providing informed consent and willingness to participate. Accordingly, eight participants, consisting of one woman and seven men, were included in the semi-structured interview data collection fieldwork.

Focus group discussion (FGD)

FGDs were conducted to explore stakeholders' experiences and understanding of the patterns, drivers, and consequences of substance use among young people, as well as existing supports and interventions. A total of 37 stakeholders (10 women and 27 men) participated in the FGDs. Participants were invited from various public sectors at the zonal and woreda levels (including education, health, social affairs, women and children affairs, university, hospital, job creation and vocational bureau, as well as religious and community elders). One of the FGDs consisted exclusively of women experts. Each FGD included between six and ten participants, ensuring a diversity of perspectives and experiences.

The selection of institutions and participants followed a purposive sampling method based on the mix and relevancy of the stakeholders' roles and their knowledge of the subject area. This approach ensured the inclusion of participants with diverse insights and experiences. Informed consent was obtained from the respondents before participation.

Table 14: Summary of interview and focus group participants' profile, Ethiopia, 2024

Participant Group	Number of Participants	Age Range	Sex (M/F)	Education	Religious Affiliation	Work Experience	Key Characteristics
Young People (Interview)	8	18- 29	7/1	2 junior school, 6 high school	6 Muslim, 2 Orthodox Christian	NA	All are single; All are substance users
Stakeholders (FGD)	37	24-67	27/10	51.4% first degree or higher, 18.9% college diploma, 13.5% high school, 16.2% primary education	Not specified	3-35 years; 2 community elders had no formal	Professionals from health, education, social affairs, child welfare, law

						employment	enforcement, religious/community leaders; One FGD was all female

M / F = Male / Female *NA = Not applicable* *FGD = Focus Group Discussion*

8.4.3. Data collection instruments

Data were collected using two related but separate semi-structured theme guides – one prepared for the individual interviews and another for the focus group discussions. The guides were developed in English, based on the study objectives (***See Appendix 2A and 2B***). These semi-structured guides facilitated data collection by offering direction while allowing participants to discuss their ideas in their own words and to introduce additional relevant topics as necessary.

The semi-structured interview guide for young substance users focused on their experiences with substance use, substance use motivations, initiation pathways, patterns, and consequences, its impact on their lives, and their perceptions of available support. The FGD guide for stakeholders examined their perspectives on substance use trends, risk factors, intervention efforts, and policy gaps.

8.4.4. Data collection procedure

Semi-structured interviews with young people were conducted to gain a deeper understanding of the pattern of their substance use, from initiation to its overall impact on their lives. Each of the eight participants participated in a one-on-one semi-structured interview, which lasted between 45 to 60 minutes. The individual interviews were conducted in a private and comfortable setting, ensuring confidentiality and creating an environment conducive to open discussion. An audio recording of the interviews was carried out with the participants' consent.

The FGDs also followed a semi-structured approach, enabling open and interactive discussions about the prevalence of substance use, types of substances commonly consumed in their community, drivers of substance use (social, cultural, spiritual, environmental, economic), related consequences, and policy and regulation issues. Broad and general questions encouraged participants to share their experiences, opinions, personal values, attitudes, and beliefs.

Each FGD was conducted in person and led by a trained facilitator, with a moderator present to manage the logistics and ensure discussions ran smoothly. Audio recordings were made to facilitate accurate data analysis. A total of five FGDs, each involving five to ten participants, were conducted, with durations ranging from 30 minutes to 2 hours and 40 minutes. The discussions took place at times and locations preferred by participants to ensure comfort and accessibility.

All interviews and FGDs were conducted in Afan Oromo (the local language) by experienced field researchers. The sessions were audio-recorded, and the researcher subsequently transcribed and translated the recordings into English. Field notes were also taken during the process to ensure consistency and to supplement audio recordings. A relaxed and conversational strategy was employed throughout to foster open communication and interaction among participants.

Invitations were extended to the selected stakeholders, and written informed consent was obtained from each participant. A support letter was obtained from Madda Walabu University, Shashemene Campus, and sent to each woreda administration office. The Woreda administration office then notified the relevant sectors to assign participants.

8.4.5. Data management and analysis

A thematic analysis was employed for the data analysis, following the Braun and Clarke six-phase approach. This flexible method allows analysis across various theoretical and epistemological perspectives (Braun & Clarke, 2021). Data collected via digital recordings were transcribed and translated from the local language into English before analysis. The six phases outlined by Braun and Clarke and adopted in this study were:

Phase 1) **Familiarisation with the data**: The analysis began with repeated readings of the transcripts from FGDs and individual interviews to ensure a deep understanding of participants' narratives. Initial reflections were documented, and key excerpts were reviewed and discussed collaboratively as a team to capture emerging insights.

Phase 2) **Generating initial codes**: The next step involved systematic coding, where we systematically developed initial codes by identifying text segments relevant to the research questions. At this stage, manual coding was used to highlight meaningful phrases, sentences, or paragraphs related to substance use. To ensure consistency, team discussions helped refine and standardise the coding process.

Phase 3) **Searching for themes**: Following the coding process, we began grouping related codes into broader themes, reflecting patterns and relationships within the dataset. Team meetings facilitated discussions on potential themes and their interconnections, leading to the identification of seven key themes (See **Figure 11**).

Phase 4) **Reviewing themes**: In this phase, we refined the identified themes to ensure they were coherent, distinct, and aligned with the data. Each theme was cross-checked against the coded extracts and the entire dataset to ensure it accurately represented participants' experiences and perspectives. Ambiguities were resolved through discussions within the team, where we collectively evaluated whether the themes captured the essence of the data without redundancy or overlap.

Phase 5) **Defining and naming themes**: Once the themes were finalised, we defined and named them to ensure they clearly conveyed their essence. We provided detailed descriptions of each theme and identified representative quotations to illustrate their meaning. As a team, we worked together to refine the wording and ensure that the themes were grounded in the data while being relevant to the research questions.

Phase 6) **Writing up**: The final phase involved integrating the themes into a cohesive narrative for the study's results and discussion sections. This required linking the themes back to the research questions and situating them within the broader literature. During this process, we worked collaboratively to ensure that the findings were presented clearly, with appropriate context and interpretation. Representative quotes were carefully selected to bring the participants' voices into the final report, highlighting the lived experiences and nuances captured in the data.

While initial coding was conducted manually to ensure familiarity with the data, NVivo software (version 12) was later employed for systematic line-by-line coding. Using NVivo strengthened the reliability of the analysis through a more structured approach to data organisation and theme development (Zamawe, 2015). An inductive thematic approach was used to generate categories and overarching themes, ensuring that findings were grounded in the data.

8.5. Ethics approval and consent to participants

All participants were provided with information regarding the study in their preferred language to ensure comprehension. Participants were given sufficient time to ask questions and reflect on the

information provided. Written informed consent was obtained from each participant, and they were informed that they were free to discontinue or withdraw from the study at any time without negative consequences.

Ethics approval was obtained from the Health and Medical Research Ethics Committee at the University of Technology Sydney (reference number: ETH23-7890) and the Campus Research Ethics Review Committee of Madda Walabu University, Shashemene Campus, Ethiopia (reference number: RCSTT/34/2015).

Participants were informed of the voluntary nature of their participation, provided with a participant information sheet, and requested to complete consent forms if they wished to participate. Assurances of confidentiality were given, emphasising the participant's ability to terminate the interview at any point without repercussions. Participants were also informed that the study's researchers were independent of healthcare, educational, and other social service facilities and that their decision to participate or not would not impact their service utilisation in any way.

8.6. Findings

8.6.1. Overview

The qualitative component comprised eight semi-structured interviews with young substance users and five focus group discussions (FGDs) with 37 stakeholders. Interview participants were single, aged 18–29, and mostly male. Stakeholders, aged 24–67, came from diverse sectors, including health, education, social services, law enforcement, and community leadership. Their professional backgrounds ranged from psychologists and social workers to police officers and religious leaders. One FGD included only women experts. Participants' demographic and professional characteristics are detailed in **Table 14**.

8.6.2. Thematic analysis

The analysis of data from semi-structured interviews and focus group discussions results in the development of seven broader themes (see **Figure 11**), framed under three major concepts, including establishment of the problem (substance use), continuation of substance use, and results (effects) of substance use. The seven themes include early exposure and normalisation of substance use, peer influence and social networks, coping with family conflicts and trauma, economic hardship and unemployment, escalation of use and subsequent dependency, and consequences of

substance use, and gender roles. Under each theme, multiple subthemes based upon more specific issues are discussed.

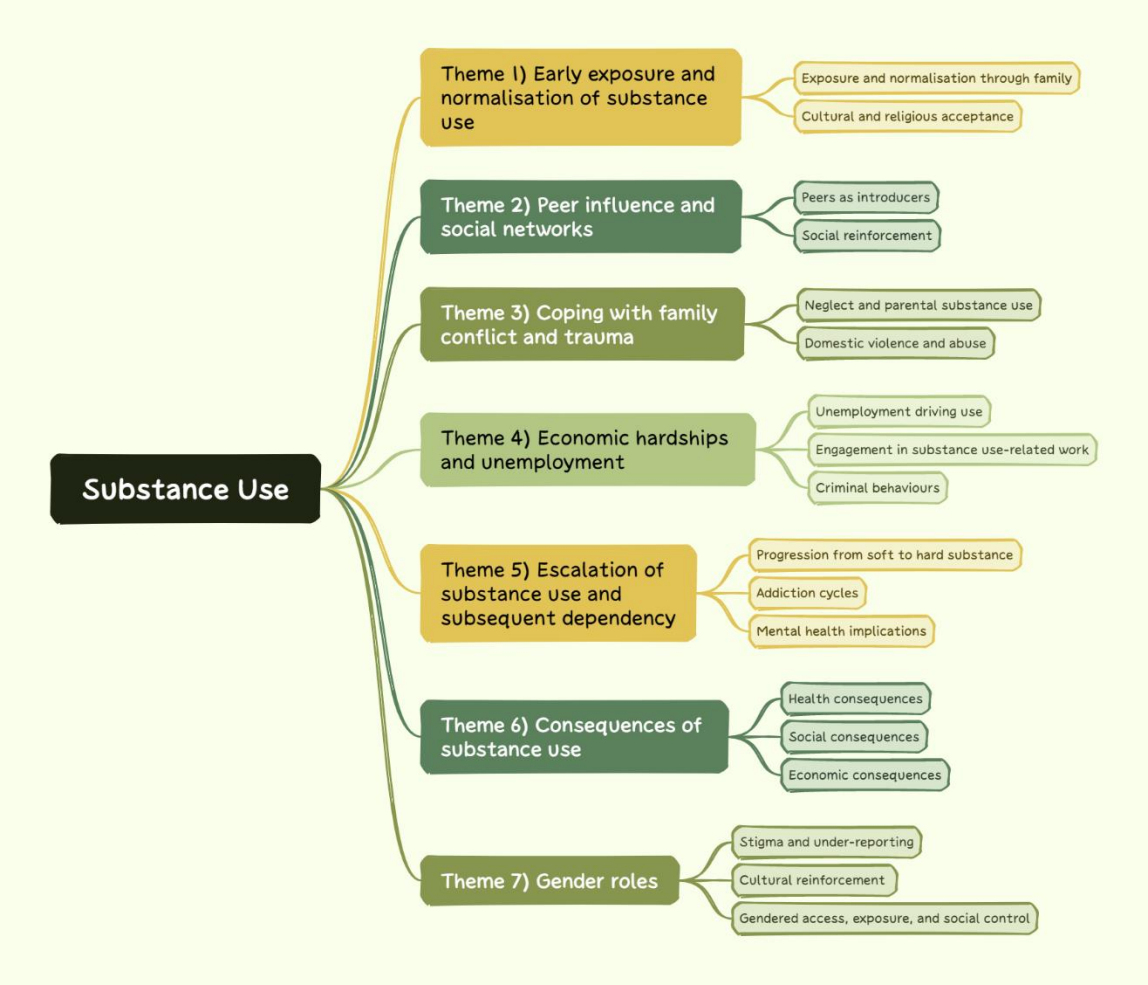

Figure 11: Visual representation of thematic analysis.

- **Concept 1: Establishment of substance use** - this concept includes two themes that describe how young people are initially introduced to substances and how substance use becomes accepted and normalised within their immediate social environments.

Theme 1) Early exposure and normalisation of substance use, and

Theme 2) Peer influence and social networks.

Theme 1: Early exposure and normalisation of substance use

This theme reflects how both young people in interviews and stakeholder participants in focus group discussions described substance use as being introduced and normalised within families and communities, shaping perceptions from an early age. Young participants often shared personal experiences of growing up in environments where substance use was modelled by family members and accepted as part of everyday life. Meanwhile, stakeholder participants, particularly zonal experts and community members, emphasised broader intergenerational and cultural dynamics that reinforced this normalisation, including religious and communal practices involving substances such as khat and alcohol. Together, these accounts suggest that early exposure through family and the wider cultural context may contribute to habitual use and potentially to dependency later in life.

This theme houses two subthemes: exposure and normalisation through family, cultural and religious acceptance.

Subtheme 1.1: Exposure and normalisation through family – Many young people described being introduced to substances within their family environment, where substance use was modelled by relatives and implicitly or explicitly accepted as part of everyday life. A strong pattern of early exposure emerged, where substance use became normalised through two primary mechanisms - direct exposure within family structures and through the transmission of cultural acceptance of substance use.

A 19-year-old male substance user from Shashemene described how substance use was widespread in both his community and family, noting that he was exposed to it from an early age. He stated:

> "*Substance use is widespread in the community where I grew up, including within my own family. Many of my family members use substances, so I was exposed to it from my early age*." (IDI#04, M19)

Similarly, a 19-year-old woman substance user described how her father's substance use exposed her to substance use at an early age, leading her to leave home at a critical time in her education. She described as:

> "*My father chews khat, smokes cigarettes, and drinks alcohol, but he doesn't care about us. He spends his money on addiction and relationships with other women instead of supporting his family. I left home at 15*." (IDI#06, F19)

Moving from the data gathered from the interviews with young people to the analysis of the FGD data, we see some experts identifying the intergenerational transmission of substance use, noting that when parents use substances openly, children internalise these behaviours as acceptable within their family structures and wider society:

> "*I can see that substance use is learned within families. Some parents use substances in front of their children, who then grow up wanting to imitate them*." (FGD#05, Zonal Expert, P7)

Another expert from the same group reinforced this view, emphasising that early initiation of substance use among young people often stems from family influence:

> "*Children and teenagers want to practice or imitate what they observe in their family in the first place. If a father uses khat at home, there is a tendency for children to imitate what they see at home*." (FGD#05, Zonal Expert, P4)

Subtheme 1.2: Cultural and religious acceptance– Several stakeholder participants explained that substance use is reinforced by broader cultural and religious narratives that frame substances like khat and alcohol as socially acceptable, and at times, morally justified. These substances were described as historically embedded in religious rituals and communal gatherings. This cultural framing, they argued, normalises substance use, contributes to its persistence, and makes it more difficult for young people to perceive it as harmful or to disengage from it.

Participants also reflected on the historical and ceremonial use of khat, noting its deep cultural roots and former religious associations. It was traditionally reserved for elders and specific community rituals, where its use was seen as a sign of reverence and social cohesion. As one religious leader explained:

> "*In earlier times, khat was primarily used by elders and had cultural norms. It was part of certain ceremonies before religious teachings made it clear that substance use is haram... People would visit places like Sheik Husein and Abalkasim—named after respected religious figures—where they gathered to chew khat in a show of respect*." (FGD#02, Religious Leaders, P3)

The findings also showed that some religious leaders defended the production and availability of substances like khat, demonstrating how cultural and economic interests can override health concerns. This defensiveness indicates the deep social and symbolic importance of khat within the community. As one participant explained:

> "*Even when the government speaks about [khat's] harmful effects, people, including religious scholars, become defensive. You may recall the distress in our community last year when the government raised concerns... We even saw respected religious scholars... defending it by linking it to economic benefits.*" (FGD#05, Zonal Expert, P8)

A participant in the exclusive women's focus group in Shashemene highlighted how alcohol consumption among young people has become increasingly normalised, particularly among boys:

> "*Alcohol was once reserved for special occasions, but now young boys drink arekei like water*." (FGD#06, Women FGD)

Many participants, particularly those involved in expert focus groups, described how the risks associated with certain substances, such as khat and alcohol, are often downplayed due to their deep social and cultural embeddedness. According to these participants, religious and cultural traditions reinforce the perception of these substances as integral to community life. Participants viewed this widespread acceptance as facilitating both early initiation and sustained use among young people. An example of how this was explained in the qualitative fieldwork comes from a participant from the zonal expert focus group who explained how khat use, in particular, is framed within religious and cultural norms, making it more socially acceptable. He stated:

> "*This is a common practice in our community, chewing at home. People chew at home to practice in the name of making du'a (prayer) as khat has long been linked to religious and cultural practices. In fact, when friends plan to chew together, they often phrase it as, 'Can we make du'a today?' which literally means, 'Can we bless each other today?' but is actually a way of asking to chew khat together. Because of this cultural framing, many people do not even consider it addictive or believe that consuming small amounts is religiously permissible*." (FGD#05, Zonal Expert, P4)

Theme 2: Peer influence and social networks

Beyond family influence, the qualitative data also shows that peers play a significant role in shaping substance use behaviours amongst young people in the West Arsi zone. This theme identified within the data emphasises how social networks introduce young people to substance use and sustain their engagement through peer pressure and reinforcement. It appears that many young individuals do not begin using substances out of mere curiosity but are influenced by social expectations, peer norms, and the pressure to maintain status within their peer circles. Peer influence often extends beyond initial exposure, as group dynamics foster environments where substance use is normalised, socially reinforced, and even encouraged.

This theme is divided into two subthemes: Peers as introducers of substance use and social reinforcement of substance use

Subtheme 2.1: Peers as introducers of substance use – Peer networks serve as a major source of substance use initiation for many young people. Many participants reported their first experiences with substances through friends, even without personal curiosity.

A 29-year-old male substance user shared how peer influence played a key role in his initiation into substance use during his early life:

> "*I started using substances when I was in grade 6. My friends invited me to try cigarettes first, then other substances followed*." (IDI#01, M29)

Similarly, another 28-year-old interviewed substance user stated his friend's influence in his substance initiation as:

> "*I was first introduced to Ganja in school, around 17 or 18, by a Jamaican friend*." (IDI#07, M28)

Peers play a role in introducing new users to substances like khat. In some contexts, there is a structured initiation process, particularly in settings where young people are in high concentration, such as educational institutions. This dynamic is particularly evident in group settings where substance use is ritualised, creating a sense of belonging. One participant described a practice called the "*Yemasketebe program,*" where young people are introduced to substance use during their time in educational settings. This peer-driven introduction fosters normalisation and social reinforcement of substance use among young people. He explained:

> "*There is a practice called **'Yemasketebe program**,' where young people introduce a new friend to khat chewing for the first time. This initiation is common in educational institutions, where peers create a welcoming atmosphere to encourage the newcomer to try khat*." (FGD#05, Zonal Expert, P8)

Another 29-year-old male substance user shared his experience of how peers influenced his substance use history:

> "*I was 21 years old when I started using substances. I first started chewing khat with my friends while working at the bus station. After that, it became difficult for me to stop. Even others started using substances by learning from me*." (IDI#03, M29)

The presence of senior users within these groups was often seen by the participants as playing a mentoring role, guiding newer members in their substance use journey. In some cases, those who were once introduced to substances by their peers later become the initiators themselves, perpetuating a cycle of peer-driven recruitment into substance use.

Subtheme 2.2: Social reinforcement of substance use- Beyond the initial introduction to substances, the qualitative fieldwork also reveals that peer networks play an important role in maintaining and further normalising substance use. Continued engagement, if reinforced as a result of peer pressure through social interaction and group dynamics, can lead to the maintenance of the behaviour, as young people feel the need to conform to the expectations of their social group to maintain their social standing within a group. A 28-year-old male substance user explained:

> "*When all your friends are using, it feels strange not to join. They make fun of you if you don't*." (IDI#05, M28)

The "***Yemasketebe program***" discussed under subtheme 1 above further illustrates this dynamic of social reinforcement. As explained by some participants, newcomers to substance use are often welcomed into such groups through organised gatherings, with their substance use initially financially supported by the group, with the expectation that the newcomer will later contribute to helping finance the substance use of the wider group. Such programs highlight the institutionalisation of substance use within peer networks, where rituals and group expectations shape individual behaviours. Participation in these practices is not just about consuming substances but also demonstrating loyalty and commitment to the group. In this way, substance use is

transformed from an individual habit into a collective social practice, making disengagement not only a personal challenge but a socially consequential act. As one participant described this process:

> "*There is a practice called **'Yemasketebe program**,' where young people introduce a new friend to khat chewing, often organising welcoming gatherings and covering the cost, expecting the newcomer to later contribute financially. This social obligation reinforces continued use within peer networks*." (FGD#05, Zonal Expert, P8)

While family influence may in some cases set the foundation for early attitudes toward substance use, peer networks often serve as the mechanism that transforms experimentation into a sustained behaviour. Through initiation, reinforcement and social bonding, peers play an important role in embedding substance use within an individual's daily life and social identity.

- **Concept 2: Continuation of substance use** - this concept includes three themes that illustrate the factors contributing to the ongoing and escalating use of substances among young people:

Theme 3) Coping with family conflicts and trauma,

Theme 4) Economic hardship and unemployment, and

Theme 5) Escalation of use and subsequent dependency.

Theme 3: Coping with family conflicts and trauma

Family conflicts, neglect, and traumatic experiences are significant risk factors for substance use among young people that are separate from substance use within the family itself. The qualitative fieldwork reveals that young people sometimes use substances as a coping mechanism to deal with life circumstances, including loneliness, rejection, and an unstable home environment. Furthermore, traumatic events, including adverse childhood experiences, such as neglect, parental substance use, and exposure to domestic violence, not only increase the likelihood of substance use initiation but also contribute to its continuation over time.

This theme, which emerged from analysis of the qualitative data, revolves around how family-related conflicts, neglect, and abuse drive substance use among young people. It is structured into

two subthemes: ‘family neglect’ and parental substance use’, as well as ‘domestic violence and abuse’.

Subtheme 3.1: Family neglect and parental substance use - Many participants described how family conflicts, neglect, and the absence of emotional support shaped their experiences with substance use. Several spoke about growing up in households marked by parental substance use, emotional unavailability, or lack of care, which they associated with feelings of instability, loneliness, and distress. In their accounts, turning to substances was often described as a way of coping with these emotional and relational difficulties. Some participants perceived that, in the absence of stable family support, they became more vulnerable to peer influence or unsafe environments, which they linked to the initiation or continuation of substance use. These narratives suggest that participants viewed disrupted family relationships and emotional neglect as important factors contributing to their substance use trajectories.

Stakeholder informants described various ways in which family neglect and parental substance use shaped young people’s engagement with substances. A religious father emphasised the importance of holistic parental care and how failing to meet basic needs like food, shelter, and emotional support increases children's vulnerability to risky behaviours. He reflected on how neglected children often turn to harmful coping mechanisms:

> *“Many parents fail to recognise that children need more than luck to thrive—they require proper care, including food, clothing, education, and emotional support. Without these, they face neglect and are more vulnerable to homelessness, and often turn to substances such as benzene, mastish, and other substances to cope*.” (FGD#06, Women FGD, P1)

A participant from a woman-only focus group discussion reflected how shifting parenting practice is characterised by reduced supervision and involvement. Noting that traditional forms of parental supervision have weakened, this informant identified these circumstances as an underlying reason for leaving children more exposed to external risks that directly and indirectly affect substance use. She stated:

> “*Substance use in our area may be linked to changing child-rearing practices. Parenting today feels looser, with less supervision, control, and more peer influence. Parental follow-up on schooling is minimal—no one asks where children have been or monitors their*

progress. They leave for school early but often return from elsewhere." (FGD#05, Zonal Expert, P2)

Another zonal expert from a focus group discussion highlighted how the societal consequences of parental substance use can drive children toward substance use. The expert noted that children of parents with alcohol addiction often experience social stigma and societal rejection, further increasing their likelihood of turning to substances for comfort. He stated:

"*Children of parents with alcohol addiction often lose hope for a better future. At school, they are insulted as 'Yesekaram lij,' a term implying neglect or negative influence from their parents' behaviours, which may increase their risk of using substances to cope*." (FGD#05, Zonal Expert, P4)

Participants in the women-only focus group highlighted rural-to-urban migration as a factor contributing to young people's vulnerability to substance use. While migration in search of better education and job opportunities is common in Ethiopia, it was not seen as problematic in itself. However, participants noted that young people often face significant challenges after relocating to cities, such as exposure to unfamiliar peer groups, lack of parental supervision, and academic or economic failure, which increase their risk of engaging in substance use and related risky behaviours. As one participant from the women's focus group explained:

"Children end up on the streets due to family neglect and cultural shifts. They migrate to the city seeking education or peace, but when they fail or face stigma, they avoid returning home, leading to psychological trauma. With no resources or support, they resort to substance use and crime, like stealing, to survive." (FGD#06, women FGD, P4)

Another participant from the same group discussed connecting cultural shifts with changes in parenting styles, emphasising that reduced parental involvement due to work commitments or a lack of awareness contributes to increased substance use among children. She explained:

*"Many cultural practices are fading, affecting how children are raised. Parents, especially working mothers, often lack awareness of what their children are doing, with little oversight on what they watch or engage in. This lack of supervision and control leads children to engage in addiction." (*FGD#06, Women FGD, P5)

Other participants also highlight how economic hardships force children into exploitative environments, including labour-intensive environments and street life, increasing their exposure to substance use through the absence of a stable home environment. It reflects a shift in traditional parenting practices, where instead of providing long-term care and support, some parents rely on their children's labour for financial survival. Indeed, the absence of nurturing care in favour of financial survival exposes young people to harsh environments where they may turn to substances as an escape, as one participant from the women-only FGD explained:

> "*In the past, parents raised their children until 18, but now some use them to make money. Children collect plastic bottles for their mothers to sell, and at night, they take the earnings. This neglect and exposure to street life can lead to substance use as a coping mechanism*." *(*FGD#06, women FGD, P7)

Subtheme 3.2: Domestic violence and abuse - Domestic violence and abuse, both physical and emotional, are significant triggers of substance use. Substance use in this context is not perceived as a personal choice but rather as a direct response to trauma, abuse and instability, serving as a coping mechanism. Some participants explained that when children and young people experience violence, neglect, or conflict within the family, they may choose to leave home to escape the distressing conditions. However, living on the streets or in other unstable environments exposes them to various risks, including substance use and exploitative situations such as engaging in sex work for survival.

A 19-year-old woman interviewee who uses substances shared her personal experience. After experiencing both physical abuse and emotional abandonment, she left home, only to find herself relying on substances to manage the trauma of street life:

> "*I had a difficult relationship with my father. He neglected our family's needs and frequently abused us, often beating me. I left home, lived on the streets and quickly started using substances, having already been exposed to them through my father*." (IDI#06, F19)

This excerpt illustrates how domestic violence can force young people into risky living conditions, where exposure to substance use is heightened. In this case, the respondent not only suffered direct abuse but also witnessed substance use within her family, increasing her susceptibility. Once she

left home, the absence of support systems and the challenges of street life further reinforced her engagement in substance use.

Theme 4: Economic hardship and unemployment - Economic hardship and unemployment were frequently cited by both stakeholders and young people as key drivers of substance use. Participants described how poverty and job loss led to neglect of children's basic needs, limited access to education, and increased family tension, creating conditions where substance use was seen as a coping mechanism. Some also noted that economic pressures pushed children into exploitative work or street life, where they faced peer influence and greater exposure to substance use.

This theme is further structured into three subthemes: Unemployment driving substance use, engagement in substance use-related work, and criminal behaviours

Subtheme 4.1: Unemployment driving substance use - Many participants, including young people and stakeholder informants, described how unemployment contributed to increased substance use among young people. Participants commonly linked boredom, frustration, and lack of economic opportunities to a sense of hopelessness and isolation. Some young people expressed that being unable to find meaningful work left them feeling purposeless and disconnected, which they believed pushed them toward substance use as a form of comfort or escape. Stakeholder participants also highlighted that, in the absence of stable employment, young people often spent more time in unstructured social settings, increasing their exposure to peers who engage in substance use. These accounts suggest that the perceived lack of employment and economic prospects plays a significant role in shaping how some young people understand and respond to their substance use.

A 28-year-old substance user described how unemployment, combined with environmental exposure, makes quitting substance use more difficult:

> "*Whenever I decide to quit, I have nowhere to escape to. Even after this interview, I will run into a friend on the street who reminds me of substances. I would be grateful for an opportunity to work or leave this area for a while*." (IDI#07, M28)

Similarly, a psychiatric nurse who participated in the zonal expert focus group discussion emphasised the role of unemployment as a major driver of substance use. He pointed out that high

young people's unemployment rates, limited job opportunities, and poor work culture create an environment where many young people turn to substances. He stated:

> "*……., there are limited job opportunities relative to the number of young people. This high level of unemployment leaves many young people idle, increasing their vulnerability to substance use*." (FGD#05, Zonal Expert, P9)

Another young man reflected on how unemployment fuels his substance use:

> "*My problem is that I have no work, so I use substances. If I had a job, I would spend my time there*." (IDI#03, M29)

The role of economic hardship, particularly unemployment, in exacerbating family instability and increasing the risk of substance use among young people was conveyed as important amongst a number of participants. One participant, a woman head of the social affairs office, actively involved in the rehabilitation of street children, provides firsthand insights on how economic hardship and family instability can lead to substance use. She explained that unemployment can lead to increased tension within households, reducing parental capacity to provide emotional and financial support and that this instability often pushes young people toward substance use as a coping mechanism. In the absence of stable family structures and economic opportunities, young people may turn to substances as a way to escape stress, manage emotional distress, or even to attain immediate economic survival (e.g., selling substances to support themselves). She explains:

> "*When we interviewed them [young people using substances] after they received psychological check-ups and treatment, many cited unemployment as the primary reason for their substance use, while others pointed to family instability and conflict*." (FGD#06, women FGD, P3)

One participant from a woman-only focus group in Shashemene explained economic hardship-driven substance use among young people in the following ways:

> "*Whether in school or out, many young people use khat nowadays. Some are educated, even earning degrees, but with no jobs, no land, and no family resources, they have no choice but to move to the city. Once here, they find themselves exposed to khat and other substances*." (FGD#06, women FGD, P5)

Subtheme 4.2: Engagement in substance use-related work - While not as common as unemployment-driven use, some young people explained how they became involved in substance-related economic activities, such as selling khat, managing *arakie* houses, or working in bars and small shops that facilitate substance use, to make a living. Given the economic relevance of the khat industry in Ethiopia, some young individuals no doubt enter this trade out of necessity. While these jobs provide a source of income, they also increase exposure to substances, making workers more likely to engage in substance use themselves.

This suggests that some youth engage in substance-related businesses as a survival strategy, making it harder for them to leave that environment. This kind of job opportunity can be an entry point for introducing substance use to some young individuals. One participant in the Negelle Arsi focus group described how individuals are drawn into substance use through their work in substance-related businesses:

> "*Women often facilitate substance use settings, such as khat houses and shops. While managing these places, they frequently engage in substance use themselves, including chewing khat and smoking shisha, usually with men companions*." (FGD#01, Negelle Arsi, P4)

Working in substance-serving environments like shisha houses makes it easier to engage in social or habitual substance use, leading to higher risks of dependency and long-term involvement in the substance economy. Another participant described how they take on various informal jobs to sustain themselves, often working in environments associated with substance use (i.e. shisha house):

> "*We find ways to get money. ….]. We do jobs like washing cars, working in cafeterias, and* ***shisha houses****—whatever we can*." (IDI#06, F19)

Subtheme 4.3: Criminal behaviours - Many participants, including young people and community stakeholders, described a perceived link between substance use and engagement in criminal behaviours. Participants explained that substances such as alcohol, khat, Ganja, and shisha were often associated with increased aggression, emotional volatility, and impaired judgment, particularly during withdrawal or intoxication. These changes in behaviour were described as contributing to involvement in a range of criminal acts, from petty theft to violent crimes. Some

participants also noted that environments where substances are used, such as *arakie* houses, can become settings where conflict escalates quickly or criminal activities are planned. These narratives reflect participants' belief that substance use can serve as both a psychological and social driver of criminal behaviour.

A religious leader highlighted how he perceived the role of substance use in fuelling crime in the community, suggesting that the progression from one substance to another is often linked to increasing involvement in criminal activities:

> "*If someone uses khat, they may also use shisha. Khat use is fuelling theft and robbery in our area*." (FGD#02, Religious Leaders, P2)

Substance use also heightens emotional volatility, aggression and impulsivity, particularly when people experience withdrawal symptoms. A young man shared his experience of how substance dependency increased his irritability and violent tendencies, making him more likely to engage in violence when under stress. He also illustrates how substance use environments (such as *arakie* houses) expose individuals to conflicts that can quickly escalate into criminal acts.

> "*Definitely. I remember one incident at an arakie house. A friend invited me for drinks, but I hadn't smoked ganja that day, so I was feeling anxious and aggressive. Someone insulted me, and I attacked him with a glass. I severely injured his head*." (IDI#07, M28)

Beyond individual cases, participants in the Negele Arsi FGD, shared insights into how substance use contributes to crimes such as robbery, rape, and even murder. These participants detailed how the sequences of substance consumption play a role in escalating behaviours. One participant described how khat use during the day, followed by alcohol use at night, led to violent and sexual crimes:

> "*Arekei is one of them. They chew khat during the day and then add alcohol at night (chebsi). Later at night, they engage in various crimes such as robbery and rape*." (FGD#01, Negele Arsi, P5)

Another participant similarly described a structured routine of substance use and its link to crime, where individuals chew khat in the morning, and consume alcohol at night, which creates a state of lower inhibition and increased aggression that facilitates violent crimes:

"*For example, they chew khat in the morning until 1 p.m., then consume alcohol in the afternoon or at night. They continue using these substances all night and then engage in various crimes such as robbery*." (FGD#01, Negele Arsi, P5)

A different participant from the same group explained the structured routine in which khat chewing sessions serve as spaces for planning criminal activities, making the substance a precursor to criminal acts:

"*Khat is also common in all the villages. They spend the night chewing khat, discussing the kind of crimes they are going to commit while chewing. The source of various crimes like rape and robbery is the use of these addictive substances. So, substance use predisposes to crime*." (FGD#01, Negele Arsi, P4)

Theme 5: Escalation of use and subsequent dependency - Many participants described how their substance use followed a gradual progression, beginning with what they perceived as less harmful or more socially accepted substances, such as khat and alcohol, and later transitioning to stronger substances like hashish. According to these accounts, this escalation was often influenced by peer pressure, increased tolerance, and a desire to manage stress or emotional difficulties. Participants also explained that, over time, substance use shifted from recreational to functional, becoming something they relied on to cope with daily life or maintain a sense of normalcy. As described in the interviews and focus groups, this pattern of increasing use was commonly associated with the development of psychological and physiological dependency, and in many cases, with deteriorating mental health. These participant narratives reflect a perceived cycle in which substance use begins as a response to social and emotional pressures but ultimately deepens individuals' challenges over time.

Three subthemes have been identified under this major theme: 'progression from substances perceived as soft to those perceived as hard, addiction cycles, and mental health implications'.

Subtheme 5.1: Progression from substances perceived as soft to those perceived as hard - Several participants, including both substance-using young people and stakeholder informants, described how substance use often began with what they perceived to be more socially acceptable or less harmful substances, such as khat or alcohol. According to these participants, the relatively widespread use and cultural acceptance of these substances created a sense that they were not

particularly dangerous. Some explained that this perception made it easier for them or their peers to try these substances without considering the potential risks. Over time, as tolerance increased, participants reported that the initial substances no longer produced the desired effects, prompting some individuals to transition to stronger or illicit substances, such as hashish. Peer influence and the easy availability of substances were also described as contributing to this progression. These narratives reflect how the perceived harmlessness of certain substances may play a role in initiating a pattern of escalating use.

A participant described how his initial use of khat led to alcohol consumption (*chebsi*), which later escalated to stronger substances like hashish, demonstrating how substance use often follows a somewhat predictable pattern of progression:

> "*You know when you start with one, it leads to another. For example, after chewing khat you go for chebsi—that means drinking alcohol after khat*." (IDI#05, M28)

He further explained how the widespread availability of substances in his environment contributed to his progression from alcohol to hashish, making accessibility a key factor in escalation patterns:

> "*I drink beer, and if we had money, we would go to a nightclub. Eventually, I started spending nights away from home. Then, I moved on to other substances like hashish. Hashish is common in our area, so we used it a lot; I mean, it is easily available in our area*." (IDI#05, M28)

The transcript from another young interviewee illustrates a clear progression from the use of relatively milder substances to more potent and socially stigmatised drugs, including hashish (ganja) and even injectable substances. He explained:

> "*I started with benzene and cigarettes, then moved to ganja, arekie, and even tried an injected drug once. Over time, it just kept escalating.*" (IDI#07, M29)

***Subtheme 5.2: Addiction cycles* –** Several participants described how, over time, their substance use became more frequent and difficult to control, with some explicitly referring to a sense of dependency. According to their accounts, this dependency affected their ability to function in daily life, including in school or at work. Some participants reported that they needed substances to feel stable or to manage routine tasks, while others reflected on how cravings and emotional instability

made quitting more difficult. These narratives highlighted how continued substance use was often experienced as a cycle, driven not only by physical and psychological urges but also by a fear of failure or inability to cope without the substance. Participants viewed this growing reliance as something that affected multiple aspects of their lives, including productivity, relationships, and their sense of control.

A 19-year-old woman who uses substances described how her addiction disrupts her daily functioning and employment, leading to economic hardship and reinforcing continued use.

> "*I struggle with addiction. Even when I get a job, I cannot work without using substances*." (IDI#06, F19)

Another young substance user added how substance dependency creates a cycle of instability, where he struggles to maintain work, manage responsibilities, and build social connections. Even when opportunities arise, the psychological burden of his addiction creates self-doubt and fear of failure, making it even harder to break free from the cycle:

> "*I also dropped out of school because of substance use. It has impacted every aspect of my life. It has complicated my life. Even if I get a job now, I'm afraid I won't have stability, time management, or the ability to maintain relationships*." (IDI#07, M29)

Subtheme 5.3: Mental health implications - Participants reported experiencing a range of mental health conditions, such as anxiety, depression, aggressiveness, and paranoia as a result of their use of substances. The escalation of their substance use is often closely associated with their deteriorating mental health, with individuals initially turning to substance use as a coping mechanism for emotional distress. However, in the long term, instead of providing relief, some participants have reported experiencing increased anxiety, depression, and paranoia due to their substance use. These psychological effects create a vicious cycle, where individuals use substances to self-medicate their mental distress, but in turn, their substance use worsens their mental health conditions.

The following quote by a 28-year-old substance user illustrates how substance use can lead to severe emotional instability, aggression, and withdrawal from social interactions. The dependency on substances to manage mental health symptoms often prevents individuals from seeking healthier coping mechanisms.

"*If I don't get ganja, my day feels dark. I become aggressive, pick fights, hate people, and feel anxious and depressed*." (IDI#07, M28)

Another young substance user described his struggle with psychological dependence, where continued use becomes necessary just to feel stable. His experience highlights how substance use dependency alters his mental functioning, making it difficult to go without it:

"*If I do not take substances, I feel like I am going crazy. I can't think straight. I feel disoriented and irritated if I do not get khat at the usual time. I feel like I am in the dark*." (IDI#01, M29)

As these quotes suggest, as individuals experience mental health deterioration, they may become trapped in a cycle where substances are both the cause and perceived solution to distress.

- Concept 3: Effects of substance use - this concept includes two themes that describe the consequences of sustained substance use on young people's lives, including their health, social relationships, and experiences shaped by gender norms:

Theme 6) Consequences of substance use and

Theme 7) Gender roles in substance use.

Theme 6: Consequences of substance use

Substance use negatively affects various aspects of life domains, contributing to physical, mental, social, and financial consequences. It disrupts not only personal health but also social connections, financial stability, cultural identity and adherence to legal norms. The data from personal interviews and focus group discussions provide additional insights into the broader impact of substance use on the consequences of substance use among young people, structured under the consequence theme. The theme is then further divided into subthemes: health impacts, social impacts, and economic impacts**.**

Subtheme 6.1: Health consequences - The major health impacts identified from the individual interviews and FGDs can be categorised as physical, including respiratory health problems, weight loss, and gastrointestinal system issues, as well as mental health conditions such as depressive

symptoms, anxiety, sleep disturbance, suicidality, and mental distress. This was evidenced by a story of a 28-year-old young man who used substances as quoted below:

> "*I never sleep for more than two hours at a time. Some nights I don't sleep at all, even though I want to." (IDI#07, M28)*

This young substance user also states elsewhere*,*

> *"Sometimes I have forgetfulness, I can't remember what I did the night before." (IDI#07, M28)*

Participants' explanations show that substance use also affects physical health. As a story of a 29-year-old young man who works in a barbershop evidences. This participant has been using substances for a long time, and he reports how substance use affects his well-being as follows:

> "*I developed gastric ulcers and was diagnosed with H. Pylori infection. I also have a kidney problem, and sometimes I spit blood …substance use affected my mental health. I don't trust people, not even close friends or family. I avoid people because I feel they are spying*." (IDI#01, M29)

A participant in the focus group discussion held among experts invited from different zonal-level sectors outlined how the health effects of substance use may flow beyond the individual users to family and wider society:

> "…… *For example, alcohol users may engage in unprotected sex due to impaired mental state, leading to the transmission of sexually transmitted diseases such as HIV/AIDS to their partners/wives and the reverse*." (FGD#05, Zonal Expert)

Subtheme 6.2: Social consequences - The qualitative fieldwork findings also reveal the social isolation and stigma experienced by substance users. It also adds depth by revealing how substance use contributes to exclusions from religious settings, criminal involvement, and family detachment. These social consequences attributed to substance use are presented in the following quotes:

> "*My family discriminates against me. They say, 'Not only your actions but even your clothes smell bad—you are reek of hashish and cigarettes*." (IDI#07, M28)

"*Society often distrusts people with substance use issues, especially regarding financial matters. There are local frames, "Hoffaadha, hin amanaman" literally meaning "they lack depth and focus and are not trustworthy*." (FGD#05, Zonal Expert)

"*…. some political groups exploit addicts, using them to incite violence. Many of these individuals, when arrested and questioned, claim they do not even remember their actions*." (FGD#06, Women only FGD)

"*I once spoke with a young substance user who told me that substances had become a substitute for his family. He isolates himself, avoiding family interactions and social events such as funerals, weddings, idir, and equb. He said, "I didn't attend my grandmother's funeral. I don't feel the loss of close family members the way I do when I am deprived of my substance*" (FGD#05, Zonal Expert)

Subtheme 6.3: Economic consequences - The qualitative findings demonstrate that substance use often leads to financial instability, with participants highlighting how substances are prioritised over essential needs. Both individual and group participants described high daily spending, reduced productivity, job loss, and an inability to save. Continuous substance use was said to drain financial resources, contribute to employment instability, and ultimately lower the financial aspects of life quality. These experiences were illustrated by the following quotes:

A young man aged 29 from Kuyera explained his financial concern attributed to substance as,

"*I can't save money. Even if I manage to save some, it doesn't last long. Substance use has had a significant impact on my finances*." (IDI#01, M29)

Another young boy from Shashemene described that substance use leads to a huge loss. In his quote, he said,

"*I spend more than 300 ETB per day on substances, while others might struggle to earn 100 ETB in a full day*." (IDI#04, M19)

Theme 7: Gender roles (Gender and substance use)

The qualitative analysis appears to reveal gender norms as playing a significant role in shaping substance use patterns amongst these participants. These norms influence access to substances,

patterns of consumption, and societal perceptions of individuals who engage in substance use. The findings under this theme are presented across the following three subthemes.

Subtheme 7.1: Gendered access, exposure, and social control over substance use – Many participants, particularly from expert and community focus group discussions, described how gender roles in Ethiopian society shape access to substances, the environments in which substances are consumed, and the degree of social acceptance. According to these participants, males generally experience fewer restrictions in their mobility and social interactions, which exposes them to environments where substance use, especially alcohol, khat, and tobacco, is seen as more acceptable. In contrast, participants explained that females are expected to remain within traditional domestic roles, limiting their exposure to such environments and subjecting them to stronger social sanctions if they engage in substance use. These views reflect the way participants perceived gendered expectations as shaping substance use patterns and visibility in their communities.

One participant reflected on how men's freedom of movement increases their exposure to substances:

> "*In my opinion, this may be because men have more freedom and are less controlled than women in their families. Culturally, in our community, men tend to spend more time outside the home, while women take a role in the house chores to help their families. I think this freedom may expose men to try what they wish to do and expose them to peer influence. Since women are traditionally supposed to stay home and engage in domestic (home-based) activities, they may have fewer opportunities for such exposure. I think this could be the key reason*." (FGD#05, Zonal Expert, P4)

This gendered exposure also affects the visibility and reporting of substance use. Men are more likely to use substances openly in social settings, whereas women's substance use tends to be hidden or confined to private spaces. A participant explained how social spaces reinforce these gendered patterns:

> "*If you go to bars (groceries), most alcohol users are young, especially men compared to women. In my opinion, this may be because women are supposed to stay at home culturally*." (FGD#05, Zonal Expert, P1)

This restriction on women's movements and activities serves as a form of social control, ensuring that substance use remains primarily associated with men. However, this does not mean that women do not engage in substance use; rather, their participation may often be hidden or occur in less visible settings.

Subtheme 7.2: Stigma and underreporting of women's substance use – Participants, particularly those in women-only and expert focus groups, described strong social stigma surrounding female substance use. According to their accounts, women who use substances are often labelled as deviant, immoral, or irresponsible, which they felt reinforces negative stereotypes and discourages open discussion on the issue. Several participants suggested that this stigma acts as a deterrent not only to substance use itself but also to disclosure and help-seeking, contributing to the hidden nature of women's substance use in their communities. These perceptions were reflected in narratives that pointed to underreporting and limited visibility, even though some participants acknowledged that women do engage in substance use, albeit often in private or less visible settings.

A participant explained how such stigma restricts open discussion and visibility:

> "*Women who use substances risk being labelled and perceived as deviant, immoral or irresponsible, reinforcing a culture of social control over women's behaviours*." (FGD#06, Women FGD, P5)

Despite this stigma, there are indications that substance use among women does occur, albeit discreetly. A woman participant shared her experience as a teacher in a region where women's khat use was part of the cultural fabric:

> "*By the way, I used to be a teacher. I taught at a school in an area where khat use is very common, even among women, as part of the culture*." (FGD#06, Women FGD, P5)

Another participant noted that women often operate substance-selling venues and may also participate in consumption, although this is rarely discussed:

> "*This problem is not limited to men; women are also affected. Women often facilitate substance use settings, such as khat houses and shops. While managing these places, they*

frequently engage in substance use themselves, including chewing khat and smoking shisha, usually with men companions." (FGD#01, Negelle Arsi, P4)

These narratives highlight the complex interplay between stigma, hidden practices, and underreporting, suggesting that actual prevalence among women may be higher than documented.

Subtheme 7.3: Cultural reinforcement of men's substance use – Participants, particularly zonal experts and focus group informants, described how cultural expectations and social norms contribute to the greater visibility and acceptance of substance use among men. According to these accounts, men are often viewed as decision-makers and providers, roles that grant them greater autonomy over financial resources and mobility. Several participants suggested that this freedom, along with fewer social restrictions, may increase men's exposure to environments where substance use is normalised or encouraged. They also noted that men are more likely to engage in substance use within peer groups and public social settings, such as khat houses and bars, where such behaviours are reinforced through group bonding and mutual acceptance.

A participant explained how cultural norms influence substance use among men:

"*Umm..., regarding the difference between men and women in substance use, it is quite clear that substance use is more prevalent among men than women. In our culture, men are decision-makers over resources than women. Women are not supposed to express and practice their feelings publicly as men do. This may expose men to be more involved in substance use than women*." (FGD#05, Zonal Expert, P3)

Additionally, men's engagement in substance use is often linked to peer influence and social bonding. Social spaces such as bars, khat houses, and informal gatherings serve as settings where men reinforce each other's substance use behaviours. A participant described this phenomenon:

"*Men tend to spend more time outside the home, while women take a role in the house chores to help their family. I think this freedom may expose men to try what they wish to do and expose them to peer influence*." (FGD#05, Zonal Expert, P4)

8.7. Discussion

This qualitative exploration provides critical insights into the lived experiences of young people who use substances in the West Arsi zone, Ethiopia, as well as the perspectives of key stakeholders

involved in prevention, care, and community support. The findings reveal deeply intertwined personal, familial, and socioenvironmental dynamics. The themes that emerged, ranging from the underlying drivers of substance use to its multifaceted consequences and barriers to mental health services, highlight a contextual interplay of issues and circumstances that can inform both policy and practice in the region.

This discussion presents an in-depth interpretation of the findings, drawing on the perspectives of both young people and stakeholders, and is organised under three interconnected conceptual domains: (1) Establishment of substance use problems, (2) Escalation and continuation of use, and (3) Effects of substance use. This structure allows for contextualising the experiences of young people in Ethiopia within a developmental trajectory of substance use, while incorporating the broader social and institutional viewpoints captured during the fieldwork.

8.7.1. Establishment of substance use problems: Initiation and early risk factors

Substance use initiation among participants was often grounded in an interplay of personal vulnerability, familial influence, and cultural permissiveness. Many young people reported starting substance use during adolescence, a critical developmental period characterised by identity formation, emotional volatility, and heightened peer influence. Social learning theory helps explain this trend, suggesting that behaviours, especially among adolescents, are learned through observation and imitation of peers and family members (Rumjaun & Narod, 2020). In this study, several participants commonly cited the influence of parents, siblings, or peers who normalised or directly introduced them to khat, alcohol, or tobacco. These findings align with existing literature highlighting the pivotal role of family and peer environments in the early initiation of substance use (Ebrahim J et al., 2024; Roba et al., 2019).

Moreover, the broader sociocultural context in Ethiopia played a key role in substance use initiation among young people. Substances like khat and alcohol were not only readily available but also embedded within traditional rituals, social gatherings, and economic activities in the region. This normalisation might blur the boundaries between culturally accepted practices and harmful patterns of use, particularly for young people with limited psychosocial support. In line with the social development model, the absence of strong bonds with pro-social institutions (e.g., schools, community programs) appeared to increase susceptibility to substance use (Haydon et al., 2011).

Participants also referenced psychological and structural challenges, including boredom, hopelessness, and unemployment, which made them more vulnerable to experimenting with substances. Strain theory explains this dynamic by suggesting that when individuals, particularly young people, are unable to achieve socially accepted goals such as education, employment, or upward mobility through legitimate means, they experience stress or strain. This strain may lead them to adopt alternative coping strategies, including substance use (Slocum, 2010). For some participants, particularly those from economically disadvantaged households, the lack of opportunities acted as a powerful driver of early use.

The findings also highlighted the participants' perceptions of the gendered nature of substance use initiation in the study setting. Several participants described how women substance users often experience both internalised stigma and societal condemnation, leading to more hidden, secretive patterns of use. The tension between societal expectations of purity and silence around women's substance use in Ethiopia may contribute to limited disclosure and delayed help-seeking, a phenomenon also documented across other patriarchal societies (Cosma et al., 2022; Geleta et al., 2022). In contrast, men in Ethiopia often have greater financial autonomy and are more involved in outdoor and community activities, both of which elevate their risk of encountering and engaging in substance use (Amahazion, 2023; Eneyew & Mengistu, 2013). The findings on internalised stigma and hidden substance use among women, as well as increased exposure among men due to financial autonomy and outdoor activity, align with research from Ethiopia and other patriarchal societies, where gender norms marginalise women substance users and heighten male risk (Abajobir & Kassa, 2019; Jaguga et al., 2022; Mwatsiya, 2019; Okoyo et al., 2022).

8.7.2. Escalation & continuation of substance use: Reinforcement, dependence, & social cycles

Following initiation, many participants described a progression into more frequent and dependent patterns of use, shaped by psychological reinforcements and entrenched social networks. The desire to self-regulate difficult emotions, such as stress, loneliness, trauma, or depression, was a recurring theme. This aligns with the self-medication hypothesis, which posits that individuals may turn to substance use as a way to cope with emotional or psychological distress in the absence of healthier coping mechanisms (Khantzian, 1997).

The psychological reinforcement was compounded by behavioural conditioning. Repeated substance use became a habitual response to emotional discomfort, with several young participants

expressing an inability to function or feel normal without it. Over time, this pattern led to physical dependency and diminished self-control, reinforcing the chronic nature of substance use and underscoring the need for long-term psychosocial support.

One key finding was that social environments—particularly peer groups—played a central role not only in initiating substance use but also in sustaining it over time. Participants commonly described how daily khat sessions, group drinking rituals, and collective justifications for use created a shared culture around substance use. Those who attempted to quit were often ridiculed or excluded, suggesting a strong social reinforcement of continued use. This finding reflects what sociologists refer to as *deviant subcultures*, social groups that maintain and legitimise behaviours that deviate from societal norms (Blackman, 2014). By understanding substance-using peer networks as deviant subcultures, we can see how these behaviours are not just individual acts but are socially reinforced, ritualised, and embedded within collective identities. This helps explain the difficulty of disengaging from substance use and highlights the need for interventions that target peer norms and group dynamics, not just individual behaviours.

Another layer of reinforcement came from systemic and structural factors. Participants described how limited access to mental health and addiction services, lack of youth-friendly recreational spaces, and unsupportive community responses shaped their substance use trajectories. These narratives, grounded in the lived experiences of both young people and community stakeholders, pointed to environments where structural neglect and economic exclusion left few alternatives for coping or social connection. Such systemic conditions did not merely fail to prevent substance use—they actively reinforced its persistence by normalising it within the broader cultural and socioeconomic context. These accounts reflect how substance use was embedded within daily routines, shaped by poverty, inadequate supervision, and limited livelihood options, all of which contributed to a cycle of vulnerability. This finding aligns with other studies in low-income countries (Onaolapo et al., 2022), where weak infrastructure and punitive responses deepen marginalisation and reduce opportunities for recovery among young people.

8.7.3. Effects of substance use: Mental health, quality of life, & broader consequences

The qualitative data revealed that the consequences of sustained substance use were wide-ranging, affecting participants' mental well-being, relationships, economic stability, and overall quality of life. Participants commonly reported symptoms such as anxiety, depression, irritability, emotional

instability, and, in some cases, suicidal ideation. These experiences are consistent with broader evidence on the comorbidity between substance use and mental health conditions (Sullivan, 2022; Yu & Chen, 2025).

From a biopsychosocial perspective, as articulated by (Volkow et al., 2016), substance use affects individuals not only biologically, through neurochemical dependency and withdrawal, but also psychologically, by undermining self-esteem and emotional regulation, and socially, through stigma, isolation, and disruption of meaningful relationships. These overlapping stressors were evident in participants' narratives, where the interplay of physiological dependence, social exclusion, and diminished self-worth contributed to a deteriorating sense of mental well-being and reduced quality of life. The study findings, therefore, reflect both individual and contextual pathways through which substance use erodes psychological resilience and overall functioning.

Several participants described how substance use among young people disrupted their own or others' family and romantic relationships, leading to experiences of tension, mistrust, rejection, and disconnection from family members. Some reported being ashamed by the way their family members treated them, while others described feeling unwelcome at home or abandoned by partners due to their substance use. This breakdown in close relationships often led to social withdrawal, which in turn appeared to reinforce substance use, increase engagement in risky behaviours (including criminal activities), and reduce motivation to seek help. These patterns reflect a vicious cycle also documented in the literature, where substance use contributes to legal risks, deteriorating health, and deeper social marginalisation (Saladino et al., 2021; Weldeyohanes et al., 2021).

Socioeconomically, substance use had a significant impact on the lives of many participants. Several young individuals who took part in the interviews reported dropping out of school or missing job opportunities due to the cognitive, emotional, or behavioural effects of their substance use. Some described losing focus in class, being expelled, or struggling to maintain consistent employment. Financial instability was also a recurring theme, as participants noted that the ongoing cost of purchasing substances led to material deprivation, reliance on others, or engagement in high-risk activities to sustain their habits. These experiences contributed to a sense of lost potential and undermined their overall quality of life and personal aspirations. Such narratives are consistent with previous research indicating that substance use is associated with

reduced educational achievement, diminished quality of life, and poorer economic outcomes (Mekonen et al., 2017; Melkam et al., 2024; Mokona et al., 2020). Amid these socioeconomic challenges, a few participants expressed a strong desire to change their situation and pursue recovery. However, they also highlighted the absence of accessible rehabilitation centers, trained mental health professionals, or community-based recovery services as key barriers to achieving this goal. This finding illustrates a critical gap in Ethiopia's health systems and reflects broader concerns about the underdevelopment of mental health infrastructure across many low-income countries.

Despite these challenges, a few participants expressed a strong desire for change and recovery. However, they highlighted the lack of rehabilitation centers, mental health professionals, or community-based recovery programs in their areas. This finding illustrates a critical gap in Ethiopia's health system and echoes the broader challenges facing mental health infrastructure across many low-income countries.

8.8. Implications for policy and practice

The qualitative insights gained from this study suggest several areas that could inform policy and practice responses to substance use among young people in the West Arsi zone of Ethiopia. Based on participants' accounts of early exposure and peer influence, preventive interventions could be considered within schools and community settings, with an emphasis on promoting life skills, improving mental health literacy, and addressing early social and family risk factors. Such programs may help reduce the normalisation of substance use described in both family and peer environments.

Participants also described limited access to professional support and youth-friendly services, particularly in rural areas. In response to this, the development of integrated mental health and substance use services — including youth-centered and trauma-informed models — could be explored, particularly in settings where formal care is largely absent. These suggestions are supported by findings indicating that even when participants expressed a desire to change, their efforts were hindered by a lack of available support.

The study also pointed to important gender-specific barriers, including stigma and restricted mobility, affecting young women. In this context, gender-responsive approaches that improve safe access and reduce social sanctions around female substance use may be beneficial. These would

be in line with narratives that described hidden or suppressed patterns of substance use among women and strong social control over their behaviour.

Peer-led initiatives and community-based rehabilitation efforts could also be valuable, particularly in reducing stigma and improving engagement. Participants described how peer networks reinforced substance use but also provided a sense of belonging; harnessing these dynamics positively could help shift norms and promote support-based alternatives.

In Ethiopia, school platforms (e.g., school health activities and life skills clubs) already provide an entry point for prevention, but coverage and fidelity are variable, and mental health literacy content remains limited, particularly in rural schools. Youth-friendly services and peer clubs exist in some facilities and youth centres, yet they are unevenly distributed and often urban-based. Primary health care has begun integrating mental health and substance-use care (e.g., mhGAP-aligned training), but staffing, supervision, and supply constraints limit consistent delivery.

Implementation is further shaped by stigma, gender norms (restricting girls' mobility and help-seeking), competing health priorities and constrained budgets, intermittent service disruptions, and political–economic factors: in some settings, substances such as khat and alcohol are tied to household livelihoods and local revenue, dampening local ownership of restrictive or preventive measures. At the same time, Ethiopia's Health Extension Program, school networks, faith-based and community structures (idir/afosha (community mutual-aid associations supporting households with social and financial needs), youth associations), and strong peer networks are important facilitators that can be leveraged for early identification, prevention, and engagement.

Policy and practice should therefore prioritise: (1) embedding age appropriate life skills and mental health literacy in school routines with teacher training and supportive supervision; (2) integrating brief screening, advice, and referral within school health services and primary care (including youth-friendly hours and confidential pathways); (3) developing peer-led components with safeguards, to shift norms and enhance uptake; (4) partnering with faith-based/community organisations to reduce stigma and extend reach; (5) gender-responsive measures that improve safe access for young women; and (6) aligning local economic interests with public health goals by framing prevention as an investment in productivity, educational attainment, and public safety, while supporting alternative livelihoods in high production areas over time.

Finally, some of the challenges described by participants — including unemployment, school dropout, and migration in search of opportunity — point to the structural and economic drivers of substance use. While these are broader societal issues, policies aimed at supporting youth employment, educational re-engagement, and access to livelihood opportunities may indirectly contribute to reducing the risks associated with substance use. This link is reflected in participants' accounts of using substances to cope with boredom, financial stress, or lack of purpose, particularly among those who had dropped out of school or were unable to secure work.

8.9. Conclusion

Organising the discussion along the trajectory of substance use—from establishment to escalation and effects—offers a nuanced understanding of the lived experiences of young Ethiopians. Substance use among young people is not merely an individual choice or moral failure but a reflection of deep-rooted psychosocial, cultural, and structural factors. Addressing it requires a coordinated, empathetic, and multi-sectoral public health response—one that listens to young people's voices and needs and attempts to address these needs inclusively and reflectively wherever possible.

Chapter Nine: Discussion, Implications, and Conclusions

9.1. Chapter Overview

The findings in this thesis examine substance use, mental health conditions, and health-related quality of life (HRQoL) among young people from both their own and stakeholders' perspectives. This general discussion chapter synthesises these findings, comparing and interpreting them in relation to contemporary global literature and relevant theoretical frameworks, with a particular focus on low and middle-income countries (LMICs). It provides a high-level discussion of the key findings, highlighting the study's contributions to existing scientific knowledge, academic discourse, and clinical practice.

The chapter begins with a brief overview, followed by a discussion of the prevalence and underlying drivers of substance use, its associations with mental health conditions and HRQoL, and its broader impacts. It also examines the practical and policy implications of the findings. Finally, the chapter presents the strengths and limitations of the study, offers recommendations for future research, policy, and practice, and summarises the key conclusions related to the overarching research aims.

The main aim of this thesis was to explore patterns of substance use among young people in Ethiopia and to examine mental health conditions and HRQoL among those who use substances. This aim is addressed through five interrelated objectives:

- First, a systematic review and meta-analysis was conducted to assess the prevalence, associated factors, and reasons for substance use among young people in sub-Saharan Africa (SSA) (*Chapter 4*)
- Second, a cross-sectional study was conducted to assess the prevalence of and factors associated with substance use among young people in the West Arsi zone, Ethiopia (*Chapter 5*)
- Third, a cross-sectional study was conducted to assess the prevalence and factors associated with mental health conditions among young substance users in the West Arsi zone, Ethiopia (*Chapter 6*)

- Fourth, a cross-sectional study was conducted to assess the level of HRQoL and its associated factors among young substance users in the West Arsi zone, Ethiopia (*Chapter 7*)
- Fifth, a qualitative exploration of the lived experiences of young people engaged in substance use, with a focus on understanding the motivations, drivers, and consequences of substance use. (*Chapter 8*)

9.2. General Discussion

The main findings of this thesis are discussed in three core themes: 1) Substance use among young people, 2) Mental health conditions among young substance users, and 3) Health-related quality of life among young substance users.

9.2.1. Substance use among young people

9.2.1.1. Prevalence of substance use

The demographic structure of the African continent, where young people make up nearly one-third of the population (United Nations Pupulation Fund, 2024), presents both an opportunity and a challenge. With many nations relying on this dynamic and productive age group to drive their economic growth and societal transformation (Ashford, 2007), safeguarding their health and well-being is critical. However, the rising prevalence of substance use among young people has emerged as a public health challenge, with mounting evidence linking early use of psychoactive substances to long-term health risks and adverse life outcomes (GBD Alcohol & Drug Use Collaborators, 2018).

This thesis examined the prevalence of substance use among young people in both Ethiopia and the broader sub-Saharan Africa (SSA) region through a systematic review of existing regional literature and a primary study conducted in the West Arsi zone of Ethiopia. Both the review and primary study examined substance use across different timeframes (lifetime, twelve-month, and current use), operationally defining substance use as the continued use of licit and illicit psychoactive chemicals that affect one's nervous system and lead to changes in mood, awareness, thoughts, or behaviours (American Psychiatric Association, 2013).

The systematic review found that approximately one in five young people in SSA had used at least one substance in their lifetime, and 15.0% reported current use. Regionally, Southern Africa had the highest lifetime prevalence at 25.0%, followed by East Africa at 22.0%, and West Africa at 17.0%. Although these figures include alcohol, which is legal and more socially accepted in many settings, the high prevalence remains concerning given the developmental stage of the population and the potential for harmful patterns of use. Moreover, several of the included studies also documented the use of substances such as tobacco, cannabis, and khat, reinforcing the broader nature of substance use challenges faced by young people in the region.

The primary study in the West Arsi zone of Ethiopia showed an alarming situation, with nearly half of the young study participants having used at least one substance at some point. Alcohol, khat, tobacco, and cannabis were the most frequently consumed psychoactive substances.

It is important to note that both the systematic review and the West Arsi primary study included alcohol among the substances assessed. While alcohol is legal and often socially accepted across many contexts, its inclusion does not diminish the public health significance of the findings. Early alcohol use is associated with a range of adverse health, developmental, and social outcomes, particularly among young people. Moreover, the high prevalence observed in both studies points to broader patterns of psychoactive substance use, including khat, tobacco, and cannabis, which often occur alongside alcohol. This pattern of polysubstance use, coupled with the limited availability of youth-focused prevention and treatment services in many sub-Saharan African settings, highlights the urgent need for comprehensive interventions tailored to the realities of young people in the region.

These findings are particularly concerning when viewed in the context of Africa's demographic profile (United Nations Pupulation Fund, 2024). As Ethiopia and other SSA countries increasingly depend on their young population as the main driver of future economic and social progress, the high prevalence of substance use identified in both the review and original study signals a serious and escalating public health concern.

Despite some variations in the reported prevalence of substance use, evidence from both Ethiopia and the broader SSA regions points to a consistently high and increasing burden of substance use among young people. Multiple previous studies, including national surveys, community-based assessments, and systematic reviews, have highlighted the increasing normalisation and

accessibility of substances such as khat, alcohol, tobacco, and cannabis among this population. While commonly used substances such as alcohol and khat are often culturally embedded and legally available, they nonetheless carry significant health and social risks, particularly when initiated at a young age or used heavily. Other substances, such as tobacco and cannabis, pose distinct and often more severe long-term health consequences, including addiction and cognitive impairment. In Ethiopia, systematic reviews conducted over the past decade (Abajobir & Kassa, 2019; Roba et al., 2019; Roba et al., 2021) have documented a gradual rise in substance use across different age brackets and settings, reflecting a shifting landscape that demands nuanced, substance-specific public health responses.

This growing concern is further substantiated by recent studies in Ethiopia and other SSA countries, which collectively describe a growing public health concern among young people (Admasu Basha et al., 2023; Belete et al., 2023; Birhanu et al., 2023; Kassew et al., 2023; Kugbey, 2023; Melkam et al., 2023; Morojele et al., 2021; Olawole-Isaac et al., 2018). Taken together, the evidence from this thesis and the broader literature reinforces the urgent need to prioritise substance use prevention among young people in policy and programmatic responses across the region.

9.2.1.2. Factors associated with substance use

The findings of this thesis have identified a complex set of interrelated factors associated with substance use among young people, spanning individual, familial, socioeconomic, and environmental domains. These factors do not operate in isolation; rather, they are shaped and reinforced by broader sociocultural and systemic dynamics, including social inequalities, gendered expectations, and gaps in governance and service provision.

Individual factors:

This thesis identified several individual-level factors associated with substance use among young people. Gender emerged as an important factor, with men more likely to engage in substance use compared to women. This disparity in the Ethiopian context reflects not only greater cultural permissiveness toward male substance use but also deeper, socially constructed ideas of masculinity that equate manhood with strength, autonomy, and public sociability. These characteristics are often linked to risk-taking behaviours such as substance use (Merdassa, 2024).

Moreover, men's broader engagement in public life and work outside the home exposes them to environments where substances are more readily available. Their relatively greater financial control further facilitates access to substances, reinforcing the gender gap. These patterns are compounded by socialised expectations that reward dominance, peer conformity and the performance of toughness or control (Barr et al., 2024; Kassew, 2023). While such constructions of masculinity and their relationship to substance use are not unique to Ethiopia, their specific manifestations in Ethiopia remain highly relevant given the intersection of rapid social change, urbanisation and entrenched gender norms.

In contrast, women's substance use is heavily stigmatised in many Ethiopian communities, shaped by strong cultural and religious expectations around purity, discipline, and respectability (Merdassa, 2024; Sanders, 2011). These asymmetrical normative expectations are rooted in patriarchal power structures that grant men more behavioural freedom while controlling women's choices. As a result, women who use substances often do so in secrecy, increasing their vulnerability to social exclusion, shame, and related mental health consequences. Such gendered constructions of behaviour not only influence access to substances but also shape how substance use is interpreted and responded to by communities, health systems, and families (Hamidullah et al., 2020).

Age was also identified as a significant factor associated with substance use, with older adolescents and young adults showing a higher likelihood of engagement with substance use. This stage of life involves increased autonomy, peer influence, societal expectations, and identity explorations, factors that heighten vulnerability to risk behaviours such as substance use, both as experimentation and a coping strategy. In Ethiopia, this vulnerability is further compounded by poor infrastructure, limited youth-friendly spaces, and weak political commitment to supporting positive youth development (Pankhurst et al., 2018). These structural barriers restrict opportunities for learning, contribution, and skill building, often leaving many young people without safe or meaningful outlets. In such contexts, substance use may become a default avenue for coping or self-expression.

From a developmental perspective, adolescence and early adulthood are commonly marked by conflicting social demands as individuals navigate the transition from dependence to independence. This can lead to identity tensions and increased vulnerability to risk behaviours

(Arnett, 2005). Developmental theory suggests that substance use and similar behaviours peak during this life stage due to ongoing neurological and social maturation (Igra & Irwin Jr, 1996). During this period, the brain's reward system becomes more sensitive, while areas responsible for impulse control are still developing. As a result, many adolescents seek to assert identity and belonging through conformity to peer norms and social scripts, including those that involve substance use (Boyer, 2006).

Furthermore, mental health conditions were strongly linked to substance use. The study found that young people experiencing mental health conditions were more prone to substance use, possibly as a coping mechanism. This finding aligns with the self-medication hypothesis, which suggests that individuals may turn to substances to alleviate psychological distress (Khantzian, 1997). It also reflects broader social dynamics, where mental health stigma and limited access to care may lead young people to self-manage symptoms through substance use rather than seeking formal help (Bizzarri et al., 2009). This supports the idea of a strong, bidirectional relationship between substance use and mental health conditions, where each can exacerbate the other.

In the study setting, while the use of certain substances is integrated with cultural practice and normalised, using them is viewed as a failure by some community members, influenced by societal norms and faith teachings. Broader discourses of morality, religion, and generational expectations shape these conflicting narratives. This stigma and discrimination can further isolate individuals struggling with both mental health and substance use, preventing them from seeking help. On the other hand, in certain contexts, substance use is linked to social and cultural practices, adding complexity to how it is perceived (Kassew, 2023). In this context, substance use may function as a form of social participation, particularly where young people lack alternative avenues for connection, status, or purpose.

Systemic factors remain a major contributor to the growing burden among young people in Ethiopia. One key factor is the lack of accessible and youth-focused care services for substance use and mental health (Evans-Lacko et al., 2018; Federal Ministry of Health of Ethiopia, 2020), which not only limits early intervention but also allows unmanaged substance use, leading to the development of or exacerbation of mental health conditions. Although the national mental health strategy acknowledges the need for integrated services, implementation remains limited, particularly for adolescents and young adults (Federal Ministry of Health of Ethiopia, 2020). Most

available services are designed for adults and are concentrated in urban centres, leaving many young people, especially in rural or otherwise underserved areas, without appropriate care and support. This results in a treatment gap where substance use often goes undetected and untreated until it escalates or co-occurs with severe mental health conditions. The interplay between service inaccessibility, age-inappropriate models of care and geographic inequities illustrates how structural determinants shape the health trajectories of young people. These systemic gaps in care create a vicious cycle, where the absence of treatment for substance use and mental health conditions perpetuates distress and further substance use, reinforcing the bidirectional link between the two. The systemic and cultural dynamics contribute to a neglect of young people's well-being in policy and service delivery, limiting opportunities for early prevention, harm reduction, or recovery (Lund et al., 2015; Lund et al., 2012).

This thesis also found that low perceived social support was associated with increased substance use among young people. Those who lack emotional and psychological support from family, friends, or community networks were more likely to use substances as a means of coping with stress, loneliness, or a sense of exclusion. This finding aligns with the concept of the buffering hypothesis in the social support theory that suggests strong social support networks serve as a protective buffer against stress, reducing the likelihood of maladaptive coping mechanisms such as substance use (Bekiros et al., 2022). The finding is also in line with several previous studies that reported that low social support is linked to increased substance use among the young population (Melkam, Demilew, et al., 2022; Mihretu et al., 2017b; Tessema & Zeleke, 2020b; Walsh et al., 2018). This underscores the need to consider not only the presence or absence of social support, but also the nature and quality of the networks young people are embedded in; issues that are explored further in the following discussion of familial and social dynamics.

Familial and social factors:

Family dynamics significantly influence substance use behaviours. Family and social environments are the primary institutions where children can acquire positive or negative behaviours through observation or exposure. As socialising agents, families serve not only as sources of care and support but also as environments where behavioural norms, coping strategies, and attitudes toward health are first shaped (Bandura, 1977). This thesis identified that a family history of substance use was strongly associated with an increased risk of substance use among

young people, consistent with findings from previous studies that highlight the intergenerational transmission of substance use behaviours. This indicates that exposure to substance use within the household normalises the behaviour and increases accessibility, making it easier for young individuals to experiment with substances (Melkam et al., 2024; Mitiku, Amsalu, et al., 2024). Substance use within the family normalises the behaviour, making it easier for young people to engage in substance use and perceive it as non-harmful. Social learning theory supports this finding, as individuals exposed to substance use within the household are more likely to normalise the behaviour and imitate it (Bandura, 1977; Smith, 2021).

In this research, peer influence emerged as one of the most significant social drivers of both the initiation and continuation of substance use. Young people who associate with peers who use substances are more likely to engage in similar behaviours, reinforcing the role of social learning in explaining both the onset and persistence (Henneberger et al., 2020). In Ethiopia, where a large proportion of the population is under 30, the high concentration, combined with limited access to education, employment, and meaningful engagement, creates conditions where group conformity and peer-led behaviours become particularly influential (Federal Ministry of Health of Ethiopia, 2020). This is particularly salient in settings of rapid social change, where young people may participate in peer-led behaviours not due to personal conviction but as a means of seeking belonging, navigating uncertainty or avoiding exclusion. This reflects the concept of pluralistic ignorance, where individuals go along with behaviours they may not personally endorse because they assume others accept or expect them (Prentice & Miller, 1993). This is evident in instances such as participation in public gatherings, including mass mobilisations or political demonstrations (e.g., during moments of political unrest), where youth may engage based on peer momentum rather than informed decision-making.

Over time, such peer networks can sustain or even escalate substance use through repeated exposure, reinforcement, and shared risk-taking. In group settings where substance use is perceived as typical or accepted, young people may continue using substances to maintain group identity or avoid social exclusion. This finding aligns with several local studies (Geleta et al., 2022; Kassew, 2023; Melkam et al., 2024), which indicates that peer influence is strongly associated with increased substance use among young people.

Socioeconomic and environmental factors:

Economic conditions were found to have a dual influence on substance use. On one hand, financial hardship and unemployment contributed to increased substance use, as young people experiencing economic stress may resort to substances as a coping strategy. On the other hand, individuals from more economically advantaged backgrounds may also be at increased risk because their relative affluence facilitates greater access to substances and their behaviours may be less subject to surveillance or sanction. Strain theory supports this finding, explaining that individuals experiencing economic stressors may turn to deviant behaviours, including substance use, as a means of coping (Agnew, 2006). However, this only partially explains the observed patterns; for wealthier individuals, substance use may be embedded in leisure cultures or social norms that normalise experimentation and consumption. This may be reflective of the complexity of socioeconomic drivers, where deprivation may lead to substance use, although indirectly. In this context, substance use may offer short-term psychological relief or a sense of agency in constrained circumstances. In Ethiopia, youth unemployment in particular can create prolonged periods of inactivity, disconnection, and frustration, which increases the appeal of substance use as both an escape and a form of social engagement (MacDonald & Marsh, 2002; Sibanda & Batisai, 2021).

Urbanisation emerged as a significant contextual factor influencing substance use among young people in this thesis. While urban spaces often offer increased access to education, employment, and modern infrastructure, they also introduce heightened exposure to risk behaviours. The transition from rural to urban areas, typically motivated by the search for better economic and social opportunities, can lead to the disruption of traditional support systems and community-level protective mechanisms. In rural settings, young people are often embedded in close-knit communities where extended family networks, religious institutions and local norms provide a form of informal surveillance and support that can deter risky behaviours (Abebaw, 2020; Hailemariam, 2010). In relocating to urban environments, young people may experience increased anonymity, weaker social monitoring, and greater pressure to conform to new peer cultures—factors that can heighten vulnerability to substance use (Asmare et al., 2024; Shegaw et al., 2022).

At the same time, the availability and accessibility of substances such as khat, alcohol, and tobacco are often far greater in urban settings. The ease of acquiring these substances, combined with exposure to permissive norms and marketing influences, further increases the likelihood of experimentation and continued use. Several local studies have documented the impact of these

dynamics on young people, particularly in urbanising areas of Ethiopia (Abajobir & Kassa, 2019; Adane et al., 2021; Adere et al., 2017; Admasu Basha et al., 2023). Thus, while urban environments may provide pathways for mobility and development, they simultaneously present a range of structural and social risks that contribute to the rising burden of substance use among young people.

Substance use in Ethiopia is also shaped by complex systemic and sociocultural forces embedded historical, political, and religious context. A key example is khat, a widely consumed psychoactive plant that is culturally accepted in many regions and economically significant. However, there is no comprehensive national policy regulating its cultivation or domestic use, except for strategic emphasis on export and taxation. The government's position remains ambivalent, aiming to balance economic benefits with the social and health risks of khat use (Cochrane & Negash, 2017; Tolcha, 2020). However, weak enforcement regulations on substances have contributed to the widespread availability and increased use, particularly among young people (Suleman et al., 2016; Weldeyohanes et al., 2021). While some regional and local governments have taken some steps, such as banning use in public institutions, restricting sales, prohibiting advertisements, and imposing local taxes, these efforts are fragmented and inconsistently applied (Weldeyohanes et al., 2021). Ultimately, substance use patterns in Ethiopia are not merely cultural but are influenced by political priorities, institutional neglect, and evolving economic pressures, which have allowed substance markets to expand without comprehensive public health oversight.

Sociocultural norms around substance use are also deeply gendered and shaped by religious values, patriarchal traditions, and historical power structures. In many Ethiopian communities, substance use, particularly khat and alcohol, is tolerated or even encouraged among men as a sign of social bonding, status, or resilience. Women, however, who use substances face more condemnation, with their behaviour viewed as a violation of deeply rooted expectations around femininity, purity, and respectability (Gobie et al., 2021; Jones et al., 2020; Tegegne et al., 2023). This gendered regulation reflects broader systems of gender control, where men are granted more freedom over their choices, while women’s behaviour is closely monitored and controlled. As a result, women who use substances often do so in secrecy and are at greater risk of social isolation, internalised shame, and related mental health consequences.

Understanding the extent of substance use and the key risk factors among young people provides a foundation for exploring its impact on mental health, an essential next step in assessing its broader consequences among those identified with substance use.

9.2.2. Mental health conditions among young substance users

9.2.2.1. Prevalence of mental health conditions

Mental health conditions are a leading cause of disability among young people, significantly affecting their development, relationships, and overall quality of life (Mitiku, Tegegne, et al., 2024). The association between substance use and mental health conditions has been widely documented (Mitiku, Amsalu, et al., 2024), and the results from this research support the existing body of evidence that substance users are significantly more likely to experience conditions such as depression, anxiety, and post-traumatic stress disorder (PTSD) compared to their non-using counterparts (Mitiku, Amsalu, et al., 2024). In this research, 47.0% of substance users reported at least one mental health condition, significantly higher than the 26.0% among nonusers. Depression and anxiety were the most common, while PTSD and suicidal behaviours were also prevalent.

These findings reflect not only biomedical vulnerability but also point to broader structural determinants, such as poverty, stigma, and lack of access to care, that deepen psychological distress among young people. Consistent with this, a study in northern Ethiopia found nearly half of substance users had anxiety disorders (Melkam et al., 2024). Another study in Ethiopia has reported that a quarter of substance-using young people exhibited psychotic symptoms (Kassew et al., 2023). Similar international studies have also found higher rates of mental health conditions among substance users compared to non-users (Atnafie et al., 2020; Goodwin et al., 2004; Wu et al., 2010).

The strong association between substance use and mental health conditions seen in this thesis may be explained by shared risk factors, including childhood trauma, socioeconomic instability, and genetic predispositions. Many young people may initially turn to substance use to cope with psychological distress, as described by the self-medication hypothesis (Khantzian, 1997). However, persistent and prolonged use can worsen mental health symptoms through neurochemical dysregulation and also lead to social exclusion and a weakening of protective relationships, further compounding mental health vulnerabilities. Additionally, frequent or prolonged substance use can induce mental health conditions, increasing vulnerability due to

related physiological or social influences (Marel et al., 2025; Saban et al., 2014). While longitudinal research is necessary to fully understand the pathways of these relationships, the findings of this study underscore the need for targeted interventions that address both aspects.

9.2.2.2. Factors associated with mental health conditions

The findings of this study identified multiple factors influencing the prevalence of mental health conditions among young substance users, categorised into individual, family, sociocultural, and environmental influences.

At the individual level, gender differences emerged as a significant factor, with young women who use substances more likely to experience mental health conditions than their male counterparts. In many parts of Ethiopia, substance use is culturally gendered, with women expected to abstain. While some women may use substances privately among close friends, public use is heavily stigmatised and seen as deviating from societal norms (Geleta et al., 2022). This heightened disapproval reflects socially constructed gender roles that associate substance use with moral failure in women, whereas men often face more lenient social scrutiny. Such gendered stigmatisation is part of broader patterns of moral surveillance and social control over women's behaviour, where their actions are closely regulated by community expectations (Meyers et al., 2021). This social control increases psychological distress among young women who use substances, leading to internalised shame and social isolation, both of which were reflected in the higher rates of mental health conditions observed among female participants in this study.

Moreover, these gender disparities are shaped not only by individual factors and social norms but also by structurally embedded inequalities. For instance, educational inequality is both a consequence and a driver of gender-based disadvantage. In Ethiopia, girls are more likely to drop out of school due to factors such as early marriage and household labour (World Bank, 2023). This exclusion from education limits opportunities for economic independence and informed decision-making, increasing the risk of substance use and mental health challenges. In our study, although not statistically significant, women were slightly underrepresented in higher education levels, and those with lower education appeared more vulnerable to mental health conditions, reflecting the cumulative impact of intersecting gender and educational inequities. Additionally, gender-based violence, a widespread issue in Ethiopia (Deyessa et al., 2009; Kassa & Abajobir, 2020), exacerbates mental health risks. High exposure to violence, compounded by limited legal

protection and weak community support structures, leaves many young women with untreated trauma, which in turn increases the likelihood of both substance use and mental health conditions.

Traditional gender roles and expectations in Ethiopia also contribute to mental health vulnerability. Caregiving, domestic responsibilities, and emotional labour disproportionately fall on women, often resulting in chronic stress and burnout, negatively impacting their mental health (Erulkar, 2013; Gebeyehu et al., 2023). Moreover, male dominance in financial and health-related decision-making often leaves women economically dependent and, in some cases, unable to access care or support services without male approval (Lailulo et al., 2015; Muluneh et al., 2021). These barriers further reduce women's autonomy in seeking help and increase vulnerability to mental health conditions.

Finally, biological differences may also play a role. Women may have a lower physiological tolerance to the adverse effects of substances, which may contribute to a higher prevalence of mental health conditions observed among young women who use substances in this study (Fonseca et al., 2021; NIDA, 2021).

Lower levels of education (from grades 1-8) were associated with a higher prevalence of mental health conditions compared to higher levels. Limited education may restrict access to mental health knowledge and coping strategies, reducing awareness of substance use risks and limiting access to mental health care, leading to untreated conditions (Habib et al., 2023). The cognitive reserve theory suggests that individuals with higher education levels develop stronger cognitive resilience, which may help explain the disparities observed in this study (Stern, 2002). Educational disadvantage, however, also reflects broader structural inequality, where school dropout, poor-quality education, and lack of youth-focused services intersect to produce chronic disadvantage (Devonald et al., 2021).

Additionally, young people in grades 1-8 are at a critical stage of cognitive, emotional, and social development (National Academies of Sciences, 2019). Substance use during this period can disrupt brain development, further increasing vulnerability to mental health conditions. Several local (Hassen et al., 2024; Hunduma, Dessie, Geda, Assebe Yadeta, & Deyessa, 2024) and international (Fonseca et al., 2019) studies have similarly reported a higher prevalence of mental health conditions among young individuals with lower educational levels compared to their counterparts.

At the family level, a history of substance use and mental illness was strongly linked to mental health conditions among young substance users. Family substance use may expose young individuals to early life stressors, normalisation of substance use, and dysfunctional family dynamics, increasing their risk of developing mental health conditions. This aligns with social learning theory (Bandura, 1977), which posits that behaviours, both adaptive and maladaptive, are learned through observation, imitation, and reinforcement within the social context, particularly the family unit. In families where substance use is common, young people may observe these behaviours being modelled by parents or siblings. Over time, they may be encouraged, rewarded, or come to view substance use as a normalised coping mechanism for stress. In Ethiopia, where open dialogue about mental health is limited and family ties are strong, such learned behaviours may go unchallenged and become deeply ingrained, shaping young people's perceptions of normality and coping responses, contributing to substance use and mental health vulnerability.

Moreover, abuse and neglect, including emotional unavailability, harsh discipline, or inconsistent caregiving, are more commonly reported in families with a history of severe substance use (Carbonell et al., 2020). These adverse childhood experiences can interact with social learning mechanisms to deepen emotional vulnerability and increase the likelihood of both substance use and mental health challenges. In Ethiopia, where open dialogue about mental health is limited and family cohesion is culturally emphasised, these learned behaviours and unaddressed traumatic experiences may remain unchallenged and become deeply ingrained. As a result, they can shape young people's perceptions of normality and coping, contributing to the intergenerational cycle of substance use and mental health vulnerability (Lund et al., 2015).

Similarly, a family history of mental illness significantly increased the likelihood of young substance users experiencing mental health conditions, due to both biological and social influences. Biologically, genetic predisposition—where inheritable traits related to mood regulation and impulse control—may heighten susceptibility to mental health conditions (Stoewen, 2022). Socially, stigma surrounding mental health conditions and substance use in Ethiopia, where these conditions are often viewed as moral failing rather than health concerns, can lead to social exclusion, rejection by family and community, and barriers to support. These factors further exacerbate conditions like anxiety and depression. Previous studies in Ethiopia have reported similar findings, showing that a family history of mental illness is associated with mental

health conditions among substance users (Birhanu et al., 2014; Melkam et al., 2023; Wubetu et al., 2020).

Given the strong significant association between substance use and mental health conditions, their impact extends beyond psychological distress, affecting overall well-being and quality of life, necessitating an in-depth assessment of HRQoL among young substance users.

9.2.3. Health-related quality of life (HRQoL) among young substance users

9.2.3.1. Level of HRQoL among young substance users

In addition to assessing the mental health conditions of young people identified as substance users, this study explored their HRQoL, offering deeper insight into the consequences of substance use beyond psychological distress. The findings provide critical insights into the broader quality of life dimensions affected by substance use.

Our results indicate that the overall HRQoL score among young substance users was 54.78 ± 16.73(SD), with the highest mean observed in the psychological domain and the lowest in the environmental domain. These findings suggest that while some aspects of psychological resilience may be preserved, substantial challenges persist in the social and environmental spheres.

These lower scores in the social and environmental domains may reflect challenges such as financial instability, limited job opportunities, restricted access to essential services, and political instability in the region, as similarly documented in prior studies (Bratu et al., 2023; Simirea et al., 2022; Tarekegn et al., 2022). These structural deficits often intersect with individual and social vulnerabilities, limiting young people's access to education, employment, and stable housing, critical elements of well-being.

For instance, financial insecurity and unstable employment not only reduce income but also undermine access to nutritious food, healthcare, and mobility, factors essential for overall well-being (Gudata et al., 2019; Mokona et al., 2020). Similarly, inadequate housing, poor sanitation, and lack of transportation or youth-friendly spaces significantly lower the environmental quality of life (Yallew et al., 2024). The intersection of these structural barriers with substance use creates a feedback loop that deepens marginalisation.

Additionally, substance users in Ethiopia often face significant social stigma and isolation, which further weakens social support networks and contributes to diminished HRQoL (Belete et al., 2021; Hadera et al., 2019). In this context, stigma operates on multiple levels, externally, through community rejection and institutional neglect, and internally, by fostering shame, self-blame, and social withdrawal. These stigma-related processes, as key social determinants of health, limit young people's access to protective resources and life opportunities, thereby compounding the negative effects of substance use on their overall quality of life (Birtel et al., 2017).

Our study findings in this regard align with previous local (Tarekegn et al., 2022) and international studies (Alsubaie et al., 2019; Lee et al., 2020; Sadeghi et al., 2017; Stevanovic et al., 2015), which have identified lower socioeconomic and cultural factors as associated with poorer quality of life among substance users. However, our results showed a slightly higher overall HRQoL score (54.8) than a similar study in Northern Ethiopia (50.2) (Tarekegn et al., 2022), which may be due to differences in study design and population rather than a meaningful difference. While the Northern Ethiopian study focused on younger individuals aged 15–24, predominantly from rural areas, our study included a broader age range (14–29) and participants from both urban and rural areas.

The lower overall HRQoL score among young substance users in this study aligns with findings from several international studies, highlighting the negative impact of substance use on overall life quality (Alsubaie et al., 2019; Sadeghi et al., 2017; Stevanovic et al., 2015). It also reinforces a biopsychosocial understanding of health, where individual behaviour, mental wellbeing, and structural contexts interact to produce complex and often cyclical patterns of disadvantage.

Finally, these findings highlight that poor HRQoL among young substance users is not only a reflection of individual psychosocial vulnerability but also a manifestation of broader structural and policy-level limitations. This highlights the need for multi-level interventions that address not only individual-level vulnerabilities but also broader social determinants, including poverty reduction, inclusive education, access to youth-friendly health and social services, stigma reduction, and the creation of supportive community environments.

9.2.3.2. Factors associated with HRQoL among young substance users

This study identified a significant association between HRQoL and both mental health conditions and a family history of mental illness among young substance users. The combination of substance

use and mental health conditions tends to exacerbate difficulties with social engagement, coping with environmental stress, and maintaining functional daily activities (Kassew et al., 2023; Mitiku, Amsalu, et al., 2024; Shumye et al., 2019). Compounded challenges can impair social interactions, and functionality, and heighten vulnerability, leading to reduced HRQoL (Shumye et al., 2019; Tarekegn et al., 2022). The interaction between psychological distress and social marginalisation demonstrates the cumulative nature of disadvantage. These effects are likely intensified in low-resource settings such as the West Arsi zone, where access to health services, economic constraints, and cultural factors present additional challenges (Mitiku, Amsalu, et al., 2024; Tarekegn et al., 2022).

In the West Arsi zone, substance use- particularly khat and alcohol - is in some areas rooted in community life, often linked to social gatherings, religious practices, and coping with personal and societal challenges (Mihretu et al., 2020; Wubetu et al., 2020). Many young people perceive substance use as a way to fit in with modern society or manage stress, which can lead to increased consumption (Mihretu et al., 2020; Wondemagegn et al., 2017). This normalisation of substance use can exacerbate underlying mental health conditions, a key contributor to lower HRQoL. These patterns reflect a form of cultural entrenchment, where behaviours harmful to health become socially accepted or even expected, especially in settings where alternative coping mechanisms or support systems are limited (Fry, 2011). While this study highlights the lower HRQoL scores among young substance users in the West Arsi zone, the societal acceptance of substance use may play a role in these outcomes, although further research is needed to establish this link definitively.

In more culturally and religiously conservative parts of West Arsi, however, substance use and mental health conditions are often perceived through a lens of stigma, seen as sources of social shame or moral failure (Belete et al., 2021; Douglass et al., 2022). Such stigma can prevent young people struggling with substance use and mental health conditions from seeking support or discussing their struggles, leading to isolation that further contributes to a lower HRQoL. The association found in our study between mental health conditions, a family history of mental illnesses, and lower HRQoL among young substance users may help explain how stigma and lack of support contribute to this decline. As a result, some may turn to substance use as self-medication, creating a cycle of dependency that deepens distress and weakens social well-being (Hunduma et al., 2022; Hunduma, Shiferaw, et al., 2024).

Economic hardship compounds sociocultural challenges, with poverty and unemployment limiting access to health services and increasing psychological stress, especially for young people with limited opportunities, like in the West Arsi zone. In this region, access to stable employment is constrained by limited infrastructure, low-paying and unsustainable job opportunities, and a poor saving culture, all of which contribute to persistent financial insecurity (Knifton & Inglis, 2020). These socioeconomic pressures may often push young people to substance use as a coping mechanism. This continued substance use, coupled with the limited availability and accessibility of mental health services in the region (Memirie et al., 2022; Mitiku, Amsalu, et al., 2024; Tarekegn et al., 2022), restricts timely care, resulting in poorer mental health, and consequently, lower HRQoL, as our study also found among young substance users with mental health conditions. Our study findings are consistent with broader literature, which indicates that mental health conditions combined with substance use correlate with lower HRQoL (Birkeland et al., 2018; Lee et al., 2020; Tarekegn et al., 2022).

This study found that a family history of mental illness was associated with lower HRQoL among young substance users. While Ethiopian culture values strong family and community support, the stigma surrounding substance use and mental illness may prevent affected individuals and their families from accessing these protective networks (Girma et al., 2024). Additionally, a family history of mental illness reflects an underlying genetic predisposition, increasing vulnerability to conditions such as anxiety and depression, which further weaken coping mechanisms and resilience (Chinyere Assumpta et al., 2024; Defar et al., 2023; van Sprang et al., 2022).

In the West Arsi zone, where this study was conducted, access to mental health care is limited, and services are largely concentrated in urban centres. Mental health care in Ethiopia relies heavily on out-of-pocket payments, placing significant financial stress on families already facing limited resources (Arias et al., 2022; Hailemichael et al., 2019). Caregiving responsibilities often fall entirely on relatives, as there are no government-funded or institutional care centers offering comprehensive support (Andualem et al., 2024; Ayalew et al., 2019). The stigma, biological vulnerability, caregiving burden, limited social and institutional support, and economic pressures may explain the decline in HRQoL observed in our study among young substance users with a family history of mental illness. These findings are consistent with several local and international studies (Alemu et al., 2024; Birkeland et al., 2018; Tarekegn et al., 2022), which similarly highlight family mental health history as a significant factor associated with quality of life.

Finally, the impact of substance use and mental health conditions on young people's HRQoL underscores the need for targeted interventions and policy recommendations to improve their well-being.

9.3. Implications of the findings (policy, research, and practice)

This thesis explored patterns of substance use in the broader sub-Saharan region and the West Arsi zone, Ethiopia, as detailed in chapters from four to eight. A significant proportion of young people in these regions engage in substance use, driven by a complex interplay of factors. The qualitative analysis, presented in chapter eight, explains the quantitative patterns by illuminating early exposure and peer normalisation, coping with economic and psychosocial stressors, gendered stigma (especially for young women), and limited access to youth-friendly care, particularly outside urban centers. Chapters six and seven further examined mental health conditions and HRQoL among those substance-using young people. The findings revealed a high prevalence of mental health conditions and significantly reduced quality of life among those individuals. Read together, the quantitative burden and qualitative mechanisms point to a syndemic that requires coordinated, multi-level responses and careful attention to implementation realities (platforms, financing, stigma, and local political–economy). Based on these findings, the thesis presents general implications and targeted recommendations to address these issues.

9.3.1. Policy implications

At the policy level, given the critical importance of young people's health for both their well-being and the nation’s development, this thesis emphasises the need for a comprehensive, coordinated strategy that integrates mental health and substance use prevention and care into the broader health, youth, and social protection agendas. This should be grounded in health equity and social determinants of health frameworks, recognising that young people’s health outcomes are shaped by poverty, unemployment, education quality, gender inequality, and community-level disparities. Because early initiation and peer/family normalisation emerge in narratives alongside high measured prevalence, prevention must begin before late adolescence and be embedded across education, health, and social protection policies. These recommendations draw directly on the high measured prevalence (Chapters 5 to 7) and the qualitative accounts of early initiation and normalisation (Chapter 8).

Existing policies, such as health and national youth policies and the national mental health strategy, should explicitly reflect the intersectionality of these issues, recognising the developmental, social, and structural factors that impact young people's health outcomes. A key recommendation for national and regional health authorities is to incorporate integrated mental health and substance use screening protocols into young people's health service delivery frameworks. This integration should be supported by the development of clear guidelines and training for primary healthcare providers, teachers, and frontline workers to ensure the early identification and appropriate referral of at-risk young people.

Policies and strategies must also recognise that access to mental health and substance use services is not only a health issue but a basic human right, and a prerequisite for achieving broader development goals. However, realising this vision requires acknowledging and addressing a range of systemic and political barriers. These include fragmented service delivery, weak intersectoral coordination, underfunding and low prioritisation of mental health and substance use in national and regional budgets. Additionally, the shortage of trained personnel, inadequate infrastructure, and ongoing political instability have disrupted basic services in some parts of the country. Implementation is also shaped by political–economic factors: in some localities, khat and alcohol contribute to household livelihoods and local revenue, which can dampen local ownership of restrictive or preventive measures; aligning public-health goals with alternative livelihood supports and framing prevention as an investment in productivity, school attainment, and public safety can help sustain commitment. Addressing these challenges will require stronger governance mechanisms, effective cross-sectoral partners, and sustained political commitment to youth-focused health reform.

The findings reveal that substance use and mental health conditions among young people in Ethiopia are shaped by a range of interconnected social, cultural, and structural factors. Addressing these complex challenges requires coordinated cross-sectoral action, particularly among the health, education, youth affairs, and social development sectors, to ensure coordinated action, resource pooling, and program harmonisation. A key recommendation is the implementation of context-specific school and community-based mental health promotion and prevention programs tailored to Ethiopian realities. These programs should actively engage schools, religious institutions, families, and informal community networks, which play a central role in the lives of young Ethiopians. Their focus should be on raising awareness, building resilience, reducing stigma, and

enhancing help-seeking behaviour through culturally appropriate and community-driven approaches. Policy frameworks should also resource existing delivery platforms (e.g., school health/life-skills activities, youth-friendly services, and mhGAP-aligned primary care) to improve coverage and fidelity, with particular attention to rural and peri-urban gaps.

Additionally, both the survey results and lived experiences revealed gender-specific vulnerabilities, highlighting the need for gender-responsive and equity-focused policies to address the unique challenges faced by young women, rural young people, and other marginalised groups. These policies must go beyond improving access to also ensure safety, reduce cultural stigma, and strengthen support systems that are sensitive to diverse needs and contexts.

To enhance policy relevance and accountability, it is also critical to promote the meaningful participation of young people in all stages of policy and program development. This includes creating formal mechanisms for young people's engagement, such as involving young people as peer educators, advisory group members, and co-designers of interventions. Achieving this requires capacity building for young people's organisations, establishing young people's councils at regional and national levels, and integrating young people-led monitoring and accountability into program implementation.

Finally, the high burden of need and the limited access to services identified in this study highlight the need to scale up and decentralise culturally appropriate, youth-friendly mental health and substance use prevention, care, and support services in primary healthcare, schools, and informal community spaces. Monitoring and evaluation requirements (e.g., routine indicators for screening, referral, and follow-up) should be embedded to track equity, quality, and cost.

9.3.2. Practice implications

The thesis reinforces the need for integrated, youth-centred service delivery models addressing the co-occurring challenges of substance use, mental health, and reduced HRQoL. Frontline healthcare providers, school personnel, and community workers must be equipped with the knowledge and tools to identify at-risk youth early and provide timely, culturally sensitive interventions. The integration of mental health and substance use services into existing young people's health platforms—such as school health programs, community-based health extension packages, and primary healthcare units—can enhance accessibility and continuity of care. The co-existence of

substance use and mental health issues supports the case for embedding standardised screening tools in schools, youth centers, and primary health care. In practice, this includes routine brief screening, advice, and referral through youth-friendly, confidential pathways; reinforced supervision for mhGAP-aligned services; and clear protocols for crisis management and onward care. The specific service components mirror deficits reported by participants (Chapter 8) and the service gaps inferred from survey findings (Chapters 6 to 7).

Strengthening community-based psychosocial support services, with a particular focus on youth-friendly spaces and confidentiality, is essential to improving service uptake and engagement. Moreover, targeted efforts must address the unique vulnerabilities of young women, who often face disproportionate stigma and social exclusion related to both mental health conditions and substance use.

As young peer networks significantly influence behaviours, leveraging peer educators and community champions can facilitate more relatable, stigma-free prevention and support programs. As shown by the family-level risk factors in both quantitative and qualitative findings, family-focused counseling and parent-training should be part of practice models, and services should incorporate gender-sensitive adaptations to improve safe access for young women. Partnerships with faith-based and community organisations (idir/afosha, youth clubs) can extend reach in rural areas, while peer-led components should include safeguards (training, supervision, referral triggers) to protect both peers and beneficiaries.

9.3.3. Future research implications

Priorities reflect the explanatory pathways suggested by qualitative data (Chapter 8) and associations observed quantitatively (Chapters 5 to 7). This thesis highlights key gaps and priorities for future research on substance use, mental health, and health-related quality of life (HRQoL) among young people in Ethiopia. While the findings establish strong evidence of associations, the cross-sectional nature of the data limits conclusions about directionality. Future research should therefore adopt longitudinal study designs to explore the causal pathways linking substance use, mental health, and HRQoL, especially in the Ethiopian context, where early onset often goes undetected and unaddressed, making it difficult to determine which factor precedes or influences the other. Given implementation barriers identified here, pragmatic trials and hybrid

effectiveness–implementation studies are warranted to test scalable models in schools, communities, and primary care, with outcomes on fidelity, acceptability, equity, and costs.

Context-specific intervention research is also key in building on the implementation challenges observed in Ethiopia. There is a need for implementation and scale-up studies to evaluate the effectiveness, cultural relevance, and sustainability of locally adapted youth-friendly intervention models. For instance, while the potential of digital health and mhealth interventions is promising, future research must account for digital inequality, especially in rural areas where many young people have limited access to smartphones, internet, and digital literacy. Research should also explore ethical issues such as privacy, informed consent, and unintended consequences of digital interventions among vulnerable young individuals.

Moreover, the findings of this thesis suggest that future research should go beyond risk factors and focus on protective and resilience-enhancing factors. In the Ethiopian context, important but under-explored areas include the role of spirituality and religious practices, which remain central in many Ethiopian lives, often providing meaning, structure, and coping during adversity. Similarly, research should investigate how cultural identity and collective values, such as community responsibility, interdependence, and respect for each other, can promote positive mental health and substance avoidance. Indigenous social support systems, including *idir* (*afosha*), *gada*, *mahiber*, and other grassroots structures, may offer informal psychological support and serve as platforms for community-based prevention efforts.

Furthermore, the application of theoretical frameworks grounded in Ethiopia's sociocultural realities can strengthen future research. For example, an ecological systems theory offers a useful lens to understand how young individuals' behaviours are shaped within interconnected environments: family, community, institutional, and policy environments. Social capital theory can guide exploration of how community connectedness, informal networks, and trust act as protective buffers against distress. Similarly, resilience and protective models can aid in understanding how various supports interact to reduce vulnerability among high-risk young people.

Finally, the mixed-methods approach used in this thesis illustrates the value of combining statistical trends with the lived experiences of young people. Future research should continue to engage them as active partners and co-creators of knowledge, ensuring that their insights inform

the design, implementation, and evaluation of interventions. Involving them, particularly those with lived experience of substance use or mental health conditions, can enhance the relevance, acceptance, and sustainability of solutions in the Ethiopian context (Baird et al., 2025; Nagata et al., 2025). Attention to measurement harmonisation (e.g., timeframes, tools, reporting) across studies would also improve comparability and policy utility.

In sum, the integrated evidence base, quantitative patterns explained by qualitative mechanisms, supports policy integration, practice transformation in schools, communities, and primary care, and a forward research agenda that can move from description to sustainable solutions.

9.4. Strengths and limitations

A major limitation of this study pertains to its cross-sectional design, which limits the establishment of causal relationships between variables. Additionally, as with most survey-based research, there is a potential for self-reporting bias, where participants may underreport or overreport substance use, mental health conditions, and questions related to their quality of life due to social desirability or other factors that could impact the accuracy and interpretation of results.

It is also important to note that this study's findings are specific to young substance users in the West Arsi zone and might not entirely reflect the findings in other regions of Ethiopia or different socio-cultural contexts. Hence, the results should be interpreted and generalised carefully.

Furthermore, across the various components of this thesis, the age definitions used for *young people* varied slightly to suit the objectives and ethical requirements of each study. These differences were methodologically justified but may affect comparability across study components and should be taken into account when interpreting the integrated findings.

Despite these limitations, the thesis has several notable strengths. It presents a detailed analysis of the key factors associated with health-related quality of life (HRQoL), including mental health conditions, gender, age, education, social support, and family history of substance use and mental illness. The use of interviewer-administered questionnaires helped overcome literacy-related barriers and facilitated high-quality data collection. Our purposive sampling approach ensured diversity, and the high response rate (99.3%) suggests strong community engagement. Moreover,

our efforts to minimise self-selection bias through community-based recruitment enhance the credibility and inclusivity of the findings.

9.5. Conclusions

This PhD thesis presents a comprehensive and nuanced exploration of the complex and interrelated challenges of substance use, mental health conditions, and health-related quality of life among young people in Ethiopia. Drawing from quantitative studies, qualitative interviews, and a systematic review, the findings paint a compelling picture of a syndemic – a mutually reinforcing crisis wherein substance use and mental health problems co-occur and are shaped by deep-rooted structural, social, and familial factors.

The study demonstrates that substance use significantly elevates the risk of mental health conditions and deteriorates the quality of life across emotional, social, physical, and environmental domains. It further reveals that young people with family histories of substance use or mental illness, limited social support, economic hardship, or disrupted family functioning are particularly vulnerable. Young women face unique challenges due to societal stigma, leading to heightened psychosocial burdens.

These findings call for a fundamental shift in how substance use and mental health are understood and addressed, moving from fragmented, biomedical models to holistic, young people-centred, and culturally sensitive approaches that are rooted in prevention, early intervention, and community resilience. The integration of research, policy, and practice efforts must prioritise the voices and lived experiences of young people, especially the most marginalised, to ensure sustainable and inclusive mental health responses.

By offering a rich evidence base and clear direction for future action, this thesis contributes to the growing body of work aiming to close the mental health gap in Ethiopia and similar low-resource contexts.

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♦ Annexes and Appendices

Appendix -1: English Version Survey Questionnaire

Interview Details		
Questionnaire ID	----------	
Household address Kebele	Woreda: ---------- Kebele: ---------- House number: ----------	
Interview contact attempt #1	dd/mm/yyyy: [----------]	HH: MM [----------]
Contact result #1		
Interview contact attempt #2	dd/mm/yyyy: [----------]	HH: MM [----------]
Contact result #2		
Interview contact attempt #3	dd/mm/yyyy: [----------]	HH: MM [----------]
Contact result #3		
Name/ID of person interviewed		
Interviewer	Name: ----------	Sign: ----------
Supervisor	Name: ----------	Sign: ----------
Interview time	Start: ----------	End: ----------
Date of interview	dd/mm/yyyy: [----------]	HH: MM [----------]
Interview conducted at…..		
**Contact result codes: 1=Completed; 2=Not at home; 3=Postponed; 4=Refused; 5=Partly completed; 6=Incapacitated; 7=Other (specify)*		

Section I: Sociodemographic Information of the respondents		
Sex (fill it by looking the sex of the participant)	[Male, Female]	
Age in years (How old are you?)	[----------]	
Living place (where do you live, in urban or rural kebele?)	[urban, rural]	
For how long did you live in your kebele? (year/month)	------, ---------	
Educational background (What is the highest level of education you have completed?)	1. Didn't attend and cannot read and write 2. Can read and write but didn't attend formal education (e.g. learn at church or mosque or got non-formal basic education) 3. Attend formal education	
If you attended formal education, what is the highest education level you received?	Elementary, Junior, high school, certificate, college, degree and above	
Occupation (what is your work from which you get your income or how spend your day)?	Farming Private organisation employee Self-employed	

	Volunteer House wife Unemployed Student Government employee Daily laborer Other (please specify)	
What is the average annual income of your family?		
What is the source of your family's annual income?		
How would you rate your family's current income or life compared to other average families in Ethiopia?	Very low, lower, middle, higher, very high	
Marital status (What is your current marital status?		
Your spouse's occupation (what is your spouse's work from which she/he gets his/her income or how they spend their day)?)) [ask only if the respondent is married or his spouse is alive)		
Educational background of your spouse (What is the level of education of your spouse?)		
Religion (what is your religion?)		
Ethnicity (what is your ethnicity?)		
How many people, including yourself, are there in your household?		
[For female interviewees] Are you pregnant?		
Do you have children (including your own children and adopted ones)? If the response is no, go to question 120		
How many children do you have?		
How long does it take you to get to the nearest health center?		

What is your average monthly Income in Ethiopian Birr?		
Family history of mental illness?		
Family history of substance use?		

Section II: The Alcohol Use Disorders Identification Test: Interview Version

Read questions as written. Record answers carefully. Begin the AUDIT by saying "Now I am going to ask you some questions about your use of alcoholic beverages during this past year." Explain what is meant by "alcoholic beverages" by using local examples of beer, wine, Areke, etc. Code answers in terms of "standard drinks". Place the correct answer number in the box at the right.

1. How often do you have a drink containing alcohol? (0) Never [Skip to Qs 9-10] (1) Monthly or less (2) 2 to 4 times a month (3) 2 to 3 times a week (4) 4 or more times a week	6. How often during the last year have you needed a first drink in the morning to get yourself going after a heavy drinking session? (0) Never (1) Less than monthly (2) Monthly (3) Weekly (4) Daily or almost daily
2. How many drinks containing alcohol do you have on a typical day when you are drinking? (0) 1 or 2 (1) 3 or 4 (2) 5 or 6 (3) 7, 8, or 9 (4) 10 or more	7. How often during the last year have you had a feeling of guilt or remorse after drinking? (0) Never (1) Less than monthly (2) Monthly (3) Weekly (4) Daily or almost daily
3. How often do you have six or more drinks on one occasion? (0) Never (1) Less than monthly (2) Monthly (3) Weekly (4) Daily or almost daily, Skip to Questions 9 and 10 if the Total Score for Questions 2 and 3 = 0	8. How often during the last year have you been unable to remember what happened the night before because you had been drinking? (0) Never (1) Less than monthly (2) Monthly (3) Weekly (4) Daily or almost daily
4. How often during the last year have you found that you were not able to stop drinking once you had started? (0) Never	9. Have you or someone else been injured as a result of your drinking? (0) No

(1) Less than monthly (2) Monthly (3) Weekly (4) Daily or almost daily	(2) Yes, but not in the last year (4) Yes, during the last year
5. How often during the last year have you failed to do what was normally expected from you because of drinking? (0) Never (1) Less than monthly (2) Monthly (3) Weekly (4) Daily or almost daily	10. Has a relative or friend or a doctor or another health worker been concerned about drinking or suggested you cut down? (0) No (2) Yes, but not in the last year (4) Yes, during the last year
AUDIT Total S	

Section III: Problematic khat use screening test (PKUST-17)

Now, I am going to ask you some questions about your experience of using khat in the three months. Since Khat use is problematic for some people, it is important to know the khat use pattern of use of people. Thus, please tell me openly and correctly. All of the responses will be kept confidential.

***Note**: rarely (3 times and less); sometimes (once in a week); usually (2-4 days per week); always (almost daily)*

During the past three months, how often do you chew khat?	Less than once in 3 months	0
	One to three days per month	1
	One or two days in a week	2
	Three or four days in a week	3
	Daily or almost daily	4
During the past three months, when you chewed khat, on average, how much time did you spend in chewing without engaging to important task?	An hour or less	0
	2-3 hours	1
	4- 5 hours	2
	5-6 hours	3
	6 hours or more	4
In the past three months, how often do you chew khat to treat distressing experiences or depression when the khat is withdrawn?	Never	0
	Rarely	1
	Sometimes	2
	Quite often	3
	Almost always	4
In the past three months, how often you experience craving for khat?	Never	0
	Rarely	1
	Sometimes	2
	Quite often	3
	Almost always	4
In the past three months, how often do you experience distressing emotional or behaviour symptoms when the khat is withdrawn?	Never	0
	Rarely	1
	Sometimes	2
	Quite often	3
	Almost always	4

During the past three months, how much has khat led to financial problems?	None	0
	Mild	1
	Moderate	2
	Sever	3
	Extremely	4
In the past three months, to what extent you failed to do what was expected of you at work because of chewing khat?	None	0
	Mild	1
	Moderate	2
	Sever	3
	Extremely	4
During the past three months, how often you feel depressed when you didn't chew khat?	Never	0
	Rarely	1
	Sometimes	2
	Quite often	3
	Almost always	4
During the past three months, how often you experience irritability when you didn't chew khat?	Never	0
	Rarely	1
	Sometimes	2
	Quite often	3
	Almost always	4
During the past three months, how often you experience vivid, unpleasant dreams when you didn't chew khat?	Never	0
	Rarely	1
	Sometimes	2
	Quite often	3
	Almost always	4
During the past three months, how often you experience tear falling that blurred your vision when you didn't chew khat?	Never	0
	Rarely	1
	Sometimes	2
	Quite often	3
	Almost always	4
During the past three months, how often you experience frequent yawning when you didn't chew khat?	Never	0
	Rarely	1
	Sometimes	2
	Quite often	3
	Almost always	4
During the past three months, how often your work motivation has reduced when you didn't chew khat?	Never	0
	Rarely	1
	Sometimes	2
	Quite often	3
	Almost always	4
During the past three months, how often you experience serious fatigue or reduced energy when you didn't chew khat?	Never	0
	Rarely	1
	Sometimes	2
	Quite often	3
	Almost always	4
During the past three months, to what extent you have increased your amount of khat to get the desired effect?	None	0
	Mild	1
	Moderate	2
	Sever	3
	Extremely	4
During the past three months, how often you experience restlessness when you didn't chew khat?	Never	0
	Rarely	1
	Sometimes	2
	Quite often	3
	Almost always	4

During the past three months, how often you experience marked diminished effect with continued use of the same amount of khat?	Never	0
	Rarely	1
	Sometimes	2
	Quite often	3
	Almost always	4

Section IV: Tobacco Use Assessment Questions		
Have you ever used any tobacco product?	Yes	No
Which form (type) of tobacco product have you tried in your life?		
Cigarette smoking		
Pipeful tobacco smoking		
Chewing tobacco		
Smoking snuff		
Smoking shisha		
Smoking Gaya		
Any other types of tobacco		
Do you currently use any tobacco product?		
Cigarette smoking		
Pipeful tobacco smoking		
Chewing tobacco		
Smoking snuff		
Smoking shisha		
Smoking Gaya		
Any other types of tobacco		

Section V: PATIENT HEALTH QUESTIONNAIRE (PHQ-9)				
Over the last 2 weeks, how often have you been bothered by any of the following problems? (*Circle numbers in the box to indicate the answer*)	**Not at all**	**Several days**	**More than half the days**	**Nearly every day**
1. Little interest or pleasure in doing things	0	1	2	3
2. Feeling down, depressed, or hopeless	0	1	2	3
3. Trouble falling or staying asleep, or sleeping too much	0	1	2	3
4. Feeling tired or having little energy	0	1	2	3
5. Poor appetite or overeating	0	1	2	3
6. Feeling bad about yourself or that you are a failure or have let yourself or your family down	0	1	2	3
7. Trouble concentrating on things, such as reading the newspaper or watching television	0	1	2	3
8. Moving or speaking so slowly that other people could have noticed. Or the opposite being so fidgety or restless that you have been moving around a lot more than usual	0	1	2	3
9. Thoughts that you would be better off dead, or of hurting yourself	0	1	2	3
Total PHQ-9 Score ---------- = Add Columns ----- + ----- + ----- + -----				

10. If you checked off any problems, how difficult have these problems made it for you to do your work, take care of things at home, or get along with other people?	Not difficult at all --------- Somewhat difficult ---------Very difficult --------- Extremely difficult ---------

Section VI: GENERALISED ANXIETY DISORDERS (GAD-7)				
Over the last 2 weeks, how often have you been bothered by any of the following problems? (*Circle numbers in the box to indicate the answer*)	**Not at all**	**Several days**	**More than half the days**	**Nearly every day**
1. Feeling nervous, anxious or on edge	0	1	2	3
2. Not being able to stop or control worrying	0	1	2	3
3. Worrying too much about different things	0	1	2	3
4. Trouble relaxing	0	1	2	3
5. Being so restless that it is hard to sit still	0	1	2	3
6. Becoming easily annoyed or irritable	0	1	2	3
7. Feeling afraid as if something awful might happen	0	1	2	3
Total GAD-7 Score ---------- = Add Columns ----- + ----- + ----- + -----				
8. If you checked off any problems, how difficult have these problems made it for you to do your work, take care of things at home, or get along with other people?	Not difficult at all --------- Somewhat difficult ---------Very difficult --------- Extremely difficult ---------			

Section VII: Trauma Screening Questionnaire (TSQ)		
Now, I am going to ask you some questions about reactions that sometimes occur after a traumatic event. The questionnaire is designed to assess personal reactions to any traumatic event that might happen to you. Please respond as (Yes/No) whether or not you have experienced any of the following at least twice in the past week.	Yes	No
1. Upsetting thoughts or memories about the event that have come into your mind against your will		
2. Upsetting dreams about the event		
3. Acting or feeling as though the event were happening again		
4. Feeling upset by reminders of the event		
5. Bodily reactions (such as fast heartbeat, stomach churning, sweatiness, dizziness) when reminded of the event		
6. Difficulty falling or staying asleep		

7. Irritability or outbursts of anger		
8. Difficulty concentrating		
9. Heightened awareness of potential dangers to yourself and others		
10. Being jumpy or being startled at something unexpected		

Section VIII: Suicidal Behaviour Assessment Questions		
Please mark with a cross symbol in the box that the respondent's answer best fits what he/she has felt or experienced in the last year	Yes	No
1. Have you felt that life is not worth living?		
2. Have you wished you were dead? For example, going to sleep and wishing you would not get up.		
3. Have you thought about taking your life even if you weren't really going to?		
4. Have you reached the point where you considered actually taking your own life or you made plans about how you would do it?		
5. Have you tried to take your own life?		

Section IX: WHO Quality of Life Scale-Brief (WHOQOL-BREF)					
Now, I am going to ask you some questions that assesses your feelings. Each question has options with scale ranging from 1-5 and choose the alternative that best fits to your feeling.					
1. How would you rate your quality of life?	Very poor (1)	Poor (2)	Neither poor nor good (3)	Good (4)	Very Good (5)
2. How satisfied are you with your health?	Very dissatisfied (1)	Dissatisfied (2)	Neither satisfied nor dissatisfied (3)	Satisfied (4)	Very satisfied (5)
The following questions ask about how much you have experienced certain things in the last two weeks. ***[Not at all = 1, A little = 2, A moderate amount= 3, Very much= 4, An extreme amount= 5]***					
3. To what extent do you feel that physical pain prevents you from doing what you need to do?	1	2	3	4	5
4. How much do you need any medical treatment to function in your life?	1	2	3	4	5
5. How much do you enjoy life?	1	2	3	4	5
6. To what extent do you feel your life to be meaningful?	1	2	3	4	5
7. How well are you able to concentrate?	1	2	3	4	5
8. How safe do you feel in your daily life?	Not at all	Slightly	A moderate amount	Very much	Extremely
9. How healthy is your physical environment?	Not at all	Slightly	A moderate amount	Very much	Extremely
The following questions ask about how completely you experience or were able to do certain things in the last two weeks. ***[Not at all=1, A little=2, Moderately=3, Mostly=4, Completely=5]***					
10. Do you have enough energy for everyday life?	1	2	3	4	5

11. Are you able to accept your bodily appearance?	1	2	3	4	5
12. Have you enough money to meet your needs?	1	2	3	4	5
13. How available to you is the information that you need in your day-to-day life?	1	2	3	4	5
14. To what extent do you have the opportunity for leisure activities?	1	2	3	4	5
15. How well are you able to get around?	Very poor (1)	Poor (2)	Neither poor nor well (3)	Well (4)	Very well (5)
16. How satisfied are you with your sleep?	Very dissatisfied (1)	Dissatisfied (2)	Neither satisfied nor dissatisfied (3)	Satisfied (4)	Very satisfied (5)
17. How satisfied are you with your ability to perform your daily living activities?	Very dissatisfied (1)	Dissatisfied (2)	Neither satisfied nor dissatisfied (3)	Satisfied (4)	Very satisfied (5)
18. How satisfied are you with your capacity for work?	Very dissatisfied (1)	Dissatisfied (2)	Neither satisfied nor dissatisfied (3)	Satisfied (4)	Very satisfied (5)
19. How satisfied are you with yourself?	Very dissatisfied (1)	Dissatisfied (2)	Neither satisfied nor dissatisfied (3)	Satisfied (4)	Very satisfied (5)
20. How satisfied are you with your personal relationships?	Very dissatisfied (1)	Dissatisfied (2)	Neither satisfied nor dissatisfied (3)	Satisfied (4)	Very satisfied (5)
21. How satisfied are you with your sex life?	Very dissatisfied (1)	Dissatisfied (2)	Neither satisfied nor dissatisfied (3)	Satisfied (4)	Very satisfied (5)
22. How satisfied are you with the support you get from your friends?	Very dissatisfied (1)	Dissatisfied (2)	Neither satisfied nor dissatisfied (3)	Satisfied (4)	Very satisfied (5)
23. How satisfied are you with the conditions of your living place?	Very dissatisfied (1)	Dissatisfied (2)	Neither satisfied nor dissatisfied (3)	Satisfied (4)	Very satisfied (5)
24. How satisfied are you with your access to health services?	Very dissatisfied (1)	Dissatisfied (2)	Neither satisfied nor dissatisfied (3)	Satisfied (4)	Very satisfied (5)

25. How satisfied are you with your mode of transportation?	Very dissatisfied (1)	Dissatisfied (2)	Neither satisfied nor dissatisfied (3)	Satisfied (4)	Very satisfied (5)
The following question refers to how often you have felt or experienced certain things in the last two weeks.					
26. How often do you have negative feelings, such as blue mood, despair, anxiety, & depression?	Never (1)	Seldom (2)	Quite often (3)	Very often (4)	Always (5)

Appendix – 2: Afan Oromoo Version Survey Questionnaire / Bar-Gaaffii

Q0001	Participant Identification code/koodii adda footuu/baastuu hirmaattotaa				

Q0002	Household address/Teessoo	Woreda/Aanaa _____	Kebele/Ganda _____
Q0003	Successful interview contacts number/Marsaa Bargaaffiin itti milkaa'e	Contact attempt/marsaa yaalii	1. _____ 2. _____ 3. _____
Q0004	Interviewer/Bar-gaaffii kan taasise	Maqaa _____	
Q0005	Interview date and time/Guyyaa fi saa'atii bar-gaaffiin itti godhame	Date/Guyyaa _____	Time/Saa'atii _____
Q0006	Place of interview/Iddoo bargaaffiin itti godhame		

FORM 1: SOCIO-DEMOGRAPHIC DETAILS/ UNKA 1: HAALA HAWAASI-MAALUMMA HIRMAATICHAA GAD-FAGEENYAAN			
1001_1	Ganda kana keessa yoo xiqqaate ji'a 6 jiraattee jirtaa?	Eeyyee	1
		Lakki	0
	Yoo deebin "Lakkii" ta'ee namni kun qorrannicha irratti hirmaachuu hin danda'u		
1002_1	Saala	Dhalaa	0
		Dhiira	1
1003_1	Umuriin/ganni kee meeqa?	Waggaa _____	
1004_1	Sadarkaa barnoota?	Gonkumaa hin baranne, barreessuufi dubbisuu hin danda'u	1
		Dubbisuu fi barreessuu nan danda'a, garuu barnoota idileee hin hordofne	2
		Sadarkaa tokkoffaa (kutaa 1-6)	3
		Sadarkaa giddu-galeessaa (kutaa 7-8)	4
		Sadarkaa lammaffaa (kutaa 9-12)	5
		Sartifikeettii	6
		Koolleejjii	7
		Digirii jalqabaafi sanii ol	8
1005_1	Maal hojjattan ykn maddii galii keessanii maal?	Qonnaan bulaa	1
		Mana hojii miti mootummaatti caqarame	2
		Hojii dhuufaa	3
		Tola ooltummaa	4
		Haadha manaa	5
		Hoji-dhabaa	6
		Barataa	7
		Hojjataa mootummaa	8
		Hojjataa guyyaa	9
		Kan biraa (ibsi)	10
1006_1	Haalli gaa'ila kee maal fakkaata?	Kan hinfuune/hin heerumne (single)----------> ***Gaaffii 1009_1tti darbi***	1
		Kan heerumte/fuudhe (married)	2
		Waliin jiraanna garuu seeran wali hin fuune	3

		Kan seeran adda baayan (divorced)	4
		Kan abbaan/haati warraa jala duute (widowed)	5
		Kan hiikte/hike (separated)	6
1007_1	Yoo fuute/heerumtee jirta ta'e, dalagaan haadha/abbaa worraa keetii maali?	Qonnaan bulaa	1
		Mana hojii miti mootummaatti caqarame	2
		Hojii dhuufaa	3
		Tola ooltummaa	4
		Haadha manaa	5
		Hoji-dhabaa	6
		Barataa	7
		Hojjataa mootummaa	8
		Hojjataa guyyaa	9
		Kan biraa (ibsi)	10
1008_1	Sadarkaan barnoota abbaa/haadha worraa keessanii maali?	Gonkumaa hin baranne, barreessuufi dubbisuu hin danda'u	1
		Dubbisuu fi barreessuu nan danda'a, garuu barnoota idileee hin hordofne	2
		Sadarkaa tokkoffaa (kutaa 1-6)	3
		Sadarkaa giddu-galeessaa (kutaa 7-8)	4
		Sadarkaa lammaffaa (kutaa 9-12)	5
		Sartifikeettii	6
		Koolleejjii	7
		Digirii jalqabaafi sanii ol	8
1009_1	Ijoollee qabdanii? ***Deebiin 'Lakki' yoo ta'e, gara gaaffii 1011tti darbi***	Eeyyen	1
		Lakki	0
1010_1	Ijoollee meeqa qabdan?	Ijoollee _____	
1011_1	Sabbummaan kee maalinni?	Oromoo	1
		Amaara	2
		Tigree	3
		Sidaama	4
		Wolaayitaa	5
		Soomaalee	6
		Guraagee	7
		Kan biraa (Ibsi)_____	8
1012_1	Amantaa kam hordofta?	Ortodoksii- kiristaana	1
		Islaama	2
		Protestaantii-Kiristaana	3
		Kaatolikii	4
		Kan biraa (Ibsi)_____	5
1013_1	Eessa jiraatta?	Urban/Magaalaa	1
		Rural/Baadiyyaa	2
	Mana keessan keessa si dabalatee miseensi maatii nama meeqatu jiraata?	Nama _____	

1014_1	Dargaggoota/ijoollee umriin isaanii waggaa 14-29 ta'e meeqatu mana keessan keessa jira (waliin jiraattu)?	Nama _____	
1015_1	Giddugalaan galii maatii keessaanii woggaatti hangam ta'a?	Annual Income in birr/Galii waggaa birriidhaan _____	
1016_1	Maddi galii maatii keessanii maal inni?	_____	
1017_1	Galii maatii keessanii kan waggaa, akka Itoophiyaatti maatii giddugaleessa ta'e kan biraa wajjiin akkamitti madaaltan?	Baay'ee xiqqaadha (very low)	1
		Xiqqaadha (lower)	2
		Giddu-galeessa (medium)	3
		Irra guddaadha/woyyaadha (higher)	4
		Baay'ee irra guddaadha (very high)	5
1018_1	Galiin ji'aa kee giddu-galaan meeqa ta'a?	Birrii _____	

Unka 2: GENERALISED ANXIETY DISORDER/ Cinqama/dhiphina/sodaa/oormaa/yaaddoo dimshaashaa 7 (GAD 7)

Over the last 2 weeks, how often have you been bothered by any of the following problems?
Torban lamaan darban kana keessa wantoota (rakkoolewwan) armaan gadii irratti hangam yaadda'aa/sodaachaa turte?

2001_2	Feeling nervous anxiety or on edge .....…… Cinqamuu/dhiphachuu/sodaachuu/yaaddahuu	Not at all /Gonkumaa hin jiru	0
		Several days/ Guyyoota baay'ee ni jira	1
		More than half the days/ walakkaan oli (harka caalu) ni jira	2
		Nearly every day /Guyyuma maraa ni jira jechuun ni danda'ama	3
2002_2	Not being able to stop or control worrying.…… Sodaa/yaaddoo/dhiphina to'achuu dadhabuu	Not at all /Gonkumaa hin jiru	0
		Several days/ Guyyoota baay'ee ni jira	1
		More than half the days/ walakkaan oli (harka caalu) ni jira	2
		Nearly every day /Guyyuma maraa ni jira jechuun ni danda'ama	3
2003_2	Worrying too much about different things.... Dhimmoota garagaraatiif humnaa ol yaadda'uu/dhiphachuu (fkn. Barnootaaf, jireenyaaf, maatiif, nageenyaaf ….)	Not at all /Gonkumaa hin jiru	0
		Several days/ Guyyoota baay'ee ni jira	1
		More than half the days/ walakkaan oli (harka caalu) ni jira	2
		Nearly every day /Guyyuma maraa ni jira jechuun ni danda'ama	3
2004_2	Trouble relaxing .....…… Bohaaruu/bashannanuu/gammaduu/taphachuu dadhabuu	Not at all /Gonkumaa hin jiru	0
		Several days/ Guyyoota baay'ee ni jira	1
		More than half the days/ walakkaan oli (harka caalu) ni jira	2
		Nearly every day /Guyyuma maraa ni jira jechuun ni danda'ama	3
2005_2	Being so restless that it is hard to sit still……	Not at all /Gonkumaa hin jiru	0
		Several days/ Guyyoota baay'ee ni jira	1

	Boqonnaa sammuu/qalbii/yaadaa dhabuu irraa kan ka'e tasgabbaayanii taa'uu dadhabuu	More than half the days/ walakkaan oli (harka caalu) ni jira	2
		Nearly every day /Guyyuma maraa ni jira jechuun ni danda'ama	3
2006_2	Becoming easily annoyed or irritable..... Waanuma salphaaf ykn akkuma salphattii aaruu/dallanuu/	Not at all /Gonkumaa hin jiru	0
		Several days/ Guyyoota baay'ee ni jira	1
		More than half the days/ walakkaan oli (harka caalu) ni jira	2
		Nearly every day /Guyyuma maraa ni jira jechuun ni danda'ama	3
2007_2	Feeling afraid as if something awful might happen Waan badaa/gadhee/fokkisaa wayiittu raawwatuuf/ta'uuf/uumamuuf deema jedhanii yaadda'uu/sodaachuu/saalfachuu	Not at all /Gonkumaa hin jiru	0
		Several days/ Guyyoota baay'ee ni jira	1
		More than half the days/ walakkaan oli (harka caalu) ni jira	2
		Nearly every day /Guyyuma maraa ni jira jechuun ni danda'ama	3
	GAD-7 Score =_____ + _____ + _____		

FORM 3: PAITENT HEALTH QUESTINNEIRE (PHQ 9): (SCPMCMDPHASE 1 QUESTIONNAIRE)/ Unka 3: bar-gaaffii haala fayyaa yaalamaa/mtuu (dhukkubsataa/ttuu) [PH 9]			
During the last 4 weeks, how much have you been bothered by any of the following problems? **Torban afran darban kana keessa waantota (rakkoolewwan) armaan gadii irratti ammam yaadda'aa/sodaachaa turte?**			
3001_3	Little interest or pleasure in doing things…… Waantota adda addaa hojjachuu/dalaguu irratti fedhii xiqqoo qabaachuu ykn gammaduu dhabuu/dhiisuu	Not at all/ Gonkumaa hin jiru	0
		Several days/ Guyyoota baay'ee ni jira	1
		More than half the days/ Walakkaan oli (harka caalu) ni jira	2
		Nearly every day / Guyyuma maraa ni jira jechuun ni danda'ama	3
3002_3	Feeling down, depressed, or hopeless.…… Abdii kutuu, mukaawuu, of-jibbuu, baay'isanii gadduu.....	Not at all/ Gonkumaa hin jiru	0
		Several days/ Guyyoota baay'ee ni jira	1
		More than half the days/ Walakkaan oli (harka caalu) ni jira	2
		Nearly every day / Guyyuma maraa ni jira jechuun ni danda'ama	3
3003_3	Trouble falling or staying asleep, or sleeping too much Hirribi nama qabuu diduu, kan barbaadamuu ol rafuu, hirriba keessaa jeeqamuu/tasgabbayanii rafuu dadhabuu	Not at all/ Gonkumaa hin jiru	0
		Several days/ Guyyoota baay'ee ni jira	1
		More than half the days/ Walakkaan oli (harka caalu) ni jira	2
		Nearly every day / Guyyuma maraa ni jira jechuun ni danda'ama	3
3004_3	Feeling tired or having little energy.....…. Dadhabbiin namatti dhagayamuu/ laafuu/ humana dhabuu	Not at all/ Gonkumaa hin jiru	0
		Several days/ Guyyoota baay'ee ni jira	1
		More than half the days/ Walakkaan oli (harka caalu) ni jira	2
		Nearly every day / Guyyuma maraa ni jira jechuun ni danda'ama	3
3005_3	Poor appetite or overeating.....…… Fedhiin waa nyaachuu gad-bu'uu, kan barbaadamuu ol nyaachuu	Not at all/ Gonkumaa hin jiru	0
		Several days/ Guyyoota baay'ee ni jira	1
		More than half the days/ Walakkaan oli (harka caalu) ni jira	2
		Nearly every day / Guyyuma maraa ni jira jechuun ni danda'ama	3
3006_3	Feeling bad about yourself — or that you are a failure or have let yourself or your family down. Ilaalchi/bakki ofiif qabdu gadi bu'uu, of-jibbuu, akka namaa gadiitti of ilaaluu, akka nama milkaa'uu hin dandeenyetti of ilaaluu	Not at all/ Gonkumaa hin jiru	0
		Several days/ Guyyoota baay'ee ni jira	1
		More than half the days/ Walakkaan oli (harka caalu) ni jira	2
		Nearly every day / Guyyuma maraa ni jira jechuun ni danda'ama	3
3007_3	Trouble concentrating on things, such as reading the newspaper or watching television .....…… Tasgabbayanii waan tokko irratti (fkn. baarruullee dubbisuu, televizhiinii ilaaluu ....) xiyyeeffachuu dadhabuu	Not at all/ Gonkumaa hin jiru	0
		Several days/ Guyyoota baay'ee ni jira	1
		More than half the days/ Walakkaan oli (harka caalu) ni jira	2
		Nearly every day / Guyyuma maraa ni jira jechuun ni danda'ama	3
3008_3	Moving or speaking so slowly that other people could have noticed? Or the opposite – being so fidgety or restless that you have been moving around a lot more than usual.…… Suuta deemuu ykn dubbachuu ykn ammoo faallaa kanaa: baay'ee ariifatanii dubbachuu, jarjartiin adeemuu, kan	Not at all/ Gonkumaa hin jiru	0
		Several days/ Guyyoota baay'ee ni jira	1
		More than half the days/ Walakkaan oli (harka caalu) ni jira	2
		Nearly every day / Guyyuma maraa ni jira jechuun ni danda'ama	3

	barameen ala nannaawa tokkotti marmaaruu ..... (Haala namni biraa hubachuu danda'uun)		
3009_3	Thoughts that you would be better off dead of or hurting yourself in some way.…… Osoon du'ee woyya jedhanii yaaduu ykn lubbuu ufii dabarsuuf yaali gochuu	Not at all/ Gonkumaa hin jiru	0
		Several days/ Guyyoota baay'ee ni jira	1
		More than half the days/ Walakkaan oli (harka caalu) ni jira	2
		Nearly every day / Guyyuma maraa ni jira jechuun ni danda'ama	3
	PHQ-9 Score = _____		

Form 4: Trauma Screening Questionnaire/Unka 4: Bar-gaaffii haala miidhaa cimaa xinsammuu ittiin sakkatta'an

Gaaffilee armaan gaditti tarreefaman kanneen miidhaa cimaa nu mudateen walqabatee kan dhufaniidha. Gaaffileen kunniin miidhaa cimaa nu mudatee kanaan walqabatee deebiin keenya maal akka ta'u xiinxalu. Qabxiileen armaan gaditti tarreefaman bu'uura godhachuun torbaan darbe keessa si'a lamaa fi sanaa ol kan si mudatan ibsaa.

	Gaaffilee	Eeyyee, torbaan darbe keessa si'a lamaa fi sanaa ol na qunnaman	Lakki
4001_4	Yaadni taatee/mudannoo/miidhaa cimaa yeroo ta'e jireenya kee keessati si mudateen walqabate fedhii keetiin ala sammuutti deddeebi'ee si cinqu jiraa?		
4002_4	Abjuu sodaachisaa taatee/mudannoo/miidhaa sanaan walqabatee sitti dhufu jira?		
4003_4	Miidhaan sun akka waan deebi'ee dhufuutti yaaduu ykn mallattoon mul'isuu qabdaa?		
4004_4	Waan taatee/mudannoo/miidhaa sana si yaadachisu yoo si mudate (fkn. dhageettiin, argaan ...) si aarsaa?		
4005_4	Yeroo waan taatee/mudannoo/miidhaa sana si yaadachiisu si mudate mallattoolee adda addaa kan akka dhahannaa onnee dabaluu, gubaa garaachaa, dafqisiisuu fi joonjessuu sirratti mul'ataa?		
4006_4	Hirribni si fudhachuu diduu ykn hirriba tasgabbii qabu rafuu dadhabuu (irra deddeebiin dammaquu) qabdaa?		
4007_4	Obsa dhabuu ykn aarii baay'isuu qabda?		
4008_4	Xiyyeeffannoon hojii hojjachuu dadhabuu qabdaa?		
4009_4	Taatee/mudannoo/miidhaa si mudate irraa kan ka'e naannoo kee cimsitee too'aachuu fi sochii of eeggannoo gochuu qabdaa?		
4010_4	Waan salphaadhaaf rifaatuu cimaa ykn humnaa ol ta'e argisisuu qabdaa?		

Form 5: Suicidal Behavior Assessment Questions/ Unka 5: Bar-gaaffii yaada/miira lubbuu ufii balleessuun walqabatu

Please mark with a cross symbol in the box that respondents answer best fits what he/she has felt or experienced in the last year

	Gaaffilee	**Yes/Eeyyen**	**No/Lakki**
5001_5	Have you felt that life is not worth living? Jireenyi gadheedha, jireenyi faayidaa hin qabu kan jedhu sitti dhagahamee beekaa?		
5002_5	Have you wished you were dead? For example, going to sleep and wishing you would not get up.		

	Osoon du'ee jiraadhee woyya jettee yaaddee beektaa, fakkeenyaaf osoon rafee achumaan hafee jettee hawwuu fa'a?		
5003_5	Have you thought about taking your life even if you weren't really going to? Ati yoo qabatamaan hin raawwanneyyuu, yaadni lubbuu kee balleessuudhaa deddeebi'ee sitti dhufaa?		
5004_5	Have you reached the point where you considered actually taking your own life or you made plans about how you would do it? Yeroon lubbuu koo itti baasu amma jettee ykn karoorsitee beektaa?		
5005_5	Have you tried to take your own life? Lubbuu kee balleessuudhaaf yaalii gootee beektaa?		

Form 6: AUDIT/ Unka 6: Gaaffile Wantoota sammu namaa hadoochan fayyadamu (AUDIT)

1. Jireenya kee keessatti dhuugaati alkoolii of keessaa qaban dhugdee beektaa? A) Eeyyen B) Lakki
2. Torbee afran darban kana keessa dhuugaati alkoolii of keessaa qaban dhugdee beektaa? A) Eeyyen B) Lakki

6001_6	Dhuugaati alkoolii of keessaa qaban kan akka biiraa, waynii, farsoo, daadhii, araqee, kan kana fakkaatan yeroo meeqa dhugduu? (Yoo dhugaatii hin dhugdan ta'ellee guyyaa ayyaanaa Farsoo hin dhugdanii?)	Tasumaa iyyuu hin dhugu (***gara gaaffi 6009 fi 6010 tti darbi***)	0
		Ji'atti al-tokko ykn isaa gadi	1
		Ji'atti yeroo 2-4tti	2
		Torbanitti yeroo2-3tti	3
		Torbanitti yeroo 4 ykn isaa oli	4
6002_6	Dhuugaati alkoolii of keessaa qaban gaafa baayyee dhugeera jettan ammmam dhugdu?	1 ykn 2	0
		3 ykn 4	1
		5 ykn 6	2
		7, 8 ykn 9	3
		10 ykn isaa oli	4
6003_6	Dhuugaati alkoolii of keessaa qaban yeroo meeqaaf ja'aa fi sanaa oli dhugdan?	Gonkumaa dhugee hin beeku	0
		Ji'aa tokkoo fi sanaa oli	1
		Ji'a ji'aan	2
		Torbeen	3
		Guyyaa guyyaan	4
Ida'amni deebii 2ffaa fi 3ffaa = 0 (zeeroo) yoo ta'e, (gara gaaffi 6009 fi 6010 tti darbi)			
6004_6	Bara darbee keessa dhugaatii dhaabuudhaaf murteessitanii osoo hin milkaain yeroon haftan yoo jiraatee yeroo meeqa meeqaan isin qunnama?	Gonkumaa dhugee hin beeku	0
		Ji'aa tokkoo fi sanaa oli	1
		Ji'a ji'aan	2
		Torbee torbeen	3
		Guyyaa guyyaan	4
6005_6	Waggaa darbee keessa dhugaatii alkoolii irraa kan ka'e waan sirraa eegamu raawwachuu/dalaguu kan dadhabde hagami?	Gonkumaa dhugee hin beeku	0
		Ji'aa tokkoo fi sanaa oli	1
		Ji'a ji'aan	2
		Torbee torbeen	3
		Guyyaa guyyaan	4
6006_6	Waggaa darbee keessa erga dhugaatii haala ulfaataan ykn yeroo dheeraaf dhugdanii booda barii irratti sochii kamuu	Gonkumaa dhugee hin beeku	0
		Ji'aa tokkoo fi sanaa oli	1
		Ji'a ji'aan	2

	dursa dhugaatii isin barbaachisee beeka taanaan yeroo hammamiif?	Torbee torbeen	3
		Guyyaa guyyaan	4
6007_6	Bara/Yeroo darbee keessatti miirrii gaabbii ykn uf ajiifachuu/osoon gochuu baadhee jedhu dhugaatii booda sitti dhaga'amee beeka taanaan yeroo hangam ta'uuf?	Gonkumaa dhugee hin beeku	0
		Ji'aa tokkoo fi sanaa oli	1
		Ji'a ji'aan	2
		Torbee torbeen	3
		Guyyaa guyyaan	4
6008_6	Bara/yeroo darbe keessatti wanta yeroo sanata'e sababii dhugaa turteef yaadachuu dadhabdeetta yoo ta'e yeroo meeqa siquunnamee beeka?	Gonkumaa dhugee hin beeku	0
		Ji'aa tokkoo fi sanaa oli	1
		Ji'a ji'aan	2
		Torbee torbeen	3
		Guyyaa guyyaan	4
6009_6	Sababa dhugaatii keetiitiin walqabatee si'is ta'ee nama biraa irra balaan ga'ee/mudatee beekaa? Yoom?	Lakki	0
		Eyyeen- garuu bara darbee miti	2
		Eyyeen- bara darbe	4
6010_6	Namni Firaa ykn hiriyaan kee ykn hojjeetaan/ ogeessi fayyaa waa'ee dhugaatii keetii yaadda'e/dhimmamee ykn akka ati dhaabduu si gorsee beeka? Yoom?	Lakki	0
		Eyyeen- garuu bara darbee miti	2
		Eyyeen- bara darbe	4
	AUDIT Total score (qabxii waliigalaa) = ___ ___		

Unkaa 7: Gaaffilee sakatta'iinsa itti fayyadama Jimaa/jimaa/caatii rakkoo qabuu (PKUST-17)

3. Jireenya kee keessatti jimaa/caatii qamaatee beektaa? A) Eeyyen Qama'ee beeka B) Lakki hin beeku
4. Torbee afran darban kana keessa jimaa/caatii qamaatee beektaa? A) Eeyyen Qama'ee beeka B) Lakki hin beeku

Itti aansuun, ji'oota sadan darban keessatti muxannoo jimaa/caatii fayyadamuu qabdan ilaalchisee gaaffii tokko tokko isin gaafanna. Jimaa/caatii fayyadamuun namoota tokko tokkoof rakkoo ta'ee waan argameef, akkaataa itti fayyadamiinsa namootaa beekuun barbaachisaadha. Haaluma kanaan gaafii gaafatamataniif bifa iftoomina qabuu fi sirrii ta'een deebisaa. Deebiin kennamu hundi iccitii ta'ee kan eegamu ta'a

HUB: darbee darbee (yeroo 3 fi sanaa gadi); gaaf tokko tokko (torbanitti al tokko); yeroo hedduu (torbanitti guyyaa 2 hanga 4); yeroo hundaa (guyyaa guyyaan)

7001_1	Ji'oota sadan darban keessa yeroo hangam ta'uuf jimaa/caatii fayyadamteerta?	Ji'a 3 keessatti al tokkoo gadi	0
		Ji'atti guyyaa tokkoo hanga sadii	1
		Torbanitti guyyaa tokko ykn lama	2
		Torban tokko keessatti guyyaa 3 ykn 4	3
		Guyyaa guyyaan ykn guyyaa guyyaan jechuun ni danda'ama	4
7002_1	Ji'oota sadan darban keessatti, yeroo jimaa/caatii fayyadamtu giddu-galeessaan hojiilee ykn dhimmoota ijoo ta'an irratti osoo hin bobba'in ykn hin hirmaatin yeroo meeqa dabarsiteerta?	Sa'aatii tokkoo fi isaa gadi	0
		Sa'aatii 2-3	1
		Sa'aatii 4- 5	2
		Sa'aatii 5-6	3
		Sa'aatii 6 hours fi isaa ol	4
7003_1	Ji'oota sadan darban keessatti, dhiphina ykn mukaa'insa sammuu erga jimaa/caatii fayyadamuu dhiifteen ykn	Gonkumaa	0
		Darbee darbee	1

	dhaabdeen booda si mudate furuuf jecha yeroo hangam jimaa/caatii fayyadamteerta?	Gaaf tokko tokko	2
		Yeroo baayyee	3
		Yeroo hunda	4
7004_1	Ji'oota sadan darban keessatti, araada jimaatiin/caatiitiin walqabatee miirri fidi fidi jedhu yeroo meeqa si mudatee beeka? (craving)	Gonkumaa	0
		Darbee darbee	1
		Gaaf tokko tokko	2
		Yeroo baayyee	3
		Yeroo hunda	4
7005_7	Ji'oota sadan darban keessatti, erga jimaa/caatii fayyadamuu dhiiftee ykn dhaabdee booda mallattoolee jijjiirama miiraa ykn amalaa agarsiisan yeroo hangam si mudatee beeka?	Gonkumaa	0
		Darbee darbee	1
		Gaaf tokko tokko	2
		Yeroo baayyee	3
		Yeroo hunda	4
7006_7	Ji'oota sadan darban keessatti, jimaa/caatii fayyadamuun rakkoo maallaqaa/diinagdee hangam sitti fidee jira?	Homaa	0
		xinnoo	1
		giddugaleessa	2
		Hammaataa	3
		Baay'ee tokko	4
7007_7	Ji'oota sadan darban keessatti, sababa jimaa/caatii fayyadamtuutiinn hojii irratti hangam waan sirraa eegamu raawwachuu dadhabdeerta?	Homaa	0
		xinnoo	1
		giddugaleessa	2
		Hammaataa	3
		Baay'ee tokko	4
7008_7	Ji'oota sadan darban keessatti, jimaa/caatii osoo hin fayyadamin yoo hafte hangam tokko si mukeessa/gaddisiisa?	Gonkumaa	0
		Darbee darbee	1
		Gaaf tokko tokko	2
		Yeroo baayyee	3
		Yeroo hunda	4
7009_7	Ji'oota sadan darban keessatti, jimaa/caatii osoo hin fayyadamin yoo hafte hangam tokko si aarsa?	Gonkumaa	0
		Darbee darbee	1
		Gaaf tokko tokko	2
		Yeroo baayyee	3
		Yeroo hunda	4
7010_7	Ji'oota sadan darban keessatti, jimaa/caatii osoo hin fayyadamin yoo hafte hangam tokko abjuun namatti hin tolle/jeequu si mudata?	Gonkumaa	0
		Darbee darbee	1
		Gaaf tokko tokko	2
		Yeroo baayyee	3
		Yeroo hunda	4
7011_7	Ji'oota sadan darban keessatti, yeroo jimaa/caatii osoo hin fayyadamin hafte imimmaan argaa kee haguugu yeroo hangam tokkoof si mudatee beeka?	Gonkumaa	0
		Darbee darbee	1
		Gaaf tokko tokko	2
		Yeroo baayyee	3

		Yeroo hunda	4
7012_7	Ji'oota sadan darban keessatti, yeroo jimaa/caatii hin fayyadamne deddeebidhaan kan si hamoommachiisu hangam tokko si mudata?	Darbee darbee	0
		Gaaf tokko tokko	1
		Yeroo baayyee	2
		Yeroo hunda	3
		Darbee darbee	4
7013_7	Ji'oota sadan darban keessatti, yeroo jimaa/caatii hin fayyadamne kaka'uumsi hojii hir'achuun hangam tokko si mudata?	Gonkumaa	0
		Darbee darbee	1
		Gaaf tokko tokko	2
		Yeroo baayyee	3
		Yeroo hunda	4
7014_7	Ji'oota sadan darban keessatti, yeroo jimaa/caatii hin fayyadamne humni qaamaa hir'achuun ykn dadhabinni hamaan hangam tokko si mudata?	Gonkumaa	0
		Darbee darbee	1
		Gaaf tokko tokko	2
		Yeroo baayyee	3
		Yeroo hunda	4
7015_7	Ji'oota sadan darban keessatti, bu'aa/dadammaqina jimaa/caatii irraa argamu dabalachuuf hamma isaa hangam tokko dabalte?	Homaa	0
		Xiqqoo	1
		Giddugaleessa	2
		Hammaataa	3
		Baay'ee tokko	4
7016_7	Ji'oota sadan darban keessatti, yeroo jimaa/caatii hin fayyadamne boqonnaa dhabuun hangam tokko si mudata?	Gonkumaa	0
		Darbee darbee	1
		Gaaf tokko tokko	2
		Yeroo baayyee	3
		Yeroo hunda	4
7017_7	Ji'oota sadan darban keessatti hamma jimaa/caatii walfakkaataa fayyadamuu itti fufuun irraa kan ka'e bu'aa isaa hir'atee argamuun hangam tokko si mudata?	Gonkumaa	0
		Darbee darbee	1
		Gaaf tokko tokko	2
		Yeroo baayyee	3
		Yeroo hunda	4

Form 8: Tobacco Use Assessment Questions/ Unkaa 8: Bar-gaaffiilee Haala Fayyadamiinsa Tamboo			
8001_8	Have you ever used any tobacco product? Jiruu kee keessatti al tokkos yoo ta'e gosa tamboo kamuu haa ta'uu fudhattee/fayyadamtee beektaa?	Yes	No
8002_8	If yes, which form (type) of the following tobacco product have you tried in your life? Tamboo fayyadamtee beekta yoo ta'e, gosoota tamboo armaan gadii keessaa isa kam fayyadamtee beekta?		

a)	Sigaaraa xuuxuu		
b)	Tamboo alanshuu		
c)	Tamboo bullooftuu funyaaniin ol harkisuu (fuunfachuu)		
d)	Shiishaa xuuxuu		
e)	Gaayyaa xuuxuu		
f)	Kan biraa (Ibsi)		
8003_8	Do you currently use any tobacco product? Amma tamboo fayyadamtaa?	Yes	No
8004_8	If yes, which form (type) of the following tobacco product are you currently using? Yeroo ammaa/dhiyoo fayyadamaa jirta taanaan, gosoota tamboo armaan gadii keessaa isa kam fayyadamaa jirta?		
a)	Sigaaraa xuuxuu		
b)	Tamboo alanshuu		
c)	Tamboo bullooftuu funyaaniin ol harkisuu (fuunfachuu)		
d)	Shiishaa xuuxuu		
e)	Gaayyaa xuuxuu		
f)	Kan biraa (Ibsi)		

Form 9: Cannabis Use Assessment Questions/ Unkaa 9: Bar-gaaffiilee Haala Fayyadamiinsa baala sammuu nama hadoochu/Hashiishii/Gaanjaa			
9001_9	Jireenya kee keessatti gaanjaa/hashiishii fayyadamtee beektaa?	Eeyye	Lakki
9002_9	Fayyadamtee beekta yoo ta'e, guyyoota 30 darban keessatti fayyadamtee jirtaa?	Eeyye	Lakki
9003_9	Fayyadamuu isaa yeroo umrii meeqa jirtutti eegalte?	Waggaa _____	
9004_9	Hashiishii ni fayyadamta taanaan, fayyadamuu dhaabuudhaaf yaalii gootee beektaa?	Eeyye	Lakki

Form 10: QOL Assessment Questions/ Unkaa 10: Bar-gaaffii waa'ee qulqullina jireenyaa

Gaaffileen kun kan gaafatan waa'ee qulqullina jireenyaa, fayyaa fi wantoota kan biraa jireenya keessan waliin walqabatan ilaalchiseeti. Maaloo gaaffilee hundumaa deebisaa. Yoo deebii gaaffiif ta'u sirriitti hin beekin deebii ta'a kan jettan kan baayyee itti dhihaatu filadhaa. Maaloo sammuu keessanitti gita, abdii, fedhii fi yaada keessa hin dagatinaa. Kan isin gaafannu torban lamaan darban keessatti waa'ee jireenya keessanii kan isin yaaddan ta'a.

		B. badaa	**Badaa**	**Badaas/gaarismiti**	**Gaarii**	**B. gaarii**
1001_10	Qulqullina jireenya keetii akkamiin ibsita?	1	2	3	4	5

		B. gadda	**Nan gadda**	**Nan gaddi /gammach**	**Nan gammada**	**B. gammada**
1002_10	Fayyummaa kee hangam si gammachiisa?	1	2	3	4	5

Gaaffileen armaan gadii kan gaafatan torban lamaan darban keessatti waantootni ammam akka si mudatani dha

		Gonkumaa	***Xiqqoo***	***G/galeessa***	***Hedduu***	***B/heduu***
1003_10	Dhukkubbiin qaamaa dalagaa ati feete akka hin dalagne ammam si dhorkan?	1	2	3	4	5
1004_10	Jireenya kee guyyaa guyyaa keessatti hojjechuuf yaaliin fayyaa kamiyyuu hangam si barbaachisa?	1	2	3	4	5
1005_10	Jireenyatti hammam gammadda?	1	2	3	4	5
1006_10	Jireenyi kee hangam hiika akka qabu sitti dhaga'ama?	1	2	3	4	5
		Gonkumaa	***Xiqqoo***	***G. galeessa***	***Baay'isee***	***Garmalee***
1007_10	Hammam xiyyeeffachuu dandeessa?	1	2	3	4	5
1008_10	Jireenya kee guyyaa guyyaa keessatti hammam nageenyi sitti dhagahama?	1	2	3	4	5
1009_10	Naannoo jireenya keessan hangam fayya-qabeessa?	1	2	3	4	5

Gaaffiiwwan armaan gadii torban lamaan darban keessaatti waan sin mudate ykn hojjettan gaafata

		Gonkumaa	Xiqqoo	G/galeessa	Baay'inaan	Guutummatti
1010_10	Hojii idilee hojjechuuf humna ga'aa ni qabduu?	1	2	3	4	5
1011_10	Boca qaama keessanitti hangam gammadduu?	1	2	3	4	5

1012_10	Fedha keessan guuttachuuf maallaqa ga'aa qabduu?	1	2	3	4	5
1013_10	Odeeffannoo jireenya kee guyyaa guyyaa keessatti si barbaachisan hangam argattu?	1	2	3	4	5
1014_10	Sochii bashannanaaf hangam carraa sochii fi yeroo mijataa qabduu?	1	2	3	4	5

		B/gadaanaa	Gadaanaa	Gadaanas/ gaariis miti	Good	V.Good
1015_10	Hammam akka gaariitti naanna'uu ykn socho'uu dandeessa?	1	2	3	4	5

Gaaffiiwwan armaan gadii torban lamaan darban keessatti haala addaddaa jireenya kee keessatti si mudatanitti akka ati gammadde gaafachuu ta'a.

		B/gadda	Nan gadda	Hin gaddus /gammadus	Nan gammada	B/gammada
1016_10	Hirriba keetti hangam gammadda?	1	2	3	4	5
1017_10	Sochii jireenya idilee kee dalaguu irratti hangam gammachuu qabda?	1	2	3	4	5
1018_10	Dandeettii hojiif qabdutti hangam gammadda?	1	2	3	4	5
1019_10	Matuma keetti hangam ufitti gammadda?	1	2	3	4	5
1020_10	Hariiroo nama waliin qabduun hangam gammadda?	1	2	3	4	5
1021_10	Jireenya qunnamtii saalaa keetti hangam gammadda?	1	2	3	4	5
1022_10	Gargaarsa/geeggarsa hiriyoota kee irraa argattutti hangam gammachuu qabda?	1	2	3	4	5
1023_10	Bakka jireenya keetti hangam gammmadda?	1	2	3	4	5
1024_10	Tajaajila fayyaatti ammam gammadda?	1	2	3	4	5
1025_10	Tajaajila geejjibaatti ammam gammadda?	1	2	3	4	5

Gaaffileen armaan gadii torban lamaan darban keessatti wantootni tarreeffaman yeroo ammamiif akka sitti dhaga'ame ykn mudate gaafachuu ta'a.

		Gonkumaa	Yeroo tokko tokko	G/galeessatti	Yeroo baayyee	Yeroo hunda
1026_10	Yeroo meeqa miira badaa kan akka gaddaa, abdii kutannaa, yaaddoo fi dhiphina sammuu sitti dhagahama?	1	2	3	4	5

Form 11: Multidimensional Scale of Perceived Social Support (MSPSS) /Unkaa 11: Bar-gaaffilee Muuxannoo Walqunnamti Hawaasummaa			
Kutaan kun muuxannoo hirmaataan walqunnamti hawaasaa irratti qabu ilaallata. Gaaffilee armaan gadi deebii hirmaataan filatan irra marsudhaan deebisaa.			
1101_11	Hennaa rakkattee nama barbaaddutti, namni addaa si gargaaruu ykn sii birmatu ni jira.	Baay'ee itti hin amanu	1
		Itti hin amanu	2
		Sagalee hin kennu	3
		Itti amana	4
		Baay'ee itti amana	5
1102_11	Namni addaa gaddaa fi gammachuu koo wajjiin qooddadhu ni jira.	Baay'ee itti hin amanu	1
		Itti hin amanu	2
		Sagalee hin kennu	3
		Itti amana	4
		Baay'ee itti amana	5
1103_11	Maatiin koo dhugumatti/garaadhaan na gargaaruudhaaf yaalu.	Baay'ee itti hin amanu	1
		Itti hin amanu	2
		Sagalee hin kennu	3
		Itti amana	4
		Baay'ee itti amana	5
1104_11	Maatii koo irraa jajjabina miiraa fi deeggarsa yeroo barbaadu nan argadha.	Baay'ee itti hin amanu	1
		Itti hin amanu	2
		Sagalee hin kennu	3
		Itti amana	4
		Baay'ee itti amana	5
1105_11	Namni addaa kan dhugumatti madda gammachuu koo anaaf ta'u ni jira.	Baay'ee itti hin amanu	1
		Itti hin amanu	2
		Sagalee hin kennu	3
		Itti amana	4
		Baay'ee itti amana	5
1106_11	Hiriyyoonni koo dhugumatti na gargaaruuf yaalu.	Baay'ee itti hin amanu	1
		Itti hin amanu	2
		Sagalee hin kennu	3
		Itti amana	4
		Baay'ee itti amana	5
1107_11	Jireenya koo keessatti dogongora uumamuuf hiriyoota koo nan qeeqa/itti gaafatamaa godha.	Baay'ee itti hin amanu	1
		Itti hin amanu	2
		Sagalee hin kennu	3
		Itti amana	4
		Baay'ee itti amana	5
1108_11	Rakkoo keessoo koo maatii kiyya wajjiin ni mari'adha/haasaya.	Baay'ee itti hin amanu	1
		Itti hin amanu	2
		Sagalee hin kennu	3
		Itti amana	4
		Baay'ee itti amana	5
1109_11	Hiriyyoota gaddaa fi gammachuu koo itti ibsadhu ykn wajjiin qooddadhu nan qaba.	Baay'ee itti hin amanu	1
		Itti hin amanu	2
		Sagalee hin kennu	3
		Itti amana	4
		Baay'ee itti amana	5

1110_11	Jireenya koo keessatti namni addaa, kan waa'ee miira kootiif quuqamu/dhimmamu ni jira.	Baay'ee itti hin amanu	1
		Itti hin amanu	2
		Sagalee hin kennu	3
		Itti amana	4
		Baay'ee itti amana	5
1111_11	Jireenya koo keessatti murtiiwwan garagaraa ani murteessu irratti maatiin koo na gargaaruuf eeyyamamoodha.	Baay'ee itti hin amanu	1
		Itti hin amanu	2
		Sagalee hin kennu	3
		Itti amana	4
		Baay'ee itti amana	5
1112_11	Waa'ee rakkoo kootii hiriyyoota koo wajjin nan mar'adha.	Baay'ee itti hin amanu	1
		Itti hin amanu	2
		Sagalee hin kennu	3
		Itti amana	4
		Baay'ee itti amana	5

Form 12: Help-Seeking Questionnaire /Unkaa 12: Gaaffii Gargaarsa Barbaaduu

1201-12	**Gaaffii Gargaarsa Barbaaduu Waliigalaa**: Tarreen gaaffilee armaan gadii kun yaada gargaarsa barbaaduu gara fuula duraa fayyadama wantootaa fi haala fayyaa sammuu keessaniif qabdu madaala.							
	Armaan gaditti tarree maddoota ykn namoota yoo rakkoon dhuunfaa ykn miiraa si mudate gargaarsa ykn gorsa irraa barbaaduu dandeessu. Maaloo lakkoofsa **torban 4 itti aanan keessatti** fayyadama wantootaa ykn haala fayyaa sammuu keessaniif tokkoon tokkoon namoota kanaa irraa gargaarsa barbaaduun keessan hangam akka ta'e agarsiisu irratti marsi.							
	Maddoota gargaarsaa	***Garmalee Hin Fakkaatu***				***Garmalee Fakkaachuu***		
a)	Hiriyaa gaa'elaa walitti dhiyeenyaa (fkn. jaalallee/jaala/ abbaa manaa/haadha manaa).	1	2	3	4	5	6	7
b)	Hiriyaa (si wajjin kan wal hin qabanne).							
c)	Warra							
d)	Fira / miseensa maatii biroo							
e)	Ogeessa fayyaa sammuu (gorsaa, ogeessa xiin-sammuu, ispeeshaalistii sammuu).							
f)	Abbootii amantii (fkn kadhannaa).							
g)	Bakka amantii (fkn bishaan qulqulluu).							
h)	Fayyisaa aadaa							
i)	Haakima waliigalaa							
j)	Narsii ykn ogeessa fayyaa kan biraa							
k)	Barsiisaa (gorsaa, barsiisaa daree).							
l)	Nama biraa armaan olitti hin tarreeffamne (kun eenyu akka ta'e ibsaa_____							
m)	Ani nama kamirraayyuu gargaarsa hin barbaadu ture							

1202_12. Gaaffii Gargaarsa Barbaaduu Waliigalaa: Tarreen gaaffilee armaan gadii muuxannoo gargaarsa barbaaduu darbe fayyadama wantootaa fi haala fayyaa sammuu keessaniif madaala

a) Fayyadama wantootaa ykn haala fayyaa sammuu keessaniif gargaarsa argachuuf ogeessa fayyaa sammuu (fkn, gorsaa, ogeessa xiin-sammuu, ogeessa sammuu) argitanii beektuu? (***tokko irra marsi***).

Eeyyen **Lakki**

Gaaffii 2a irratti "**lakki**" jettee yoo marsite kutaa kana xumurteetta. Yoo "**eeyyee**" jette ta'e, maaloo gaaaffilee 2b, 2c, fi 2d armaan gadii guuti.

b) Ogeessa fayyaa sammuu waliin daawwannaa meeqa gootan? daawwannaa _____.
c) Ogeessi (ogeessa) fayyaa sammuu gosa akkamii akka argitan beektaa? Beekta yoo ta'e, maaloo mata duree isaanii tarreessi (fkn, gorsaa, ogeessa xiin-sammuu, ogeessa sammuu).

_____
___

d) Daawwannaan ogeessa fayyaa sammuu hangam isin gargaaree jira? (Lakkofsa irra marsi)

Garmalee gargaarsa kan hin qabne Garmalee gargaara

1 2 3 4 5

1203_12	**Gaaffii Gargaarsa Barbaaduu Qabatamaa**: Tarreen gaaffilee armaan gadii muuxannoo gargaarsa barbaaduu qabatamaa kee itti fayyadama wantootaa fi haala fayyaa sammuu keetii ni madaala		
	Armaan gaditti tarree maddoota ykn namoota yoo rakkoon dhuunfaa ykn miiraa si mudate gargaarsa ykn gorsa irraa barbaaduu dandeessu. Isaan keessaa kanneen gorsa ykn gargaarsa itti fayyadama wantootaa ykn haala fayyaa sammuu keessaniif **torban 2 darban** keessa bira deemtan kamiyyuu irra marsaa, akkasumas gosa rakkoo gargaarsa barbaaddaniifii gabaabinaan ibsaa.		
	Maddoota gargaarsaa	**Eeyyee, gosa rakkoo kanaa gabaabinaan ibsi**	**Lakki**
a)	Hiriyaa gaa'elaa walitti dhiyeenyaa (fkn. jaalallee/jaala/ abbaa manaa/haadha manaa).		
b)	Hiriyaa (si wajjin kan wal hin qabanne).		
c)	Warra		
d)	Fira / miseensa maatii biroo		
e)	Ogeessa fayyaa sammuu (gorsaa, ogeessa xiin-sammuu, ispeeshaalistii sammuu).		
f)	Abbootii amantii (fkn kadhannaa).		
g)	Bakka amantii (fkn bishaan qulqulluu).		
h)	Fayyisaa aadaa		
i)	Haakima waliigalaa		
j)	Narsii ykn ogeessa fayyaa kan biraa		

k)	Barsiisaa (gorsaa, barsiisaa daree).		
l)	Nama biraa armaan olitti hin tarreeffamne (kun eenyu akka ta'e ibsaa_____		
m)	Ani nama kamirraayyuu gargaarsa hin barbaadu ture		

Appendix – 2A: Semi-structured interview guide – Afan Oromo Version

Af-gaaffii Araada Dargaggootaa Ilaalchisee Qophaa'e – Afaan Oromo version

Kutaa I: Background Information/ Odeeffannoo Dug-duubee Hirmaattotaa

1. Koodii hirmaataa: _____
2. Saala hirmaataa: _____
3. Umrii hirmaataa waggaadhaan: _____
4. Amantii hirmaataa: _____
5. Sabummaa hirmaataa: _____
6. Haala hojii hirmaataa: _____
7. Sadarkaa barnootaa hirmaataa: _____
8. Maqaa nama bar-gaaffii taasisee: _____
9. Guyyaa fi saa'atii bar-gaaffiin itti raawwate: _____

Kutaa II: Waa'ee Fayyadama Wantoota Araada Fidanii fi Fayyummaa Sammuu Ilaalchisee

Mee seenaa kee fayyadama wantoota araada fidaniin walqabatu natti himi?

Prompts/Gaaffilee sakatta'iinsaa

- *Yeroo duraaf fayyadamuu yoom eegalte?*
- *Akkamitti haala akkamiitiin eegalte?*
- *Wontoota araada fidan kam fa'a ykn gosa kam fayyadamta?*
- *Yeroo hangam fayyadamta?fakkeennaaf guyyatti al-tokko,*
- *Waan hangam ta'u fayyadamta?*
- *Sababa maaliif fayyadamta?*
- *Sababa araadaatiin wanti hamaan si mudatee beekaa? Yoo jiraate, maalinni ibsi.*

Kutaa III: About the quality of life/Waa'ee Haala Jireenyaa Ilaalchisee

1. Walumaagalatti haala jireenya kee akkamitti ibsita?

2. Fayyadamni wantoota araada fidanii kee kuni, haala jireenya kee irratti dhiibbaa fidee jira jettee yaaddaa? Haala kamiin?

   Prompts/Sakatta'iinsa

   - *Fayyummaa qaamaa keetiin walqabatee?*
   - *Fayyummaa sammuu keetiin walqabatee?*
   - *Hariiroo ykn walitti dhufeenya hiriyaa fi maatiin keetiin walqabatee?*
   - *Qunnamtii hawaasaan walqabatee?*
   - *Diinagdeen ykn fayyadama mallaqaan walqabatee?*
   - *Sochii ykn jireenya kee guyyaa guyyaan raawwattuun walqabatee?*

3. *Sochii ykn jireenya kee guyyaa guyyaa keessatti rakkoon daran cimaan sababa araadaatiin si mudate jiraa? Maalinni?*

4. Yoo wantoota araada fidan amma fayyadamtu kana fooyyessite, haalli jireenyaa kee ni fooyya'a jettee yaaddaa? Akkamitti?

   Prompts/Sakatta'iinsa

   - *Fayyadama wontoota araada fidaniin walqabatee, gara fuula duraatti karoora akkamii qabda?*
   - *Milkaa'inna karoora sanaaf maal gochaa jirta?*
   - *Jireenya kee keessatti fayyadama wantoota araada fidanii Kanaan bu'aan ykn faayidaan ati argatte jiraa?Ibsi.*

Kutaa IV: About help-seeking behaviour/Waa'ee Amala Gargaarsa Barbaaduu Ilaalchisee

1. Araadaa fi dhimmoota isaan walqabatan furuuf gargaarsa ykn qabeenya akkamiittu naannoo keessan jira? Fakkeenyaaf: mana yaalaa, mana amantaa, kkf.

2. Araadaa fi dhimmoota isaan walqabataniif jecha gargaarsa barbaaddee beektaa? Yoo beekta ta'e, muuxannoon kee maal fakkaata? [Hirmaattonni muuxannoo dhuunfaa gargaarsa barbaaduu irratti qaban kamiyyuu, bu'aa gaarii ykn hamaa dabalatee akka qoodan gaafadhu].

3. What kind of support or resources would you be interested in receiving to address your substance use-related problems? Rakkoo araadaa fi dhimmoota isaan walqabatan furuuf deeggarsa ykn qabeenya akkamii argachuuf fedhii qabda? [Hirmaattota waa'ee madda gargaarsaa fi deeggarsa filatamoo, kan akka hiriyoota, maatii, kennitoota kunuunsa fayyaa, ykn garee deeggarsa hiriyaa gaafadhu].

4. Wantoonni araadaa fi dhimmoota isaan walqabtaniif gargaarsa barbaaduu salphaa sii taasisan maal fa'a?

5. Hennaa araadaa fi dhimmoota isaan walqabateef gargaarsa barbaaddu, rakkoo akkamiittu si mudate?

6. Gargaarsa barbaaddee hin beektu taanaan, sababni isaa maali? [Gargaarsa barbaduurratti gufuuwwan jiran kamiyyuu kan akka loogii, maqa balleessii, qabeenya dhabuu, fageenya fa'a irratti mari'adhaa]

7. Fayyadama wantoota sammuu nama hadoochanii, miidhaa isaan geessan, gargaarsa rakkoo kana furuuf jiru akkasumas yaada biraa kaasuu barbaaddan yoo jiraate?

Qorannichaaf Gumaacha Gootaniif Galatoomaa!

Appendix -2B: Stakeholders Focus Group Discussion Guide – Afan Oromo Version

Gaaffilee Marii Garee Qooda Fudhattootaaf Qophaa'e – Afaan Oromoo Version

Kutaa I: Background Information/ Odeeffannoo Dug-duubee Hirmaattotaa

1. Koodii hirmaataa:

   P1: _____
   P2: _____
   P3: _____
   P4: _____
   P5: _____
   P6: _____
   P7: _____
   P8: _____
2. Baay'ina hirmaattotaa: [Dhi_____ / Dha_____], Ida'ama_____

3. Hojii Hirmaattotaa:

   P1: _____
   P2: _____
   P3: _____
   P4: _____
   P5: _____
   P6: _____
   P7: _____
   P8: _____
4. Sadarkaa barnoota hirmaattotaa:

   P1: _____
   P2: _____
   P3: _____
   P4: _____
   P5: _____
   P6: _____
   P7: _____
   P8: _____
5. Iddoo ykn mana hojii hirmaattotaa:

   P1: _____
   P2: _____
   P3: _____
   P4: _____
   P5: _____
   P6: _____
   P7: _____

P8: _____

6. Maqaa nama af-gaaffii taasisee: _____
7. Maqaa gargaaraa qorannoo: _____
8. Guyyaa fi sa'aatii af-gaaffii: _____

Kutaa II: Gaaffilee Marii Garee

1. Mee haala fayyadama wantoota sammuu nama hadoochanii dargaggoota Itoophiyaa, keessumaayyu worra Godina Arsii Lixaa ilaalchisee hubannoo qabdan nuuf qoodaa (baay'ina nama fayyadamuu fi cimina rakkoo ilaalchisee). Maddi ykn sababiin rakkoo kanaa maal fa'a jettanii yaaddu?
2. Fayyadama wantoota sammuu nama hadoochanii dargaggootaatiin walqabatee muuxannoon dhuunfaa keessanii maal fakkaata? Jireenya hojii keessan keessatti maal taajjabdaniittu?
3. Wantoonni sammuu nama hadoochan hawaasa keessan keessatti dargaggoonni baay'inaan fayyadaman maali? Maaliif isinitti fakkaata? (Alcohol, Khat, Ganja, cigarette smoking, cocaine, etc) and why?
4. Dargaggoonni naannoo keessanii wantoota kana akka fayyadamaniif ykn araadaaf akka saaxilamaniif wantoota gumaachan maal fa'a ta'uu danda'a?
5. Dargaggoota naannoo keessan jiraatan irratti fayyadamni wontoota sammuu nama hadoochuu maal fa'a fidee jira jettanii yaaddu?
6. Akka yaada keessaniitti, fayyadamuun wantoota sammuu hadoochanii, qulqullina jireenya nama dhuunfaa irratti dhiibbaa qabaa? Akkamitti?
7. Rakkoolee itti fayyadama wantootaa sammuu hadoochanii wajjin walqabatan furuuf qabeenyaa fi deeggarsa akkamii naannoo keessan keessatti argamu? Maal hojjechaa jiru? (wal'aansa, deebisanii dhaabuu, fayyisuu aadaa, deeggarsa hafuuraa, deeggarsa maallaqaa, leenjii, tajaajila barnootaa fi kkf?)

   Prompt: Qormaata akkamiittu isaan mudachaa jira?

8. Dargaggoota biratti fayyadama wantootaa sammuu hadoochanii furuu keessatti gaheen dhaabbilee maali?

   Prompt: Dargaggoota hawaasa keessan keessa jiran biratti fayyadama wantootaa sammuu hadoochanii ittisuu fi hir'isuu keessatti istiraateejiin ykn mala akkamiittu milkaa'e?Waajjirri keessan gahee akkam bahachaa jira?

9. Dursanii ittisuu fayyadama wantoota sammuu nama hadoochanii irratti, dhaabbileen garagaraa haala kamiin waliin hojjachuu qabu jettan? Dhaabbanni keessan hoo?
10. Ilaalchi dargaggootaa, hojiilee rakkoo araadaa furuuf naanno keessanitti hojjatamaa jiru keessatti haala fooyya'aa ta'een akkamitti walitti makamuu qaba jettan?
11. Ittisaa fi wal'aansa fayyadama wantootaa sammuu namaa hadoochanii dargaggootaaf godhamu ilaalchisee mootummaaf, warra imaammata baasaniif, fi karoorsitoota fayyaadhaaf yaada akkamii qabdu?

Qorannichaaf Gumaacha Gootaniif Galatoomaa!

Annex -1: The JBI Criteria Used in Methodological Quality Assessment

Items	**Yes**	**No**
1. Was the sample frame appropriate to address the target population?		
2. Were study participants sampled in an appropriate way?		
3. Was the sample size adequate?		
4. Were the study subjects and the setting described in detail?		
5. Was the data analysis conducted with sufficient coverage of the identified sample?		
6. Were valid methods used for the identification of the condition?		
7. Was the condition measured in a standard, reliable way for all participants?		
8. Was there appropriate statistical analysis?		
9. Was the response rate adequate, and if not, was the low response rate managed appropriately?		

Yes= 1 No= 0

This is to certifv that

Student Jemal Ebrahim Shifa

ID [redacted]

has successfullv completed the UTS Consent Matters subiect

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Date 30/10/2022