Lived experience of the non-medical use of tramadol among people in Ghana: an interpretative phenomenological analysis.

OWUSUAA-ASANTE, M.A.

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LIVED EXPERIENCE OF THE NON-MEDICAL USE OF TRAMADOL AMONG PEOPLE IN GHANA- AN INTERPRETATIVE PHENOMENOLOGICAL ANALYSIS.

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PhD 2024

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MAAME AMA OWUSUAA- ASANTE, MPH

A thesis submitted in partial fulfilment of the requirements of Robert Gordon University for the degree of Doctor of Philosophy

May 2024

Declaration

I declare that this PhD thesis, titled "Lived experience of the non-medical use of tramadol among people in Ghana- An Interpretative Phenomenological Analysis", submitted in partial fulfilment of the requirements of Robert Gordon University for the degree of Doctor of Philosophy, is entirely my own work. All sources utilised in this thesis have been duly acknowledged and referenced.

Signed by

Maame Ama Owusuaa- Asante

May 2024

Maame Ama Owusuaa- Asante

Doctor of Philosophy

Lived experience of the non-medical use of tramadol among people in Ghana- An Interpretative Phenomenological Analysis.

Abstract

Background: The non-medical use of tramadol, a prescription opioid medication, is a global health issue associated with severe physical, mental, and social consequences. Several studies have examined the contributing factors and social consequences of the problem in Ghana. However, notable gaps remain in existing qualitative studies exploring the complexities of the phenomenon. Moreover, the paucity of research on existing rehabilitation and support programmes for tramadol use in Ghana further accentuates these gaps.

Main Aim: To gain an in-depth understanding of the complexities and lived realities of the non-medical use of tramadol in Ghana.

Methodology and Methods: A scoping review was conducted to map and summarise the available evidence on contributing factors, social effects, rehabilitation, and support for the non-medical use of tramadol and identify gaps in the international evidence base. To address some of the identified gaps, an Interpretative Phenomenological Analysis was employed to explore the lived experience of sixteen individuals with a history of tramadol use in Ghana. Participants were purposively sampled for audio-recorded individual face-to-face semi-structured interviews at drug rehabilitation and support facilities in Kumasi and Accra. Audio-recorded interviews were simultaneously transcribed and translated, and then analysed using the foundational principles and procedures of the IPA methodology.

Findings: Four superordinate themes emerged during the data analysis: (i) Precursors and influences of the non-medical use of tramadol; (ii) Socio-cultural, environmental and knowledge factors contributing to the continuous non-medical use of tramadol; (iii) Multifaceted consequences of the non-medical use of tramadol, and (iv) The complex framework of the rehabilitation process and its role in facilitating recovery from the non-medical use of tramadol. Within the broad superordinate themes, are subordinate themes and subcategories that offer specific and nuanced details of the overarching themes.

The findings illuminate the interplay of individual and social contexts in influencing initial use of tramadol. They elucidate the role of awareness, perceptions, cognitive processes, societal

norms, cultural expectations, and drug accessibility in the continuous use of tramadol. Furthermore, the findings indicate that the consequences of tramadol use have a cascading effect, impacting individuals and reverberating across the wider societal context. The consequences include interpersonal problems, social isolation, educational disengagement, and a negative impact on emotional, financial and community well-being.

The analysis reveals that rehabilitation for tramadol use is complex, involving multifaceted approaches that include medical, psychological, and social dimensions. The rehabilitation process emerged as a critical component in facilitating recovery through addressing individuals' holistic needs and assisting them in achieving long-term positive outcomes.

Collectively, these findings demonstrate the complex interaction between individual, social, cognitive, and environmental factors that shape the trajectory of tramadol use and its potential recovery process.

Conclusion: The study emphasises the need for a comprehensive, multi-disciplinary, and holistic approach to address the complexities of the non-medical use of tramadol. The proposed approach should encompass a spectrum of strategies, from prevention to rehabilitation, considering individual and societal contexts. The study's findings indicate the need for tailored interventions that acknowledge the multi-dimensional impact of tramadol use to achieve sustainable, long-term recovery.

Keywords: drug use; Ghana; Interpretative Phenomenological Analysis; lived experience; non-medical use; prescription opioid misuse; rehabilitation services; substance abuse; tramadol; treatment.

Word count: 79,899

Dedication

This thesis is solemnly dedicated to Madam Margaret Birago, my late aunt. She departed this world during the final stages of my doctoral studies, leaving an irreplaceable void. Her consistent encouragement and confidence in my abilities have helped shape my academic and personal life. I carry the emotional burden of her absence but also the honour of fulfilling the pride she would have felt in witnessing this accomplishment.

Acknowledgement

I am profoundly grateful to the participants who generously shared their stories and entrusted me with their experiences. Their willingness to engage in discussions about a sensitive subject like the non-medical use of tramadol has significantly contributed to the depth and richness of the study's findings. Their voices have given life to the research, shedding light on the multifaceted dimensions of this problem.

I extend sincere appreciation to the gatekeepers of my research, Mr Yaw Obeng-Nsiah (Head of Training and Programs, Hopeful Way Foundation), Fr. Nicolas Twumasi (Director, Brottier Recovery Home) and Mr Samuel Evans Ofe (Resident Substance Use Disorder Counsellor, Brottier Recovery Home) for their integral role in facilitating access to essential resources and insights, ensuring both the depth and ethical integrity of this thesis. Their inputs bridged the gap between theoretical concepts and real-world observations, enriching the entirety of this work. My deepest gratitude to the local collaborators of the study, Dr Albert Dompreh (Komfo Anokye Teaching Hospital) and Ms Jane Amedzro (formerly of UNAIDS), whose expertise and comprehensive understanding of the local context enhanced the depth and quality of the research. I would like to thank my colleagues from the health systems, drug regulation and compliance sectors, as well as fellow research students. Their collaborative demeanour and insightful feedback were crucial in refining my ideas and producing work that could stand up to scrutiny.

A big thank you to Dr Sam Assan, who was the first to believe in the potential of this project and started this journey with me. I express my utmost gratitude to my supervisors, Dr Esther Idehen, Dr Karen Barnett, Dr Nicola Torrance and Professor Kay Cooper, for their invaluable academic guidance, emotional support, and mentorship, all of which were critical to the successful completion of this thesis. The symbiotic relationship between their distinct yet complementary approaches has provided me with a holistic educational experience that I find phenomenally enriching. Their collective expertise has significantly enhanced my scholarly development. I extend my sincere gratitude to Dr Andy Hall, Research Degree Coordinator at the School of Health Sciences, for his invaluable support throughout this research. His diligent efforts to ensure my access to all necessary resources were fundamental in facilitating the successful completion of this study.

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List of abbreviations

ACE- Adverse Childhood Experience

ADF- Alcohol and Drug Foundation

BPS- Bureau of Public Safety

CBT- Cognitive-Behavioural Therapy

CDC- Centers for Disease Control and Prevention

CPP- Conditioned Place Preference

EAPs- Employee Assistance Programs

FDA- Food and Drugs Authority

GSS- Ghana Statistical Service

ID- Identification

IHME- Institute for Health Metrics and Evaluation

INCB- International Narcotics Control Board

IPA- Interpretative Phenomenological Analysis

MOA- The researcher

NCCMH- National Collaborating Centre for Mental Health

NDARC-National Drug and Alcohol Research Centre

NHIS-National Health Insurance Scheme

NIDA- National Institute on Drug Abuse

NIHR- National Institute for Health Research

NLM- National Library Medicine

NRSA- National Road Safety Authority

NRSC- National Road Safety Commission

PIS- Participant Information Sheet

SAMHSA- Substance Abuse and Mental Health Services Administration

SDG- Sustainable Development Goal

SRD- Statista Research Department

SUDs- substance use disorders

UK- United Kingdom

UN- United Nations

UNODC- United Nations Office on Drugs and Crime

US- United States

WDR- World Drugs Report

WHO- World Health Organization

Glossary of terms

Substance use

The use of specific substances, such as alcohol, tobacco products, drugs, and inhalants that can be ingested, inhaled, injected, or alternately administered into the body, with the potential for addiction and other negative consequences (Centers for Disease Control and Prevention (CDC) 2023).

Substance abuse

A pattern of compulsive substance use characterised by recurrent significant negative social, occupational, legal, or interpersonal consequences (American Psychological Association 2022).

Drug use

The consumption of a variety of psychoactive substances that alters perception, mood, consciousness, cognition, and behaviour, encompassing both medical and non-medical uses (World Health Organization (WHO) 2023a). Such substances can include those that are legal, such as prescription medications and those that are illegal, like heroin, cocaine, or cannabis.

Drug abuse

The continuous use of a drug despite being aware of a serious social, occupational, psychological, or physical problem that is caused or aggravated by the drug use (WHO 1994).

Recreational drug use

The use of one or multiple psychoactive substances to achieve an altered state of consciousness, whether for pleasure or leisure purposes (Crocq 2022).

Drug misuse

The use of a drug for a purpose that is not in compliance with legal or medical guidelines, such as the non-medical use of prescription medications (WHO 1994).

Self-medicating

The use of drugs for the purpose of addressing a medical condition or alleviating symptoms by individuals who are not medically trained experts (Hernandez-Juyol and Job-Quesada 2002). It may also involve the use of unapproved drugs or in a way other than specified in the product labelling (Hernandez-Juyol and Job-Quesada 2002).

Non-medical use

The United Nations Office on Drugs and Crime (UNODC) defines non-medical use as “the taking of prescription drugs, whether obtained by prescription or otherwise, other than in the manner or for the reasons or time period prescribed, or by a person for whom the drug was not prescribed” (Fischer 2011 p.1).

Non-medical use of tramadol

Throughout this thesis, references to the use of tramadol pertain specifically to its 'non-medical use', aligning with the focus of the research presented. This distinction is essential to avoid repetitive use of the phrase 'non-medical use' for more streamlined and academically refined writing. The UNODC definition of non-medical use is adopted for the non-medical use of tramadol and therefore defined as the use of tramadol with or without prescription, in a way, amount, time or reason the medical prescriber did not intend (Fischer 2011). The term `non-medical use’ is an umbrella term that can encompass `misuse’ and `abuse’. This broad term does not necessarily specify the frequency, dosage, or potential adverse effects of such use. In scholarly literature, `tramadol misuse’ and `tramadol abuse’ are often used to describe more specific instances of non-medical use (Iwanicki 2020). These more focused terms offer further contextual information regarding the individual's intention, frequency of use, and potential risks, in instances where tramadol is used without medical prescription or supervision.

Tramadol misuse

The use of tramadol in any way that was not directed by a qualified doctor, including use without a prescription of one's own, exceeding dosages, frequency and duration recommendations (Reines et al. 2020; Hughes et al. 2016).

Tramadol abuse

The non-medical use of tramadol, even just once, specifically for its desirable or pleasurable psychological or physiological effects (Iwanicki et al. 2020).

Tramadol addiction/use disorder

Widely varying definitions of drug addiction have emerged. However, the argument of this thesis strongly aligns with the following definitions. Edwards, Arif and Hodgson (1982) defined drug addiction, also referred to as drug use disorder, as the repeated use of a substance despite being aware of the potential harm. Heather (1998) also defined drug addiction as repeatedly using a drug after resolving and making regular attempts to abstain from it or at least significantly minimise it. A hybrid of these two definitions is used to describe tramadol addiction/use disorder.

Drug dependence

Drug dependence and substance use disorder or addiction are frequently used interchangeably, but it is important to note that they are distinct concepts. Drug dependence is a condition where an individual becomes physically or psychologically reliant on a drug or medication (Fluyau and Charlton 2019). This reliance is marked by the body's adjustment to the drug's presence, often resulting in the development of tolerance (Fluyau and Charlton 2019).

Drug tolerance

Drug tolerance is when the body's physiological response to a drug diminishes over time, necessitating higher doses of the drug to achieve the desired effect (Bespalov et al. 2016). In simpler terms, it is needing more of the drug to achieve the same effect and experiencing withdrawal symptoms when the drug is discontinued.

Intoxicated

The state in which the consumption of alcohol or drugs impairs a person's cognitive or physical abilities (Sarkar, Bhatia and Dhawan 2023).

Withdrawal

Withdrawal occurs when a person abruptly stops or reduces their use of a substance that they are physically or psychologically dependent on (Alcohol and Drug Foundation n.d).

Withdrawal symptoms

A set of symptoms that manifest when an individual discontinues the use of a substance to which they have developed a dependence or addiction. It can manifest physically as nausea, vomiting, muscle pain and spasms, as well as negative emotions such as stress, anxiety, or depression (Substance Abuse and Mental Health Services Administration (SAMHSA) 2016a).

Treatment

In the context of drug use, treatment refers to an all-encompassing approach that addresses the physical, psychological, and social dimensions of addiction to facilitate recovery and enhance overall well-being (Volkow 2011).

Detoxification

It is a process that involves removing harmful substances from the body of a person who is acutely intoxicated and/or dependent on substances of abuse (National Library of Medicine (NLM) 2006). The process of detoxification also involves systematically managing withdrawals (NLM 2006).

Rehabilitation

A process that consists of a set of holistic recovery-oriented interventions, whether physical, mental, or social, with the goal of treating people with substance use disorders or addiction, hence facilitating their reintegration into society (Suryadarma and Putri 2018).

Recovery

A transformational process in which people with substance use disorders improve their health and wellbeing, live an independently driven life, and aim to reach their maximum potential (SAMHSA 2016a). `Being in recovery' is described by the SAMHSA as when those positive changes and values are voluntarily adopted as a way of life. While complete abstinence from

all drug use is an essential component of a recovery lifestyle, it is not the sole indicator of a healthy and socially constructive way of life (SAMHSA 2016a).

Sobriety

The state or quality of not being intoxicated (Dictionary.com 2023; Merriam-Webster 2023).

Relapse

It is resuming drug use after a prolonged period of abstinence (SAMHSA 2016a).

12 step programme

A support and fellowship group designed for people recovering from addiction (SAMHSA 2016a). Alcoholics Anonymous was the inaugural 12-step programme, established in 1935 (SAMHSA 2016a). Subsequently, a range of 12-step groups following a similar framework emerged. These groups have gained prominence as the most widely used mutual aid organisations, offering a set of steps to facilitate the maintenance of recovery from alcohol and drug use disorders.

Language

As the thesis evolved, it became clear that appropriate use of language was of utmost significance as it could heavily impact how society perceives people affected by the use of tramadol (Broyles et al. 2014). The repeated use of tramadol for non-medical purposes can cause chemical changes to the brain and result in addiction or drug use disorder (WHO 2019). Historically, addiction was not considered an illness (Nathan, Conrad and Skinstad 2016; Peele 1990). Several studies have subsequently collectively classified addiction as a chronic but treatable medical condition (Volkow 2021; Le Roux, Tang and Drexler 2016; McGinty et al. 2015). Arguments that claim that addiction is solely a behavioural shortcoming are not universally accepted and not backed by current academic literature. However, the perception of addiction as a defect in one's moral character still exists. This is evident in the illegalisation of drug use, which has had many unintended effects in many parts of the world. In the United States, criminalising drug use and misuse eventually led to inadequate pain treatment (Brennan, Lohman and Gwyther 2019; Brennan, Carr and Cousins 2007).

Moreover, criminalisation is likely to exacerbate the stigma associated with drug use and misuse. Many people use stigmatising language while discussing drug use, misuse and

addiction, often unintentionally (National Institute on Drug Abuse (NIDA) 2021). They use language that may present someone suffering from a drug use disorder or addiction in a humiliating or negative light, potentially discouraging them from seeking treatment (Ashford, Brown and Curtis 2019; Hadland, Park and Bagley 2018; Olsen and Sharfstein 2014). Harmful stigma and negativity around drug use, misuse and addiction can be eliminated with simple language adjustments (NIDA 2021; Tran et al. 2020). Addiction specialists advocate using person-first language that emphasises the person rather than the disease (Kabakov, Polisetty and Murray 2022; Sharp et al. 2021; Atayde et al. 2021). It focuses on eliminating words that define a person based on their condition or have negative connotations. The phrase `person with a drug use disorder' sets a respectful and non-judgemental tone and separates the person from the disorder (Lucero 2019; Sharman 2019; Moyana 2019).

Furthermore, the word `abuse' is strongly linked to connotations of wrongdoing and sanctioning or punishment (Alinsky et al. 2022; Miller 2020; Kelly, Dow and Westerhoff 2010). The neutral term `use' is used in the World Drugs Report, while `non-medical' or `misuse' is used to describe the use of prescription/pharmaceutical opioids in a manner that deviates from the prescribed parameters (UNODC 2022). It is acknowledged that the term `abuse' carries negative connotations, but it is used when reporting findings from literature that originally used this term. The use of the term `abuse' in this context is solely for the purpose of reflecting the original authors' choice of language. Table 1 provides a summary of the appropriate terminology used throughout this thesis.

Table 1. Summary of the appropriate terminology used throughout the thesis

Problematic vocabulary	Recommended vocabulary	Reasoning
Tramadol abuse	Non-medical use of tramadol Non-medical tramadol use Tramadol use Tramadol misuse	It has been found that the word `abuse' is strongly linked to wrongdoing and punishment. Non-medical use/misuse refers to use outside prescribed parameters. The term use sets a neutral tone.
Tramadol user Tramadol misuser Junkie Tramadol addict	Person who uses tramadol non-medically Person who misuses tramadol Person who uses tramadol Person with tramadol use disorder Person with tramadol addiction	The use of language that focuses on the individual demonstrates that tramadol use/misuse/addiction is a medical condition or sickness. These phrases emphasise that a person with tramadol addiction has a problem, as opposed to being the problem itself. This language is used to avoid eliciting negative connotations, punitive mindsets, or individual blaming and shaming.
Former tramadol addict Reformed tramadol/drug addict	Person in recovery or long-term recovery/person who previously misused/used tramadol	As above

Problematic vocabulary	Recommended vocabulary	Reasoning
Clean	Being in recovery for the use of tramadol	The use of medical terminology, as you would use for any other medical condition, can help minimise stigma.
Habit	Tramadol addiction Tramadol use disorder	The term `habit' suggests that a person is choosing to take tramadol although they have the option to stop, which is a false assumption. Referring to tramadol use disorder/ tramadol addiction as a habit downplays the severity of the disease.
Getting high	Using	A less derogatory term to describe using tramadol to get intoxicated.
Dirty Failing a tramadol test	Testing positive on a drug/tramadol screen	Use medically appropriate vocabulary in the same manner that you would for any other medical issue. A person's optimism and belief in their ability to bring about change may be diminished using these words.

1 CHAPTER 1: INTRODUCTION

1.1 Chapter overview

This first chapter contextualises the thesis within the broader context of the non-medical use of tramadol. It begins by briefly highlighting how tramadol use contributes considerably to the overall drug use problem, with significant social and public health consequences, affecting people across various demographics and geographical backgrounds. The chapter then prepares the reader for the subsequent arguments in the thesis by providing background and exploring the current contextual knowledge of the use of tramadol. The rationale and personal motivations for the study are also outlined in this chapter. The chapter also informs the reader of the overarching aim of the thesis.

1.2 Introduction

In the densely populated area of Tinka, Ashtown in Kumasi, Ghana, a setting characterised by busy markets, there exists a narrative that is less apparent but holds significant implications. A 12-year-old student, whose residence situates him in this vibrant urban environment, where tramadol is readily available, engages in the non-medical use of tramadol. What begins as conforming to his social group later develops into a mechanism for coping with daily challenges, leading to dependency. The non-medical use of tramadol affects many like him who are navigating a complex web of socio-economic pressures. To fully understand this phenomenon in the local setting of Ghana, it is crucial to contextualise it within the broader landscape of drug use.

1.2.1 Global overview of drug use problem

Drug use in and of itself is not inherently harmful, but it becomes problematic when it progresses to the point where it causes significant harm to individuals and society (Seddon 2011). In the context of this thesis, the term 'drug use' refers exclusively to problematic patterns of use, as opposed to a broader, non-problematic sense. Drug use, a problem of major global health concern, is prevalent and associated with significant physical, mental, and social difficulties (Reichert et al. 2021; Strathdee et al. 2015; Keaney et al. 2011; Thornton and Deitz-Allyn 2010; Cranford, Eisenberg and Serras 2009; James, Johnson and Raghavan

2004). These difficulties not only have a significant negative effect on the individuals involved but also pose serious challenges for health care, social support systems, and the general wellbeing of the community (Ryan and Rosa 2020; Lander, Howsare and Byrne 2013; Cartwright 2008). In Ghana, the use of substances including marijuana, cocaine, heroin, methamphetamine, and opioids are the most commonly reported among student and drug-using populations (Kyei-Gyamfi et al. 2024; Osei Asibey, Marjadi and Conroy 2023; Oppong Asante, Meyer-Weitz and Petersen 2014; Affinnih 1999). Research also underscores the consequential physical, mental, and social challenges it presents within the Ghanaian context (Osei Asibey, Marjadi and Conroy 2023). The complexities of drug use difficulties highlight the need for comprehensive approaches that include prevention, treatment, and support interventions to address the holistic well-being of those affected.

Many countries have implemented drug prohibition policies and laws to reduce the prevalence and problems associated with drug use (Tagziria, Ane and Ruiz Benitez De Lugo 2023; Woodiwiss 2020; Tinasti 2020; Wodak 2014; Biddulph and Xie 2011). In Ghana, the Narcotics Control Commission Act of 2020 (Act 1019) endeavours to transition the nation's drug policy from the punitive framework established by the Narcotic Drugs (Control, Enforcement, and Sanctions) Law of 1990 (PNDCL 236) to a more decriminalised approach (Parliament of Ghana 2024; Ane 2018). Despite these reformative efforts, the Act stipulates fines ranging from 200 to 500 penalty units, equivalent to ₵2,400 to ₵6,000, for possession and personal use, with non-payment resulting in imprisonment (Office of the High Commissioner for Human Rights n.d). This punitive measure remains stringent when considered against the backdrop of Ghana's socio-economic conditions, where the average salary of public sector employees is ₵2,594 (Tagziria, Ane and Ruiz Benitez De Lugo 2023; Ghana Statistical Services (GSS) 2023a). This average salary, however, does not encompass earnings within the private sector, yet it provides a valuable benchmark for assessing the fiscal burden of these fines on the typical public sector employee in Ghana.

Advocates of the criminalisation of drug use claim that it is a practical approach to disrupting and deconstructing illicit drug activities (Smyth, Davey and Keenan 2023; Pacula et al. 2010; Weiner 2009). In some studies, fear of arrest is identified as a significant predictor in the decision of people who use drugs to stop or reduce drug use (Johnson, Golub and Dunlap 2006). However, these results are limited and should be interpreted with caution because of their narrow focus on methamphetamine use in a single area, which may not be applicable to other drugs or in different settings. Moreover, conflicting evidence suggests that people may use drugs in riskier and more covert ways out of fear of punishment, such as by increasing their consumption before leaving the house (Race 2014). Other researchers argue that

prohibitionist laws are not only unsuccessful but counterproductive to accomplishing the objectives of policymakers and have contributed to increased drug use, drug-use disorders, and drug-related mortality rates (Karamouzian et al. 2018; Coyne and Hall 2017; Belackova and Salmon 2017; Barnett 2009).

According to the 2020 World Drugs Report (WDR), approximately 284 million people in the global population had used a drug in the preceding year (UNODC 2022). This was an increase over the previous year, when around 271 million people had used drugs (UNODC 2019). While the percentage rise was approximately 4.6%, the trend over a more extended period showed that the number of people who use drugs globally had increased by 26% since 2009 (UNODC 2019). The Global Burden of Disease Study shows 494,000 estimated drug-related deaths occurred in 2019, representing a 17.5% increase between 2009 and 2019 (Institute for Health Metrics and Evaluation (IHME) 2019). Additionally, approximately 46% more people died globally from drug use disorders in 2019 compared to 2010, which equates to an estimated 273,000 deaths worldwide (IHME 2019). While data on the overall prevalence of drug use in Ghana are lacking (Bird 2019), observed trends in specific demographics, such as adolescents, correspond with the global pattern (Brown-Acquaye 2001), signalling a possible increase in drug use within the country. The increase in global prevalence, morbidity, and mortality rates associated with drug use, as presented above, provides statistical evidence that supports the arguments against prohibitionist laws and punitive measures. Notwithstanding this, there continues to be a well-established global agreement regarding the prohibition of the utilisation of specific drugs for non-medical purposes, resulting in drug-related offences being a predominant cause for criminal arrests in countries such as the United States (US) (Federal Bureau of Investigation n.d; Colson 2020).

1.2.2 Opioid use and the rise of prescription opioid non- medical use

Opioids are drugs whose use are a highly topical issue within the broader context of drug use and can potentially cause serious harm (NIDA 2020). In 2020, roughly 61 million people used opioids (as seen in Figure 1), including opiates (heroin and opium) and pharmaceutical or prescription opioids (UNODC 2022). Opioid use is associated with more harm than other narcotic drugs, such as cannabis, although cannabis is more commonly used (UNODC 2022; National Collaborating Centre for Mental Health 2008). In Ghana, empirical data concerning the prevalence of opioid use remains sparse. Nevertheless, an Accra based study, indicated that among the homeless population, lifetime opioid use was reported at 29%, with recent use at 6% (Osei Asibey, Marjadi and Conroy 2023).

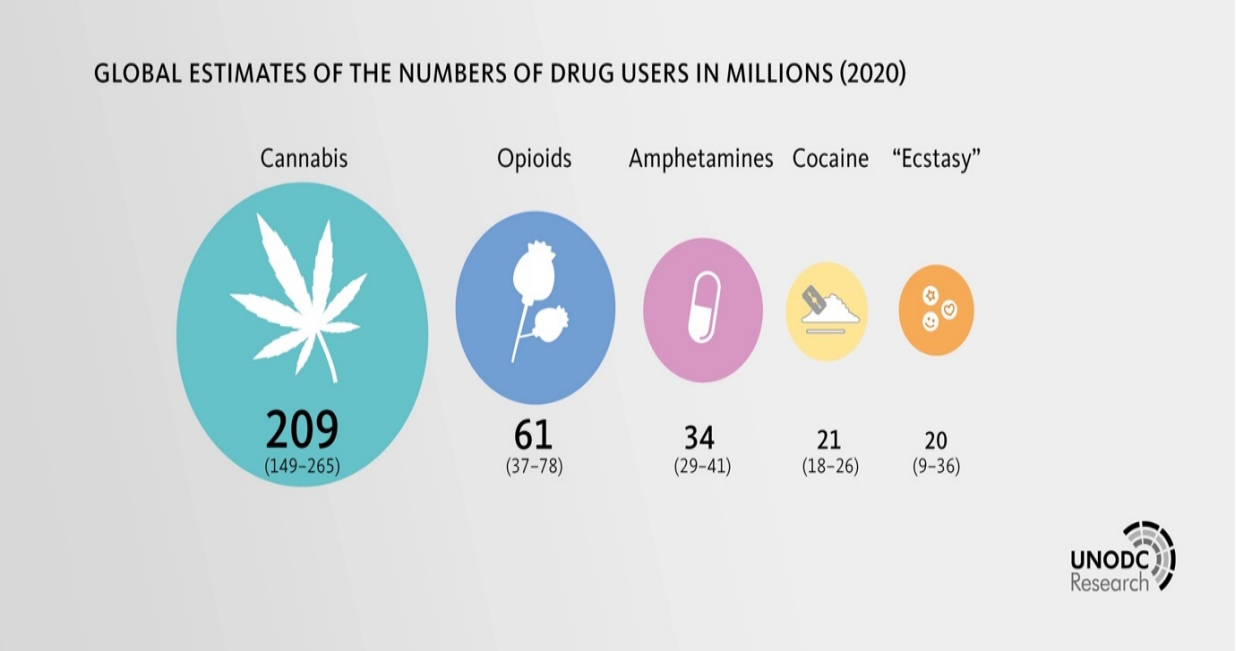


Figure 1. Global estimates of the numbers of drug users in millions (2020) (UNODC 2022).

Over the last decade, a rapidly expanding synthetic pharmaceutical industry has emerged (UNODC 2019). While the rise of this industry has resulted in advances in pain management (Lou 1999), it appears to have also unintentionally fuelled an increase in the non-medical use of prescription opioids, contributing to the broader drug use problem. The non-medical use of prescription or pharmaceutical opioids significantly contributes to the opioid epidemic (Compton, Boyle and Wargo 2015). In the US, for example, roughly 9.5 million people had used opioids non-medically in the past year in 2020, and of these, 9.3 million people had used prescription opioids non-medically (Hughes et al. 2016). Specifically, there are increasing reports of non-medical use of tramadol in West, North Africa and the Near Middle East (UNODC 2020). There is also notable non-medical use of opioids like codeine, oxycodone, hydrocodone, tramadol, and fentanyl in North America (UNODC 2020). Despite limited studies on the non-medical use of prescription opioids in Ghana, prevalence of the non-medical use of tramadol and codeine is highlighted among specific demographics such as commercial vehicle drivers, young adults, students, market women and farmers (Danso and Anto 2021; Saapiire et al; 2021; Food and Drugs Authority (FDA) 2019; Hassan 2018).

Existing research shows that some people who use opioids start by using prescription opioids acquired through a legitimate prescription, usually for chronic pain (Saapiire et al. 2021; Vadivelu et al. 2018; van Amsterdam and van den Brink 2015). However, many other cases of opioid use begin by using them recreationally, acquiring them through illicit means, such as

buying them on the street and from corner stores (NIDA 2018b). In fact, research indicates that a substantial proportion of individuals who use prescription opioids for pain management do so safely and as recommended by their healthcare provider (Chou et al. 2015). The diverse origins of opioid use illustrate the complexity of the opioid crisis, suggesting a need to shift focus from primarily jurisdictional responses to more clinical interventions (Phillips et al. 2017). Strict drug laws may inadvertently divert funding from public health initiatives to law enforcement and criminal justice programmes and can result in reduced availability of pain medication (Knaul et al. 2018). This can, in turn, exacerbate existing disparities in pain treatment and impact public health initiatives like harm reduction, prevention, and treatment (UNODC 2022; Bartels et al. 2016).

The notably high drug use figures perhaps also reveal the additional challenge of providing people involved with adequate and accessible treatment and rehabilitation options. According to the 2020 WDR, only one out of eight people receive treatment for drug use disorders (UNODC 2020), underscoring a significant gap in treatment accessibility on a global scale. Many countries face a shortfall in healthcare infrastructure and resources, such as a shortage of trained healthcare professionals (Arya et al. 2020; O'Connor, Nyquist and McLellan 2011), inadequate funding (Mark et al. 2016), and limited availability of support services (Joudrey et al. 2020) specifically allocated for treating substance use disorders (SUDs). This shortfall is substantiated by a review of data from the World Mental Health Survey, which revealed that only a small fraction of individuals with SUDs receive treatment that is only marginally adequate (Degenhardt et al. 2017). In the US, for instance, only 18% of the 22.5 million individuals who required treatment for substance or alcohol use disorder in 2014 actually received it (Han et al. 2015). Furthermore, it appears that there is a dearth of women-targeted services given that the specific needs of women, such as those related to trauma, childcare and family relationships, may not be adequately met by the majority of rehabilitation programmes historically designed for men (Greenfield and Grella 2009).

Ghana is making continuous attempts to enhance addiction treatment. The Addictive Disease Unit's establishment at Korle-Bu Teaching Hospital in 1991 (Asare and Addae 2014), represents a noteworthy advancement in this context. This unit, backed by the Department of Psychiatry of the Medical School, primarily follows a medical model in its treatment approach, incorporating the Alcoholic Anonymous 12-step programme (Asare and Addae 2014). Additionally, Ghana's three psychiatric hospitals use the medical model for SUD treatment, focusing on detoxification, co-morbidity treatment, counselling, and rehabilitation, with community psychiatric nurses crucial in providing community-level counselling. However,

these facilities are predominantly located in urban areas, posing accessibility challenges for individuals in rural regions (Asare and Addae 2014).

Furthermore, a study in the Sunyani Municipality of Ghana, identified the cost of healthcare, a dwindling social support system, fear of arrest by law enforcement agencies, and lack of knowledge about appropriate healthcare locations as significant barriers to treatment-seeking among drug-using populations (Cadri et al. 2021). Moreover, there is a notable absence of national treatment and rehabilitation centres outside of psychiatric hospitals, with personnel specifically trained in managing SUDs (Asare and Addae 2014). Given these challenges, enhancing treatment accessibility and effectiveness for drug-using populations in Ghana requires addressing both the geographic distribution of treatment facilities and the socio-economic and legal barriers hindering access to care.

1.2.3 The mode of action and non-medical use of tramadol

Tramadol, a prescription-only opioid medication, is a synthetic centrally-acting analgesic primarily used to treat moderate to severe pain (Subedi et al. 2019). Tramadol operates both as a weak opioid agonist, primarily at the μ-receptor and as an inhibitor of neurotransmitter reuptake for serotonin and noradrenaline (Scott and Perry 2000). This distinct pharmacological profile stems from its composition of two enantiomers, each contributing uniquely to its therapeutic actions (Grond and Sablotzki 2004). The (+)-enantiomer primarily targets the μ-opioid receptor and moderates serotonin reuptake, while the (−)-enantiomer focuses on enhancing noradrenaline activity by both inhibiting its reuptake and promoting its release (Grond and Sablotzki 2004). This dual functionality contributes to tramadol's effectiveness while maintaining a profile that is perceived as having a lower potential for misuse and abuse compared to other more potent opioids such as morphine, oxycodone, hydrocodone, fentanyl, and codeine (Scott and Perry 2000). The nuances of this issue are discussed in greater depth in the next section of this chapter.

Paradoxically, the perceived low misuse and abuse liability has contributed to a surge in its non-medical use, as the associated risks are often underestimated (WHO 2014; Gutstein and Akil 2001). Consequently, tramadol holds significant research value, providing a unique lens through which the broader issue of prescription opioid use can be understood, as opposed to other opioids such as oxycodone, hydrocodone, fentanyl, and codeine, which are more commonly acknowledged as high-risk substances. Furthermore, tramadol's widespread availability without a prescription especially in regions like West, North Africa, and the Middle East, has propelled its notoriety, making it a significant public health issue in these areas (UNODC 2022; UNODC 2020). The terms `tramadol misuse' and `tramadol abuse' are

frequently used to describe more specific instances of non-medical use in published literature (Iwanicki et al. 2020). This distinction is highlighted because literature using these terms is extensively referenced throughout this thesis, ensuring clarity and alignment with the standard language and concepts of the field.

1.3 Background and context

1.3.1 Abuse and misuse potential of tramadol

Tramadol produces analgesic effects in humans via both opioid and non-opioid mechanisms of action as elucidated in the preceding section (Raffa 2008). While the non-opioid component potentially causes less harm, the opioid component produces euphoric or pleasurable effects and carries a significant risk of adverse consequences (Dunn et al. 2019). When a person engages in a pleasurable activity, the brain is biochemically programmed to release the neurotransmitter dopamine, which reinforces the neural pathways that encourage the repetition of the activity (Volkow 2021; Wise and Jordan 2021; NIDA 2007). Tramadol's opioid component triggers brain reward pathways and can lead to misuse and addiction (WHO 2019).

Initial studies projected tramadol as an opioid with relatively low abuse liability, projecting it as a safer alternative to more potent opioids like morphine (Gutstein and Akil 2001; Cami, Lamas and Farré 1994; Preston, Jasinski and Testa 1991; Richter et al. 1985; Yanagita 1978). However, more recent evidence regarding non-medical use fundamentally opposes these initial assertions. For instance, some researchers have noted that potential harm through opioid use and misuse is inherent to all opioids, regardless of potency (Crush et al. 2022; Quinlan and Macintyre 2022). Further supporting this perspective, other studies have described tramadol's effects as comparable to morphine in magnitude, with both exhibiting similar Conditioned Place Preference (CPP), an experiment used to measure pleasurable effects (Sprague et al. 2002; Tzschentke, Bruckmann and Friderichs 2002). In the CPP experiment, as detailed in studies by Cha et al. (2014) and Zhang et al. (2012), animals such as mice or rats are placed in a cage with two compartments, receiving a drug in one and a placebo in the other during the conditioning phase. This process creates an association between the drug's effects and the environmental cues of the drug-paired compartment. After, the animal is placed in the apparatus without any drug administration and allowed to move freely between the compartments. A preference for spending more time in the drug-paired compartment is interpreted as an indication that the animal finds the drug pleasurable, demonstrating the drug's addictive potential. It is crucial to interpret these findings with caution, as the CPP experiments were conducted on mice, and the implications for human tramadol

and morphine use and addiction may not directly correspond. However, it is plausible to draw parallels, given that research shows that the opioid component of tramadol is the dominant contributor to its pharmacological activity (Verri et al. 2015; Babalonis et al. 2013; Zhang and Liu 2013; Raffa 2008; Grond and Sablotzki 2004).

The risk of tramadol abuse is also hypothesised to increase over time, especially when people increase dosages or change administration routes to elevate their level of opioid tolerance (Dunn et al. 2019), a theory paralleled by findings that the risk of misuse and subsequent addiction increases with time and may rise after day three of opioid prescription (DeBenedette 2017). Due to tramadol's similar profile of effects to opioid agonists, which activate specific brain receptors to produce a full opioid effect, some groups, including individuals with a history of substance use and patients with chronic pain, may also be more vulnerable to its non-medical use (Khan et al. 2013; Epstein, Preston and Jasinski 2006). Although the ability of opioids to produce pleasurable or euphoric effects varies according to opioid agonism, it is important to highlight that accessibility, familiarity, and cost variables may impact the likelihood of the non-medical use of opioids (Smith and Bruckenthal 2010). These additional factors, coupled with increasing records of tramadol's non-medical use globally, suggest that tramadol's abuse and misuse potential may have been previously understated.

Although there are no overall global statistics on its prevalence, many countries have reported increasing rates of the non-medical use of tramadol, which will be reported in detail in section 1.3.2. There are also significant risks associated with tramadol use, with evidence establishing a relationship between tramadol use and drug poisoning, cardiac and renal complications, seizures, respiratory depression and death (Badr Yacoub Salem et al. 2022; Habibollahi et al. 2019; Randall and Crane 2014; McCrimmon and Alheid 2003; Clarot et al. 2003). Additionally, the available literature frequently links tramadol use to psychological illnesses such as depression and anxiety (Diab et al. 2021; Rao and Ward 2019; Bassiony et al. 2016). The effects associated with the non-medical use of tramadol extend beyond an individual's physical and mental health and affect education, the criminal justice system, and social well-being (Badr Yacoub Salem et al. 2022; Madukwe and Klein 2020; Bassiony et al. 2016). Tramadol use is also frequently combined with the use of other substances, especially tobacco, alcohol, and cannabis (WHO 2019), enhancing the risk of adverse effects and overdoses due to potential inter-drug interactions (WHO 2020b; NIDA 2020). This situation necessitates enhanced clinical vigilance and public health efforts to educate about the dangers of combining drugs and to prevent potential health emergencies.

1.3.2 Prevalence of non-medical use of tramadol: a global overview

1.3.2.1 The western world: the non-medical use of tramadol in Europe and America

A comparative analysis conducted by Iwanicki et al. (2020) revealed similar prevalence patterns in the non-medical use of tramadol in the United Kingdom (UK), Germany, Italy and Spain in 2018. Within this analysis, Spain recorded the highest prevalence, with almost 1.06 million people using tramadol for non-medical purposes. This was followed by the UK, Germany and Italy, recording roughly 1.05 million, 906,750 and 150,213 non-medical use cases, respectively. The population sizes of these countries compared to reported prevalence may have implications for the extent of the issue in each country. Spain's comparatively smaller population of 48.69 million in 2018 (Statista 2022), recording the highest prevalence, indicates a more severe issue compared to the UK with a larger population of 66.46 million in the same year (Office for National Statistics 2022), despite having similar case numbers. Germany, with the largest population of 82.91 million in 2018 (Data Commons n.da), having a lower prevalence, signifies a less widespread problem relative to its population size. Lastly, Italy, with fewer cases and a mid-sized population of 60.42 million in 2018 (Data Commons n.db), presenting the lowest prevalence, indicates that non-medical use is considerably a less prevalent issue compared to the other countries in the study.

Similarly, evidence from the US highlights the high prevalence of tramadol use. The National Survey of Drug Use and Health revealed that between 2015 and 2017, approximately 1.6 million to 1.8 million Americans misused oral tramadol (Reines et al. 2020). While the number of Americans who misused tramadol appears relatively small compared to the entire population between these years, the absolute figures (1.6 to 1.8 million) nonetheless represent a significant concern. Although most of these countries have stringent drug enforcement laws, these figures demonstrate a high prevalence of tramadol use. The striking similarity in prevalence across Europe and America may be related to the increased prescribing rates. In the US and the UK, overprescribing tramadol is cited as one of the plausible causes of the opioid crisis (Makary, Overton and Wang 2017). In Germany, low but rising tramadol prescription rates overlap with increasing rates of its non-medical use (Rosner et al. 2019).

1.3.2.2 The Middle Eastern context: the non-medical use of tramadol in Iran, Gaza and Yemen

1.3.2.2.1 General population prevalence trends

The notable surge in tramadol misuse reported in some Middle Eastern countries, including Iran, Gaza, and Yemen, renders them pertinent case studies for understanding the scope of the issue across the region (Rostam-Abadi et al. 2020; Nasiri et al. 2019; UNODC 2017; Abood and Wazaify 2016). A systematic review showed that 4.9% of the general Iranian population used tramadol in the last 12 months, with a 95% Confidence Interval (CI) of 4.1% to 5.9% (Rostam-Abadi et al. 2020). This statistic may be an indicator of the behavioural health landscape in Iran but also sets a precedent for the potential undercurrents of widespread tramadol misuse in similar socio-political environments. Opiate analgesics were the third most misused substance, with tramadol (48.2%) being the most misused opiate analgesic in Aden City, Yemen (Abood and Wazaify 2016). This prevalence rate appears to be significantly higher than the Iranian study (Rostam-Abadi et al. 2020). The type of methodology used may have accounted for the disparity. The findings of Abood and Wazaify (2016) were based on participating pharmacists' assessments of prescription requests, as opposed to the Rostam-Abadi and colleagues' systematic review that aggregated findings in studies that reported non-medical use using questionnaires administered to people who misuse the drug.

1.3.2.2.2 Student populations prevalence trends

The existing scholarly literature prominently underscores a notable prevalence of tramadol use within student cohorts in the Middle East. An examination of this trend among student populations serves to elucidate the broader scope of the tramadol use problem in the region. Studies show varying rates of tramadol misuse among college students in Iran (Damghan and Hamadan), ranging from 4.71% to 12.5% (Pourmohammadi and Jalilvand 2019; Bashirian, Barati and Fathi 2014). Variations in geographical, cultural, and demographic factors may account for the disparity in prevalence rates among students. For example, the religious context of Damghan may enforce stricter norms against substance misuse compared to the more urban Hamadan City. Additionally, the younger average age and higher prevalence of risky behaviours generally in the Hamadan sample may suggest a greater inclination towards tramadol misuse. Differences in willingness to disclose substance misuse could also contribute to the observed variations.

1.3.2.3 The non-medical use of tramadol in Africa: trends in North, West and Central Africa

A pattern of increasing non-medical use of tramadol has also emerged in West, North and some parts of Central Africa, affecting population subgroups. The prevalence of tramadol use is well documented in the Egyptian and Nigerian populations. The prevalence of use in Togo, Cameroon and Benin has received scant scholarly attention. However, many media reports relying on expert interviews and anecdotal evidence highlight increasing prevalence (Institute for Security Studies 2018). While such reports offer preliminary insights, they lack the comprehensive rigour of scholarly research, necessitating caution in interpretation and highlighting the need for more robust studies.

In examining the prevalence trends of non-medical use of tramadol in Africa, it is noteworthy that there are no comprehensive studies assessing tramadol use across general populations. Research efforts are primarily focused on specific sub-populations that are perceived to be more vulnerable to tramadol use, such as individuals in educational institutions, transport, industrial and construction workers, and drug-using populations. This focus on specific groups, while limiting a holistic understanding of the scope of tramadol use across the continent, sheds light on its impact within particular communities where an elevated risk profile has been documented (Diab et al. 2021; Abd-Elkader et al. 2020; Peprah et al. 2020; FDA 2019).

1.3.2.3.1 Prevalence of non-medical use of tramadol among drug using populations

In Nigeria, the prevalence rate of tramadol misuse among people who use drugs was about 54.4%, with 91% of them involved in unlawful drug acquisition without a prescription (Ibrahim et al. 2017). These striking figures underscore the urgent public health challenge posed by the non-medical use of tramadol in Nigeria. The high rate of illicit acquisition suggests widespread availability and significant gaps in regulatory and enforcement mechanisms.

1.3.2.3.2 Prevalence of non-medical use of tramadol among students

In Sohag City, Egypt, 5% of university students abused drugs, with 1.8% of this subset abusing tramadol (Meray, Ahmed and Rania 2016). Similar numbers were found in Zagazig, Egypt, where 7.4% of university students abused drugs, with 1.9% specifically abusing tramadol (Amin, Elnagdi and Amer 2019). Similar methodological approaches and sample characteristics may account for the broad similarities in prevalence among studies. Another

study in Zagazig showed a higher rate of 8.8% among younger secondary school students (Bassiony et al. 2015), suggesting lower age may be a factor in prevalence. Research also indicates that tramadol abuse is more common among individuals aged 15 to 18, those with lower educational levels, and those with a history of substance abuse (Saapiire et al. 2021; Bassiony et al. 2015). Moreover, the impacts of changes in the brain occur considerably more quickly in teenagers since the brain is still developing, making them more vulnerable to drug use and addiction (Squeglia, Jacobus and Tapert 2009).

Studies in Nigeria show high tramadol abuse rates among students, ranging from 32.8% to 39% (Olanrewaju et al. 2022; Idowu et al. 2018; Bassi et al. 2017), possibly influenced by factors such as youthful independence, predominantly male samples, and urban settings, all linked to higher drug use and misuse (Saapiire et al. 2021; Madukwe and Klein 2020; Pourmohammadi and Jalilvand 2019; Idowu et al. 2018; Ranjbaran et al. 2018; Wood et al. 2018; Bassi et al. 2017;; Bassiony et al. 2015; Rigg and Monnat 2015; Khanna, Vohra and Rajput 2002). Consistency in these findings may also stem from the use of structured questionnaires. Comparatively lower prevalence rates from 11.2% to 27.2% in other studies vary with demographics, including older students and female-majority samples, aligning with evidence that tramadol use is more common among males (Uwaibi, Omozuwa and Agbonrofo-Eboigbe 2022; Saapiire et al. 2021; Pourmohammadi and Jalilvand 2019; Duru et al. 2017).

The observed discrepancies in the prevalence of tramadol use between Nigerian and Egyptian students may stem from cultural, socioeconomic, and policy differences between the countries. Higher rates of tramadol use reported for Nigeria, could be fuelled by economic hardship and widespread availability of tramadol, with individuals using the drug as a means of escapism (Dauda 2017; Ibrahim et al. 2017). In Egypt, on the other hand, religious beliefs may act as a buffer (Abduh 2000), lowering levels of tramadol use. Moreover, the country has a strict drug control policy (Zaki 1983), which could limit the availability of tramadol.

1.3.2.3.3 Prevalence of non-medical use of tramadol in occupational settings

A cross-sectional survey of randomly selected minibus drivers, construction and textile industry workers in Egypt revealed a significant prevalence of tramadol misuse (56.9%) (Abd-Elkader et al. 2020). Tramadol misuse was highest among construction workers (92.3%), followed by bus drivers (50%) and textile workers (25.3%) (Abd-Elkader et al. 2020). In Lagos, a state in southwestern Nigeria, 53.7% commercial vehicle drivers abused tramadol (Idowu et al. 2022). The comparability of the prevalence rates can be explained by the study samples' similar characteristics. Both study populations had low income, minimal educational levels and a higher proportion of males compared to females.

Other studies have shown varying prevalence rates of tramadol abuse among commercial vehicle drivers. Dada et al. (2021) reported a 35.1% abuse rate in Kano, Nigeria, while Yunusa et al. (2017) recorded a 19.4% rate in Lagos, and Hamzat, Kanmodi, and Adesina (2019) reported a lower prevalence of 6.4% in Sokoto. In Accra, Ghana, Danso and Anto (2021) found a 24.9% abuse rate. Comparatively lower prevalence in these studies may be linked to the older age of participants, typically ranging from 21 to 49 years, which correlates with a reduced likelihood of abuse. Additionally, variations in prevalence could be due to different study parameters, such as Hamzat and colleagues focusing on recent two-week misuse versus lifetime use in other studies.

Among 111 motorcycle taxi drivers in Togo who used tramadol, 84.7% purchased the drug without a prescription (Carmel et al. 2019). Togo may have different border control measures, allowing for easier smuggling or trafficking of tramadol into the country (Salm-Reifferscheidt 2018), leading to its higher availability and misuse among drivers. In 2015, 40 million illegal tramadol tablets were intercepted at ports in Benin (International Narcotics Control Board (INCB) 2018). This was reported to be mainly due to lax border and customs control, especially since Cotonou, the economic centre of Benin, has become a hub for illegal tramadol (INCB 2018). These factors collectively underscore how tramadol's easy accessibility significantly contribute to the rise in non-medical use in Africa, as demonstrated by Klein (2019). The observed prevalence in Africa indicates an emerging public health emergency in the region and explain why the World Drugs Report in 2019 described the non-medical use of tramadol as a crisis in Africa (UNODC 2019).

Historically, drug regulations in the Middle East and North Africa have been more conservative and reactionary (Ghiabi 2018a). Dynastic monarchies, semi-military republics, the heavy reliance on Islamic law and norms and religiously sanctioned republics have all contributed to the region's strict drug sanctions (Ghiabi 2019). Regardless of existing stringent drug laws, countries like Egypt, Iran, and Yemen still face rising tramadol use. Cultural norms and societal expectations significantly shape this landscape. Tramadol holds a lower social stigma than other substances (Klein 2019), with many misusing it under the guise of medical prescriptions, especially in regions where drug use is culturally taboo and religiously forbidden (Ghiabi 2018b). This context affects perceptions and responses to substance use in the region (Abbot and Chase 2008).

Considering all the evidence provided on prevalence in the various countries around the world, it is reasonable to conclude that the non-medical use of tramadol is an increasingly concerning problem in many countries. Factors influencing variability in tramadol use prevalence may include geographic location, population size, and demographic characteristics (Keyes et al.

2014; Committee on Opportunities in Drug Abuse Research and Institute of Medicine 1996). Additionally, environmental factors such as socioeconomic background, societal norms, cultural influences, and substance accessibility also mediate differences in drug use and misuse (Spooner and Hetherington 2005; Somers et al. 2004). These patterns can vary dramatically over time and across different nations.

1.3.3 The non-medical use of tramadol: the Ghanaian context

1.3.3.1 Cultural foundations and identity formation in Ghana

Ghana, a country situated on the Gulf of Guinea in the West African subregion, is bordered by Burkina Faso, Togo, the Atlantic Ocean, and Côte d'Ivoire (Boateng et al. 2023). Some notable cities in the country include Accra, Kumasi, Cape Coast, Tamale and Sekondi-Takoradi. Figure 2 presents the Map of Ghana highlighting geographical location, borders and major cities. With a population of approximately 30 million, Ghana represents a confluence of diverse cultural identities and religious beliefs (Konadu and Campbell 2016; GSS 2023b). Ghana is made up of ethnic groups, such as the Akan, Mole-Dagbon, Ewe, Kusasi and Ga-Dangme, among others (Asante and Gyimah-Boadi 2004). The majority of Ghanaians are Christians, but there are also significant Muslim populations and adherents of traditionalist beliefs (GSS 2023). This rich tapestry of ethnic diversity, cultural practices and religious beliefs sets the stage for understanding how deeply ingrained social structures influence personal and collective decisions, including those related to health behaviours like tramadol use.

Central to Ghanaian culture is the family unit, which transcends being a mere social construct to a fundamental element of identity and support (Dzramedo, Amoako and Amos 2018). The prevailing strong family ties are critical in shaping individual behaviours and societal norms. Decisions, from daily choices to life-changing judgments, are often weighed against their potential impact on family and community, reflecting the deep-rooted collectivist culture that emphasises communal well-being over individual desires (Asadu 2018; Hystad and Carpiano 2012; Kirk and Okazawa-Rey 2006). This cultural orientation can provide a supportive network that offers protection and reinforcement for healthy practices (Campos and Kim 2017), but can also lead to a sense of obligation on individuals to conform to the expectations and norms of the group, which may not always align with optimal health outcomes or personal preferences (Kawabata 2013).

Moreover, this deeply rooted sense of community is intertwined with the pervasive influence of religion, which acts as another fundamental pillar shaping societal norms and personal ethics in the country (Macaulay 2021; Max-Wirth 2018). Religious teachings significantly

influence individuals' self-conception and worldviews (Predko 2019), informing how they interact with others, manage conflicts, and engage in community activities (Macaulay 2021; Max-Wirth 2018). This integration of faith into one's identity subsequently informs a wide range of decisions (Predko 2019; Sigalow, Shain and Bergey 2012). By aligning their choices with religious values, individuals ensure that their actions are consistent with their spiritual commitments, further reinforcing their religious identity in a cyclical manner. The societal value of respecting authority similarly shapes individual decision-making in Ghana. This reverence extends beyond traditional figures of authority, such as religious leaders, community elders, and senior family members (Anderson 2022; Kumasey 2017). It also permeates various social groups, manifesting as respect for individuals who are older, even by a marginal age difference (Kumasey 2017). Consequently, older siblings and colleagues often receive deference, reinforcing a hierarchical social structure where age subtly but powerfully influences interactions and decisions.

While the aforementioned cultural features significantly shape identities in Ghana, it is crucial to acknowledge that these influences are not uniform across the entire population. Variations in socio-economic status can lead to distinct expressions of cultural norms and values (Ishii and Eisen 2020). For example, in wealthier, urban areas, the rapid pace of modernisation and global influence might lead to a dilution of traditional collectivist practices, with individualism becoming more pronounced (Welch 2001). The respect for authority may also manifest differently. In affluent areas, authority may be challenged more readily, while in less affluent or rural areas, traditional structures of authority might be more strictly observed. These disparities highlight the complexity of cultural identity in Ghana, where socio-economic contexts significantly influence how cultural features are embraced and expressed, shaping the diverse tapestry of identities across the nation.

Figure 2. Map of Ghana highlighting geographical location, borders and major cities (Map data 2024).

1.3.3.2 The non-medical use of tramadol in Ghana: a growing public health challenge

Like many other countries, tramadol use is a recognised public health challenge in Ghana (FDA 2019). This challenge intersects with broader national health concerns, law enforcement efforts, and socio-cultural factors, indicating the need for a comprehensive strategy to tackle the problem effectively. The approved dosage strengths of tramadol in Ghana include 50 and 100mg tablets and capsules and 50mg/ml-2ml injections (FDA 2019). However, the availability and unauthorised access to doses contrary to medical recommendations persist. According to the Ghana FDA, tramadol is on Ghana's list of most misused prescription medications; acquired in corner stores, recreational spots, and pharmaceutical and licensed chemical shops without a prescription (FDA 2019).

The adulteration and falsification of tramadol on the market exacerbate the problem of non-medical use. An estimated 86.5% of unapproved tramadol seized by the FDA in Ghana were produced in India, while the remaining 13.5% had no manufacturer details on the packaging, which is against the established labelling standards for prescription drugs by the FDA and has negative implications for public safety (FDA 2019). This trend of regulatory non-compliance is

further evidenced by a 2019 study by Klein, which scrutinised tramadol samples in some selected West African countries. Significantly, he concluded that not one of the examined samples complied with international and national standards and regulatory laws for medicines (Klein 2019). This finding aligns with broader observations reported by the WHO, which indicate that more than half of medicines on the African market are substandard, falsely labelled, falsified or counterfeit (SSFFC), signifying serious risk to individuals (WHO 2023b).

Approximately 77.6% of the 36.2 % of people who used tramadol in the Jirapara municipality in the Upper West Region of Ghana, misused or abused the drug (Saapiire et al. 2021). Reports from the Ghana FDA and the media indicate a widespread problem of tramadol use in the country (Thompson and Ofori-Parku 2021; FDA 2019). In response to the emerging public health problem, regulatory measures were enacted to classify tramadol as a controlled substance. Specifically, the Minister of Health imposed restrictions on tramadol through the Executive Instrument titled ‘Instructions for the Control of the Importation, Manufacture, and Sale of Tramadol and Tramadol-Containing Products Instrument, 2018’ (FDA 2019).

The Ghana FDA has seized over 500,000 unauthorised tramadol doses from licenced and unlicensed pharmaceutical stores and drug peddlers in Ghana since 2017 (FDA 2019). The Volta region had the most tramadol seized, with 14,700 tablets and 110,400 capsules, followed by the Northern and Ashanti regions, with 1,300 tablets and 10,280 capsules and zero tablets and 4115 capsules respectively (FDA 2019). The influx of unauthorised tramadol in Ghana's Volta and Northern Regions may be linked to the areas' rural, agricultural character (GSS 2013). According to Hassan (2018), tramadol has become one of the most popular pharmaceuticals among Ghanaian farmers, who have colloquially termed the drug "farm and purchase cow" an anecdotal evidence to the perceived energy enhancement that it provides, potentially enabling them to generate enough income to purchase livestock such as cows. The ownership of livestock, particularly cattle, is traditionally regarded as a sign of wealth and socioeconomic status in Ghana's Northern region (Ameleke et al. 2020). Similarly, the substantial number of unapproved tramadol doses seized in the Ashanti region may be linked to the prevalence of physically demanding occupations like timber processing in the area (GSS 2013), where tramadol’s perceived energy-enhancing and pain-relieving properties may be sought after (Madukwe and Klein 2020).

Although the drug is also misused in white-collar occupations (Diab et al. 2021), given the relationship between pain and manual labour, using analgesic medication (painkillers) to relieve pain and improve physical performance is reasonably expected (Agaliotis et al. 2013; Schneider, Lipinski and Schiltenwolf 2006). This reflects broader trends observed in physically intensive activities like sports (McCabe, West and Boyd 2013). Increased seizures of tramadol

may also be attributed to enhanced FDA regulatory efforts to curb non-medical use. However, the prevailing evidence suggests that the fundamental driver is likely the drug's appeal in physically demanding occupations for its performance-enhancing properties, superseding the impact of heightened regulatory scrutiny. The surge in availability of illicit tramadol in the Volta region is also attributed to its porous borders by the FDA (FDA 2019). Notably its proximity to Aflao, a major border crossing with Togo, aligning with previous studies that identify border areas as hotspots for illicit drug trade patterns (Li et al. 2014; Saha et al. 2014; Peltzer et al. 2010; Brouwer et al. 2009). For governmental policies to successfully reduce the non-medical use of tramadol in Ghana, approaches backed by evidence that can address cultural influences (Velasco, Griffin and Botvin 2017; Nyamathi et al. 2017) and investigation of a variety of psychosocial factors that influence use are required (SAMHSA n.da).

1.4 Rationale for study

The non-medical use of tramadol can have significant social consequences for individuals as well as their communities. The negative psychological outcomes like depression and anxiety can make it challenging for people who use tramadol to participate in social activities and establish or maintain meaningful relationships (Rao and Ward 2019; Bassiony et al. 2016). Understanding these negative outcomes is crucial for developing effective interventions and policies to address the broader consequences of tramadol use on the Ghanaian society.

Additionally, tramadol use can have wider social implications, especially if people engage in risky or illegal activity to obtain the drug. There is a dearth of research examining the relationship between tramadol use and crime and violence, specifically in Ghana. Nonetheless, reports have linked tramadol abuse to criminal activity and violence across West Africa, including Ghana (Holmstedt, Olsson and Håkansson 2020; Klein 2019). Ghana's crime index was 44.5 as of February 2023, with the country facing a significant problem with street crime, particularly severe in Accra and other major urbanised cities (Bureau of Public Safety (BPS) 2021). Considering the increasing reports of crime and the prevalence of tramadol use in Ghana, understanding how interrelated factors associated with use may contribute to crime in the country seems critical.

Ghana experienced a significant rise in road traffic accidents, with a 23.67% increase from 2020 to 2022 (National Road Safety Commission (NRSC) as cited in Statista Research Department (SRD) 2023; National Road Safety Authority (NRSA) 2022; Coleman 2014). Road accident fatalities and injuries increased from 2080 and 12,380 to 2373 and 15,690, in 2020 respectively (NRSC as cited in SRD 2023; NRSA 2022). Given tramadol's side effects like

drowsiness, dizziness, and blurred vision (The National Health Service (NHS) 2022; Subedi et al. 2019), which can impair driving ability and sequentially increase the risk of accidents, understanding its non-medical use in Ghana's context is crucial to potentially reduce road accidents and improve road safety. Furthermore, in 2020, 11,438 violent crimes were reported in Ghana, though underreporting due to fear or mistrust in legal systems may imply higher actual figures (BPS 2022; GSS 2019). The psychoactive effects of tramadol can alter mental state and induce violent behaviour (Peprah et al. 2020; Ratnapalan 2013), highlighting the importance of understanding the factors contributing to its non-medical use. Gaining insights into the intricate link between tramadol use, mental health, and societal impacts is crucial for devising informed preventive responses and interventions.

The link between the use of tramadol and self-harming behaviours is suspected to be influenced by the drug's mood-altering effects such as euphoria, drowsiness, and sleepiness, which may momentarily suppress negative emotions (McCabe, West and Boyd 2013). Tramadol can also cause anxiety and irritability (Fuseini et al. 2019), potentially exacerbate existing mental health problems and increase self-harm and suicide risks, especially among young males, who predominantly use tramadol (Madukwe and Klein 2020; Pourmohammadi and Jalilvand 2019; Fuseini et al. 2019). In Ghana, where tramadol use is prevalent, there were 1,993 recorded suicide fatalities in 2020, which represented 1.14% of the total deaths for that year (WHO 2020a). Individuals aged between 10 and 19 years, predominantly males, constitute the majority of people who died by suicide in Ghana (Abdulai 2020; Adinkrah 2012). While this reveals a possible indirect correlation between tramadol use and suicide incidents in Ghana, the observed pattern might be part of a larger pattern related to age and gender vulnerabilities as it aligns with global statistics that rank suicide as the fourth leading cause of death among 15–29-year-olds, predominantly in men (WHO 2021).

Considering the consequences associated with the non-medical use of tramadol, the significant economic impacts on Ghana cannot be overemphasised. It can result in incurring substantial healthcare costs due to related health complications, decreased workplace productivity, and increased absenteeism (Reinhart et al. 2018). It potentially compromises the nation's appeal to investors and tourists due to associated criminal activities like theft and violence (Mataković and Cunjak Mataković 2019; Karagiannis and Madjd-Sadjadi 2012). Ghana's limited social welfare resources are further strained as affected individuals may require support, including social welfare and disability benefits (Moro et al. 2022; Baffoe and Dako-Gyeke 2013). Additionally, there are considerable legal expenses linked to the prosecution of drug-related offenses and enforcement of drug laws, posing an overarching

economic burden on the country (Stevens et al. 2022; Bergen-Cico et al. 2017; Caulkins et al. 1997).

The non-medical use of tramadol threatens Ghana's achievement of Sustainable Development Goal (SDG) 3, which aims for universal well-being and healthy lives (United Nations (UN) 2022), with indicators such as decreased suicide and accident mortality, and preventing substance use and misuse. Mental health, being a neglected aspect of healthcare in Ghana (Eaton and Ohene 2015), accentuates the scarcity of rehabilitation and treatment for people who use drugs, hindering the attainment of Universal Health Coverage, also a target of SDG 3 (UN 2022). Given these effects, it is apt to assume that lack of attention to tramadol use may directly hamper the realisation of SDG 3, emphasising the need for prioritising it in public health initiatives in Ghana.

Recent years have witnessed a growing academic interest in the non-medical use of tramadol in Ghana, with research investigating its prevalence, contributing factors, and social consequences. However, there are notable gaps in the existing qualitative research exploring factors contributing to initial and continuous use, its social effects on individuals, the impact on interpersonal and broader societal interactions in diverse samples. These gaps are further highlighted by the limited studies on rehabilitation and support for tramadol use in Ghana. This PhD uses an interpretative phenomenological analysis approach, employing individual face-to-face interviews to explore the lived experiences of people with varied occupational backgrounds who use tramadol in Ghana.

1.5 Personal context for researching the non-medical use of tramadol

This research is motivated by the researcher's background and work in public health. As a public health professional, the researcher began their career with an internship at the World Health Organization's Africa Regional Office. Here, they contributed to projects aimed at improving regional access to pharmaceuticals, other medical supplies, and health technologies. This formative experience exposed them to the complexities and challenges involved in ensuring equitable access to essential medicines and the public health implications of non-medical use.

After completing the internship, they returned to Ghana and assumed a supportive consulting role with the Food and Drugs Authority, where they had served as a regulatory officer during their National Service. During this period, discussions around the non-medical use of tramadol

were rife, with the emphasis primarily on the enforcement of strict regulatory laws and criminalisation of non-medical use. This concerned the researcher, as it threatened to create difficulties for individuals who genuinely required tramadol for pain management to legitimately access it. Given that the majority of their public health career had been devoted to advocating for equitable access to medicines, these discussions prompted a more nuanced and balanced exploration of the issue, setting the stage for the current research.

1.6 Aims and objectives

The overarching aim of this PhD is to gain an in-depth understanding of the complexities and lived realities of the non-medical use of tramadol in Ghana.

The specific objectives are:

- To explore how people are introduced to tramadol and the factors that lead to initial use.
- To understand the factors that influence continuous non-medical use of tramadol.
- To understand how non-medical use of tramadol impacts personal, social, work and family life.
- To explore experiences with access and use of rehabilitation and support services for non-medical use of tramadol.

1.7 Chapter conclusion

The introduction has set the stage for the thesis by presenting essential background and contextual information on the non-medical use of tramadol. It also outlined the rationale for researching the subject, underscoring its significance. The aim and specific objectives formulated based on the gaps identified in the existing research are also presented. The next chapter presents a detailed scoping review, examining the existing body of research and elaborating on the identified gaps.

2 CHAPTER 2: CONTRIBUTING FACTORS, SOCIAL EFFECTS AND REHABILITATION AND SUPPORT FOR THE NON-MEDICAL USE OF TRAMADOL: A SCOPING REVIEW

2.1 Chapter overview

This chapter presents a scoping review conducted to map and summarise the available evidence on contributing factors, social effects, rehabilitation, and support for the non-medical use of tramadol and to identify gaps in the existing evidence base. Firstly, the chapter sets the stage by defining the key terms to clarify concepts and delineate the scope of inquiry. Following this, the rationale for choosing a scoping review over other review methodologies is discussed. The chapter then systematically documents the methods used in conducting the scoping review and analyses and presents the review's findings. It concludes by demonstrating how the thesis's aim and objectives address some of the identified gaps.

2.2 Introduction

Contributing factors, within the context of this scoping review, refer to a variety of elements and circumstances that significantly influence or facilitate the non-medical use of tramadol. Collectively, these factors, which include the socioeconomic environment, individual characteristics, and societal influences, contribute to the initiation and continuation of tramadol use (SAMHSA n.da; Clayton et al. 2014; Braveman and Gottlieb 2014; Schinke, Fang and Cole 2008). Several geographically diverse studies have investigated the factors contributing to the initial and continuous non-medical use of tramadol. Prior substance use, chronic pain, social environment, drug availability, political instability and socioeconomic difficulties have all been reported as factors influencing tramadol use (Ngwa 2022; Saapiire et al. 2021; Danso and Anto 2021; Diab et al. 2021; Ibrahim et al. 2017). It is essential to understand these factors for the development of targeted prevention and treatment interventions to meet the unique needs of individuals involved in tramadol use.

The reciprocal relationship between individuals and their communities implies that shifts in individual actions can cumulatively contribute to broader societal changes, and vice versa. In this review, the term social effects encompasses the extensive societal, interpersonal, and individual impacts of tramadol use. These effects can impact education, relationships, perceptions, health and well-being and the functioning of society. The non-medical use of tramadol has been reported to be associated with increased criminal activity, violence, and road accidents (Yassa and Badea 2019; Abdel Kareem and Ali 2018). Moreover, it has been found to place individuals in socially disadvantaged circumstances, characterised by challenges in maintaining or securing employment, limited education, and the onset of financial instability (Diab et al. 2022; Ngwa 2022; Bassiony et al. 2015). People who use tramadol are also vulnerable to various forms of violence and social exclusion (Diab et al. 2021; Fawzi 2011). These social consequences highlight the far-reaching implications of tramadol use, requiring holistic strategies for prevention and treatment.

For the purpose of this review, rehabilitation and support services for tramadol use are defined as a set of therapeutic and assistance approaches aimed at helping individuals recover and regain control over their lives (Sereta et al. 2016). Rehabilitation offers a structured programme that may include medical, psychological, and social components, tailored to address the specific needs of individuals struggling with SUDs (Suryadarma and Putri 2018). Support services, as integral components of the rehabilitation process, offer continual assistance and guidance to individuals in recovery. These services typically include emotional support, access to community resources, and strategies to prevent relapse. Incorporating personalised treatment with approaches such as supportive counselling, Cognitive-Behavioural Therapy (CBT), psychoeducation, and family and peer support effectively addresses tramadol use disorders, providing individuals with the essential tools for sustained recovery (Arve 2023; Almér Herrnsdorf, Holmstedt and Håkansson 2022; SAMHSA 2020; Dugosh et al. 2016).

The cited literature above shows an increasing body of literature relevant to the contributing factors, social effects and rehabilitation and support for the non-medical use of tramadol globally. The purpose of the scoping review was to map and provide a comprehensive overview of the available literature on the contributing factors, social effects and rehabilitation and support for the non-medical use of tramadol. Additionally, it aimed to clarify and map the terms and definitions commonly used in research on these aspects of tramadol use. It also sought to map what is currently known and to identify gaps in the existing literature.

2.3 Justification of choice of review methodology

A literature (narrative) review, a type of evidence synthesis, involves thoroughly summarising and critically analysing a body of existing research on a subject (Knopf 2006). This comprehensive analysis helps to identify gaps in knowledge, inconsistencies, and areas where further research is required. The purpose of an evidence synthesis, as explained by Gough et al. (2020), is to present a comprehensive overview of the existing research and the resulting cumulative understanding.

Other types of evidence synthesis, including systematic review, qualitative systematic review, umbrella review, mixed methods review, mapping review, and scoping review (Sutton et al. 2019; Tricco et al. 2015; Aromataris and Pearson 2014; Grant and Booth 2009), are each characterised by a distinct approach and designed for varying purposes. These methods take the literature review process a step further by employing systematic and rigorous methods to combine and summarise the findings of previously conducted studies (Gough et al. 2020). The use of explicit and transparent methodology in formulating research questions is inherent to these types of evidence synthesis (Munn et al. 2018). The transparent methodology includes a comprehensive process by which studies are identified, selected, appraised, analysed, and the quality of the evidence assessed to address the research question (Munn et al. 2018; Linares-Espinós et al. 2018). This allows for the replication or reproducibility of the review. Table 2 offers a summary of the different types of evidence synthesis, their description and respective purposes.

Table 2. Summary of the different types of evidence synthesis, their description and respective purposes

Type of evidence synthesis	Description	Purpose
Systematic review	Involves a detailed, methodical search for appraisal and synthesis of research evidence. Strictly adheres to predetermined guidelines for conducting the review, ensuring methods are transparent and reproducible.	To uncover evidence on a global scale. To identify gaps in existing research and provide guidance for future research endeavours. To inform and guide evidence-based practice and policymaking in various fields.
Qualitative systematic review	Systematically collects, appraises, and synthesises qualitative research studies. Strictly adheres to predetermined guidelines for conducting the review, ensuring methods are transparent and reproducible.	To provide a rich, in-depth and contextual understanding of people's experiences, attitudes, and behaviours. To identify and analyse patterns, themes, and nuances within qualitative data, revealing complex interactions and relationships. To inform policy and practice, especially in areas where understanding subjective experiences and perspectives is crucial. To uncover gaps in the literature and areas lacking in-depth exploration, informing future research.

Type of evidence synthesis	Description	Purpose
Mixed methods review	Integrates findings from both qualitative and quantitative studies. Strictly adheres to predetermined guidelines for conducting the review, ensuring methods are transparent and reproducible.	To provide a more complete and nuanced understanding of research topics, capturing both the depth of human experiences and the breadth of statistical evidence. To identify gaps in existing research and provide guidance for future research endeavours. To inform and guide more effective policymaking and practice.
Umbrella review	Compiles evidence from multiple reviews into a single comprehensive document. Essentially a systematic review of other systematic reviews. Strictly adheres to predetermined guidelines for conducting the review, ensuring methods are transparent and reproducible.	To provide a broad overview of a complex subject area, particularly where there are multiple studies and interventions. To identify and clarify inconsistencies and contradictions among different studies, offering a clearer understanding of the subject matter. To highlight key findings, emerging trends, and significant gaps in research. To facilitate decision-making by providing a clear comparison of the effectiveness or outcomes of different interventions studied in various systematic reviews.
Mapping review	Identifies, describes, and organises existing knowledge and unexplored areas within a wide-ranging subject field. Focuses on gathering basic descriptive details about studies and categorises them using predefined codes. Strictly adheres to predetermined guidelines for conducting the review, ensuring methods are transparent and reproducible.	To categorise and summarise the existing body of literature on a broad topic area. To identify what research has been conducted and identify areas where knowledge is lacking.

Type of evidence synthesis	Description	Purpose
Scoping review	Designed to assess the breadth and scope of the existing literature on a certain topic or issue, covering a diverse array of sources such as primary research, reviews, and non-empirical evidence. Strictly adheres to predetermined guidelines for conducting the review, ensuring methods are transparent and reproducible.	To identify the types of available evidence in a particular field. To clarify fundamental concepts and definitions within the literature. To examine the methodologies employed in conducting research on a specific subject. To identify key elements or factors underlying a particular issue. To evaluate the feasibility of a systematic review. To identify, analyse knowledge gaps as well as areas for future research.
Literature (narrative) review	General term for publications that review and analyse current or recent literature. Maps and summarises research findings but does not adhere to predetermined guidelines or protocol for conducting the review.	To map and summarise available evidence on a specific subject. To identify gaps in knowledge, inconsistencies, and areas where further research is required.

For this study, a scoping review was deemed to be the most suitable evidence synthesis approach. This is because a scoping review maps and identifies the fundamental concepts underlying a research area and the primary sources and types of evidence available, making it particularly valuable when a topic is complex or has not been comprehensively reviewed previously (Munn et al. 2022; Maggio et al. 2021; Munn et al. 2018). A scoping review, unlike a literature (narrative) review, is guided by an a priori protocol and follows a structured process (Munn et al. 2018). This structured approach ensures transparency, minimises bias, and allows for replicability, making it a more rigorous and exhaustive method for mapping the existing literature and identifying areas that can benefit from further research. In contrast, the subjectivity involved in selecting studies for inclusion in a literature (narrative) review increases the possibility of bias (Xiao and Watson 2019). Furthermore, a scoping review allows for an exploration of research on multiple aspects of tramadol use (Grant and Booth 2009), diverging from the more focused scope typical of systematic reviews (Aromataris and Pearson 2014). Lastly, the scoping review approach was ideal because of its ability to facilitate the clarification and mapping of terms and definitions used in research on tramadol use (Peters et al. 2015). This is especially crucial given the existing ambiguities in both scientific and legal contexts regarding the terms "drug use," "drug misuse," and "drug abuse." Such distinctions are not always readily apparent, leading to potential misunderstandings (UNODC 2020).

A preliminary search of JBI Evidence Synthesis, Cochrane Database of Systematic Reviews, CINAHL, PubMed, PROSPERO, and Evidence for Policy and Practice Information prior to the development of a protocol identified no current or ongoing scoping or systematic reviews on the topic at the time the review topic was proposed. The scoping review protocol was registered on Open Science Framework (OSF) 10.17605/OSF.IO/ZXEJ5.

2.4 Review question

What is the current international evidence base on the contributing factors, social effects and rehabilitation and support for the non-medical use of tramadol?

The specific review questions were:

1. What type of research has been conducted on the contributing factors, social effects and rehabilitation and support for the non-medical use of tramadol?
2. What terminologies have been used to characterise the non-medical use of tramadol and how have they been defined within the existing evidence?

3. What population groups/contexts have been explored in the research on contributing factors, social effects and rehabilitation and support for the non-medical use of tramadol?
4. What factors have been reported in the evidence-base as contributing to the non-medical use of tramadol?
5. What social effects of the non-medical use of tramadol have been reported in the evidence- base?
6. What rehabilitation and support services for the non-medical use of tramadol have been reported in the evidence-base?

2.5 Inclusion criteria

2.5.1 Participants

Studies that examined persons of any age with a history of non-medical use of tramadol were considered. The UNODC definition of `non-medical use' which broadly encompasses abuse and misuse of tramadol, presented in the preceding chapter was adopted for the non-medical use of tramadol for the review (Fischer 2011).

2.5.2 Concept

This scoping review considered the following:

1. Studies that explored the contributing factors for the non-medical use/misuse/abuse of tramadol. Contributing factors included, but were not limited to; social, economic, environmental, systemic, and health-related factors.
2. Studies that explored the social effects/consequences of non-medical use/misuse/abuse of tramadol. Social effects/consequences included, but were not limited to; intrapersonal, interpersonal, educational, legal, economic, and societal consequences.
3. Studies that explored rehabilitation and support available for people involved in the non-medical use/misuse/abuse of tramadol. Rehabilitation and support included, but were not limited to; peer support groups, behavioural therapies, family therapy, vocational and educational support, and residential treatment.

2.5.3 Context

Studies conducted in any geographical location and setting were considered.

2.5.4 Types of sources

This scoping review considered quantitative, qualitative, and mixed methods study designs for inclusion. PhD theses were also considered for inclusion in this scoping review. Opinion pieces from experts in the field of drug use and addiction and journalistic narratives based on qualitative testimonials were also included. Randomised Controlled Trials (RCTs) on drugs used in the treatment of tramadol use were excluded as they fell beyond the primary focus of exploring non-pharmacological approaches addressing psychosocial and behavioural aspects of non-medical use. Epidemiological studies on the prevalence and studies on the physical and mental health effects of non-medical use were also excluded as these areas were already extensively researched and documented in the existing literature. Literature, scoping and systematic reviews were not included in the review to avoid potential overlapping conclusions from previously synthesised research. Reports without full text availability, even after interlibrary loan requests, were excluded to ensure comprehensive data extraction and to avoid potential biases from limited information accessibility.

2.6 Scoping review methods

The scoping review was conducted in accordance with the JBI methodology for scoping reviews (Peters et al. 2020) and reported in line with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses Extension for Scoping Reviews (PRISMA-ScR) (Tricco et al. 2018).

2.6.1 Search strategy

The search strategy was developed collaboratively with an information scientist and aimed to locate a comprehensive range of sources. This included published and unpublished primary studies as well as opinion pieces. The inclusion of opinion pieces aimed to enrich the analysis with expert insights and perspectives that may not be captured in primary research literature (Majumder Kakoli 2015). An initial limited search of MEDLINE (EBSCO) and CINAHL (EBSCO) was undertaken to identify evidence on the topic. The text words contained in the titles and abstracts of relevant reports and the index terms used to describe the reports were used to develop a full search strategy for MEDLINE (EBSCO) detailed in Table 3. The search

strategy, including all identified keywords and index terms, were adapted for each included information source (See Appendix 1 for comprehensive search strategies for each included information source). The reference lists of reports selected for full text review were also screened for additional reports. There were no date restrictions, and all reports published in English, which the review team was proficient in or for which translation into English using Google Translate was feasible, were considered for inclusion. The search yielded literature, scoping, and systematic reviews, which were examined for relevant reports. The databases searched were MEDLINE (EBSCO), CINAHL (EBSCO), SocINDEX (EBSCO), International Pharmaceutical Abstracts (EBSCO), Scopus and Web of Science. Sources of unpublished studies and grey literature searched include Google, NIDA International Drug Abuse Abstracts, Ethos, ProQuest Dissertations and Theses (ProQuest) and Open Dissertations.

2.6.2 Source of evidence selection

Following the search, all identified records were collated and uploaded into RefWorks V.4.6 (ProQuest LLC, MI, USA), where duplicates were removed and then imported into Covidence systematic review software (Veritas Health Innovation, Melbourne, Australia). Following a pilot test, titles and abstracts were screened by two independent reviewers (MOA and NT) for assessment against the inclusion criteria for the review. Two independent reviewers (MOA and KB) assessed the full text of all retrieved citations in detail against the inclusion criteria. Any disagreements that arose between the reviewers at each stage of the selection process were resolved through discussion.

2.6.3 Data extraction

A modified version of the JBI data extraction tool (see Appendix 2) was piloted on 10 reports by two independent reviewers (MOA and EI) and discussed within the review team (MOA, KB, NT, KC and EI) (Peters et al. 2020). The extraction tool was then modified and revised to best address the review questions. Ten percent of the extraction was initially performed by two independent reviewers (MOA and EI). Due to budgetary constraints within the doctoral study's allocated funds, the remaining extraction was conducted by one reviewer (MOA). The data extracted included specific details about the population, concept, context, methods and key findings relevant to the review questions. Any disagreements that arose between the reviewers were resolved through discussion. There was no need to contact authors of papers for missing or additional data.

Table 3. Search strategy

MEDLINE (EBSCO HOST)

Search conducted in December 2022

Search	Query	Records retrieved
#1	(MH "Tramadol") OR (TX "Tramadol")	7,468
#2	(MH "Substance Abuse, Oral") OR (MH "Prescription Drug Misuse") OR (MH "Drug Misuse") OR (TX "misuse") OR (TX "use") OR (TX "non-medical"* use) OR (TX "abuse")	5,692,434
#3	(MH "Sex Factors") OR (MH "Socioeconomic Factors") OR (MH "Sociodemographic Factors") OR (MH "Sociological Factors") OR (MH "Age Factors") OR (MH "Social Factors") OR (MH "Economic Factors") OR (TX "geographical factors") OR (TX "reasons") OR (TX "factors")	5,246,620
#4	(TX "social effects") OR (TX "consequences") OR (MH "Social Problems") OR (TX "problems")	1,032,601
#5	(MH "Substance Abuse Treatment Centers") OR (MH "Rehabilitation") OR (MH "Residential Rehabilitation") OR (MH "Psychosocial Rehabilitation") OR (MH "Rehabilitation Centers") OR (TX "drug rehabilitation") OR (TX "drug support service")	33,017
#6	#3 OR #4 OR 5)	6,037,015
#7	(#1 AND #2 AND #6)	1,187

2.6.4 Quality assessment of included reports

One reviewer (MOA) employed JBI Critical Appraisal tools (checklists for analytical cross-sectional studies, case control studies, case reports, case series, qualitative, textual evidence: narrative, and a modified version of the checklist for textual evidence: expert opinion) to evaluate the quality of the included reports. A checklist inspired by the JBI checklists for

analytical cross-sectional studies and qualitative research was developed for mixed method study designs. These reports were then classified into three quality categories: high, moderate, and low, as detailed in Appendix 3.

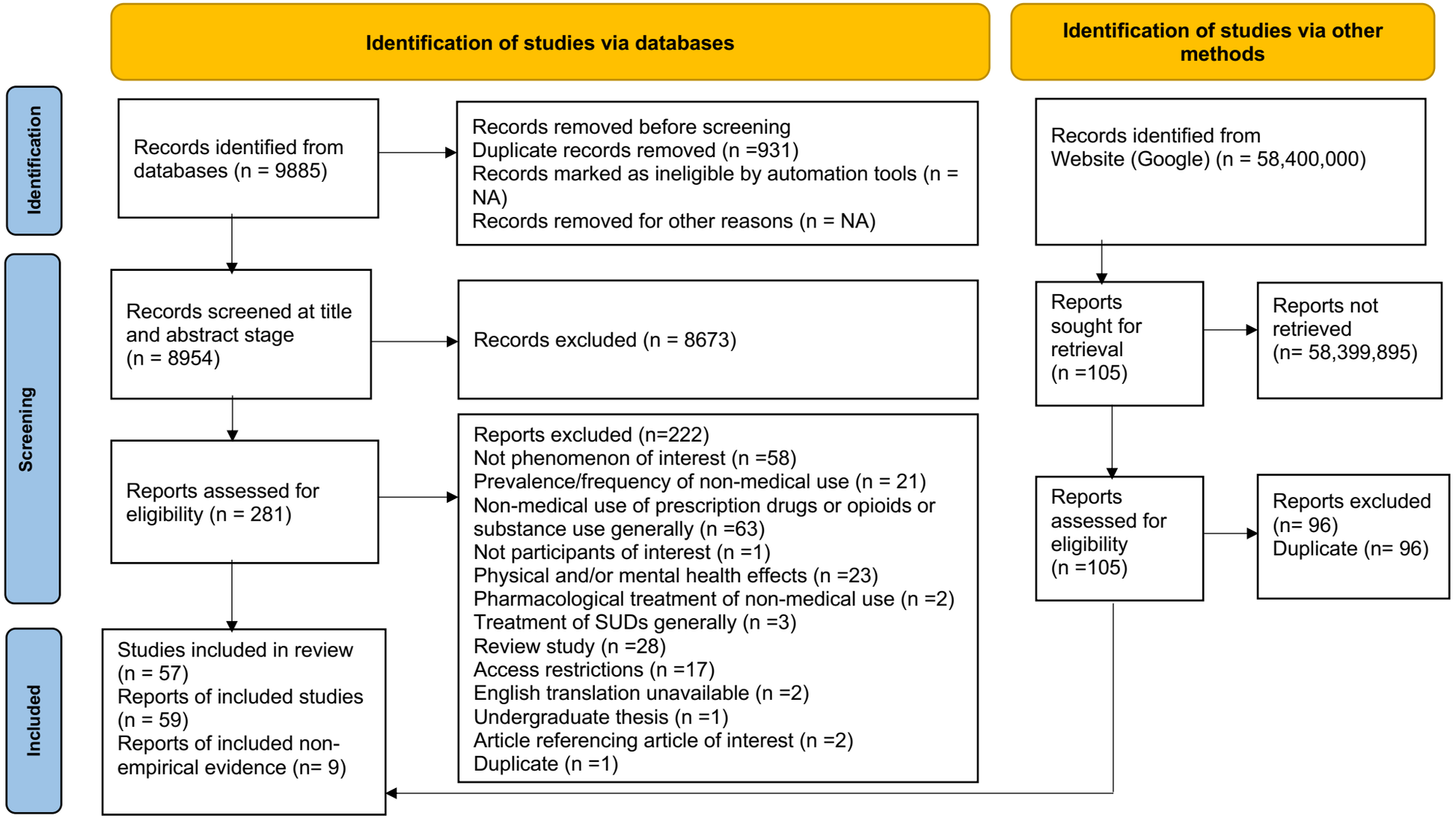
2.6.5 Data analysis and presentation of results

Deductive and inductive thematic analysis methodologies were utilised to analyse extracted data for different review questions. Deductive analysis for questions 1 and 2 involved categorising the data using predefined themes. Inductive analysis for questions 3-6 identified emergent themes by exploring patterns and key concepts, with initial codes grouped into broader categories based on their interrelations. These categories were then synthesised into overarching themes that highlighted key aspects of the review questions. The themes were refined and validated against the dataset, modifying as needed by splitting, combining, or redefining them. The findings are presented using tables, charts, and a narrative summary.

2.7 Results

2.7.1 Study inclusion

Database searches yielded a total of 9885 records (published and unpublished/grey literature). After eliminating 931 duplicates, the remaining records were processed for further review. Two reviewers independently screened all 8954 titles and abstracts, using a predefined eligibility criteria. Out of these records, 281 underwent an independent full-text review. Consequently, 222 reports were excluded from consideration as they did not meet the criteria for inclusion. Search through websites (Google) yielded 58,400,000 records. These were systematically screened in groups of 50 search results, continuing until a group contained no relevant results. This screening process ultimately resulted in 105 relevant reports being identified for further screening. Ninety-six of these reports were excluded after undergoing independent review by two reviewers (MOA and KB). Appendix 4 contains a comprehensive list of citations, along with explanations detailing the reasons for all excluded reports. Sixty-eight reports were included in this scoping review. The PRISMA flow diagram (Figure 3) below illustrates the systematic process of study inclusion and the results of the comprehensive search conducted in July 2022 and subsequently updated in December 2022. Additionally, the diagram delineates the sequential stages of study selection and inclusion.



The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. (Page et al. 2021).

Figure 3. Prisma flow diagram.

2.8 Review findings

2.8.1 Types of research conducted

2.8.1.1 Characteristics of included reports

The distribution of reports included in the review reflects a notable geographical diversity. A substantial majority (74%), of these reports were related to Africa. This was followed by the Middle East, contributing 13% of the reports. Europe and North America each accounted for 4% of the total. The remaining reports were relatively sparse, with Central Asia contributing 1% and South Asia 3% to the overall evidence base. These reports were related to the following countries: **Ghana** (Alhassan 2022b; Alhassan 2022a; Danso and Anto 2021; Saapiire et al. 2021; Peprah et al. 2020; Fuseini et al. 2019; Elliason et al. 2018; Ebo'o 2018), **Nigeria** (Nwafor et al. 2023; Ngwa 2022; Klantschnig, and Dele-Adedeji 2021; Argungu, Sa'idu and Sanda 2021; Dumbili et al. 2021; Nnam et al. 2021; Onu et al. 2021; Owonikoko et al. 2021; Madukwe and Klein 2020; Iorfa et al. 2019; Chikezie and Ebuenyi 2019; Obaji 2019; Freeman 2019; Ezenwa et al. 2019; Ebhota 2018; Jonathan and Samuel 2018; Ibrahim et al. 2017; Obekpa et al. 2021; Ohaju-Obodo et al. 2019), **Cameroon** (Ngwa 2022; Gallois, van Andel and Pranskaityté 2021), **Uzbekistan** (Khayredinova et al. 2020), **Somalia** (Omar and Ahmed 2021), **Benin** (Bio-Sya et al. 2021), **Egypt** (Bassiony et al. 2022; Nagy et al. 2022; Naem et al. 2020; Shamseldin et al. 2020; Abd-Elkader et al. 2020; Yassa and Badea 2019; El-Sawy et al. 2019; Hassan et al. 2019; El Wasify et al. 2018; Curnow 2018; AbdelWahab et al. 2018; Zaki et al. 2016; Mohamed et al. 2015; Bassiony et al. 2015; Negm and Fouad 2014; Fawzi 2011; El-Sawy and Elhay 2011), **US** (Cicero and Ellis 2012; Stoehr et al. 2009; Cicero et al. 2008), **Iran** (Pourmohammadi and Jalilvand 2019; Nasiri et al. 2019; Barahmand, Khazaee and Hashjin 2016; Bashirian, Barati and Fathi 2014; Sadir et al. 2013), **Gaza** (Diab et al. 2021), **Yemen** (Abood, Scott and Wazaify 2018), **India** (The Times of India 2018; Sarkar et al. 2012), **UK** (Winstock, Borschmann and Bell 2014; Smith 2014), **Togo** (Carmel et al. 2019; Salm-Reifferscheidt 2018), **Norway** (Arve 2023), **Jordan** (Wazaify, Alhusein and Scott 2022), **Sierra Leone** (Inveen 2017), **Niger** (Maiga, Seyni and Sidikou 2013) and **Gabon** (Ebo'o 2018). The distribution of included reports by region is presented in Figure 4. The 68 reports were published between 2008 and 2023, revealing a notable trend in publication frequency over time (Figure 5). In the initial years (2008-2013), the publication frequency, which included both scholarly articles and opinion articles, was relatively low, signifying an emergent scholarly and media engagement with the subject. There was a significant increase in the number of publications in 2019, indicating a consistent interest in the subject and its

relevance within this period. The observable decline in publications during the most recent years (2022-2023) could be indicative of a shift in research focus or the impact of external factors such as societal and economic changes that shape research trends and direct funding allocation towards different topics such as COVID-19. Furthermore, the decline may be attributable to the year 2023 still being in progress, with its final count of publications on the subject still pending.

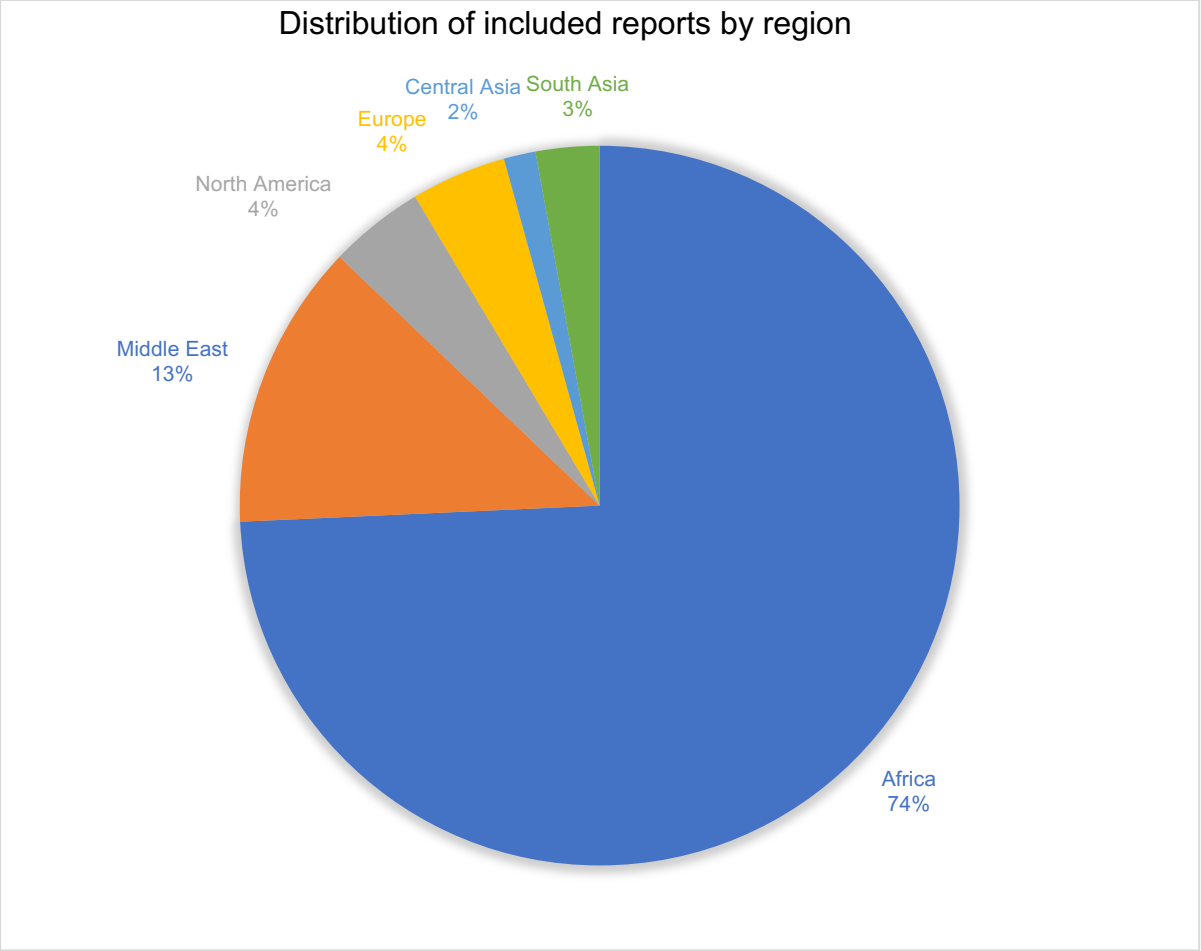


Figure 4. Distribution of included reports by region.

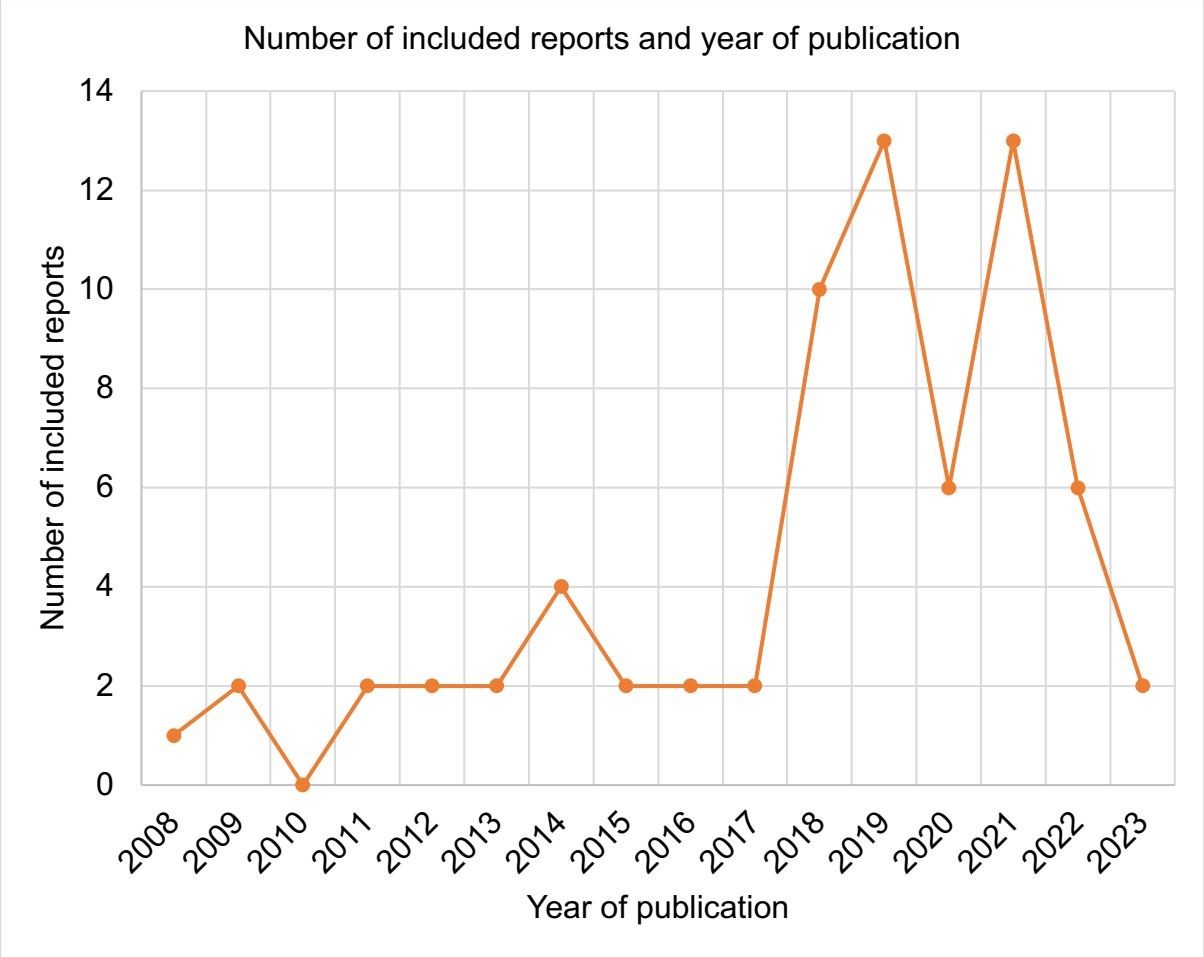


Figure 5. Number of included reports and year of publication.

Primary research studies (59) were the predominant portion of included reports in the review, while nine constituted non-empirical evidence, solely opinion pieces (9). The reports encompassed diverse research designs. Quantitative designs included cross-sectional (31), case series (1), case control (5) and case report (3). Qualitative designs encompassed ethnography (1), phenomenology (2), exploratory descriptive design (10), discourse analysis (1) and case study (1). Mixed method approaches comprised of parallel/convergent (1), embedded (1) and sequential mixed method designs (3). Opinion pieces included journalistic narratives based on expert opinions (5) and qualitative testimonials (4). It is essential to highlight that some included reports employed multiple research designs. This diversity in approaches and perspectives underlines the richness of the evidence base, while also highlighting areas that may have received less attention or had different methodological foci.

The number of included reports and research design they adopted is shown in Figure 6. The characteristics of the included reports by methodology are presented in Table 4.

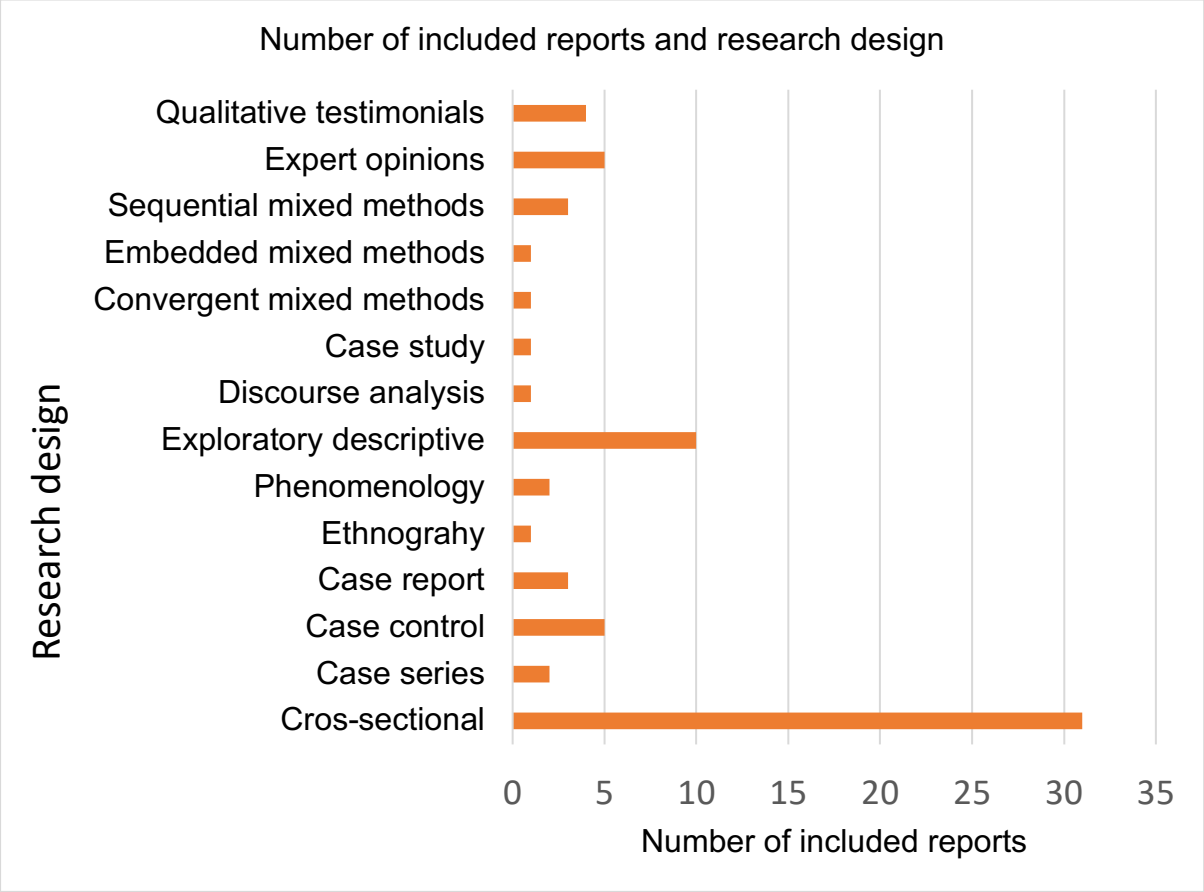


Figure 6. Number of included reports and research design.

Table 4. Characteristics of included reports by methodology

Key for abbreviations

ACEs- Adverse Childhood Experiences
DERS- Difficulties in Emotion Dysregulation Scale.
ER- Emergency Room.
IDP- Internally Displaced Persons
NPOPs- Non-prescription online pharmacies
SUD- substance use disorder.
TC- Therapeutic Community.
TPB- Theory of Planned Behaviour
UK- United Kingdom.
US- United States

Quantitative							
Author (s), year	Title of study	Aims and objectives	Study design	Population and sample	Data collection methods	Context and setting	Outcomes
1. Shamseldin et al. 2021	Gender differences in emotional dysregulation and deliberate self-harm in patients with tramadol dependence.	To investigate gender differences in emotional dysregulation and deliberate self-harm in patients with tramadol dependence.	Cross-sectional	N= 60 Male= 30 with mean age 31.47±4.86 Female=30 with a mean age 30.53±5.74 Patients attending clinic for tramadol dependence	Clinician administered semi-structured interviews and self-reported questionnaires	Psychiatric and addiction facilities (inpatient units, outpatient clinics, and private hospitals), Cairo, Egypt. Urban	Female patients exhibited higher levels of emotional dysregulation (Difficulties in Emotion Dysregulation Scale (DERS) -Mean= 115.57) and were more likely to engage in deliberate self-harm compared to male patients dependent on tramadol. (DERS- Mean= 104.57) with no statistical significance (p= 0.067).
2. Negm and Fouad 2014	Prevalence of substance abuse among adolescent school students in Zagazig.	To determine prevalence and associated factors of substance abuse among school students aged 13-18 years in Zagazig, Sharkia governorate.	Cross- sectional	N= 204 Male= 72% Female= 28% Mean age= 15.26 ± 1.59 (Range 13-18) Students	Urine screening and questionnaires	Preparatory schools, Zagazig, Egypt. Urban	Perceived safety among youth due to tramadol's prescription status and discreet concealment because of its prescription status were found to contribute to tramadol use. Tramadol was abused for its prolonged effects, and a reduced risk of repercussions upon discovery. Two-thirds of those who used drugs reported tramadol as their initial substance of choice following tobacco, while 22% started with cannabis. The remainder began their drug use with multiple substances.
3. Naem et al. 2020	The effect of tramadol abuse on the quality of sexual life.	To evaluate the various facets of sexual function in patients with chronic tramadol abuse.	Case control	N= 111 (68 cases, 43 controls) Male=111 Mean age of cases= 33.66±5.666 (Range 21-44) Mean age of controls= 32.23±4.535 Range (24-42) Patients attending clinic for SUD and use tramadol and those who do not	Survey questionnaires	Minia psychiatric hospital, Egypt. Urban	The control group (Mean±SD= 92.18±6.798) experienced significantly (P=-8.732) better quality of sexual life (sexual depression, esteem and preoccupation) compared to the group abusing tramadol (Mean±SD= 62.49±21.6). In the group abusing tramadol, 16.2% experienced mild occupational decline, 63.2% faced moderate decline, and 20.6% suffered severe decline/deterioration. 11.8% experienced mild, 57.3% experienced moderate, and 30.9% experienced severe family/social problems. In terms of legal consequences, 64.7% had mild, 26.5% had moderate, and 9.8% had severe legal consequences.
4. Nnam et al. 2022	“When I take drugs, I don’t care”: insights into the operational dynamics of male violent offenders in a correctional centre.	To investigate the operational dynamics of male violent offenders in the Abakaliki correctional facility.	Cross-sectional survey	N= 260 Male= 260 Age Range (20-24) Inmates charged with violent crimes	Structured questionnaires	Abakaliki custodial centre, Ebonyi State, Nigeria. Urban	There were correlations between tramadol use among violent offenders and various types of violent behaviours. Specifically, tramadol use shows strong associations with armed robbery (.962), murder (.791), and multiple drug use (.999). Moderate correlations are observed with kidnapping, cultism, assault battery, and burglary.

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5. Nasiri et al. 2019	Population size estimation of tramadol misusers in urban population in Iran: synthesis of methods and results.	To estimate the proportion of urban Iranians who misuse tramadol.	Cross-sectional	Group 1: N= 140 Male= 70, Female= 70 Persons Group 2: N= 60 Male= 30, Female= 30 Persons Group 3: N= 20 Medicinal herb sellers Pharmacist technicians	Questionnaires used to estimate the size of the hidden tramadol-using population from a random sample without directly surveying drug users, complemented by tramadol sales data	Iran	The primary reason for tramadol use was addiction, accounting for 41.40% of cases, followed by enhancement of sexual relationships at 31.90%. Other reasons include use as a sedative (16.80%), combined reasons of addiction and enhancing sexual relationships (6.34%), and addiction together with use as a sedative (0.59%). Additionally, 0.99% of the cases did not specify a reason for tramadol use.
6. Winstock, Borschmann, and Bell 2014	The non-medical use of tramadol in the United Kingdom (UK): findings from a large community sample.	To explore the source, motivations for use and patterns of use of tramadol in the UK.	Cross-sectional	N= 7360 Male= Does not specify, Female= Does not specify Mean age= 29.6 UK survey respondents	Standardised questionnaires through anonymous online survey.	UK	The reasons provided for using tramadol include relieving pain (74.8%), helping to relax (30.9%), aiding sleep (28.2%), getting high (24.7%), relieving boredom (15.7%), relieving distress (10.3%), for work (5.7%), for socialising (4.6%), alleviating withdrawal symptoms (3.3%), for sex (1.9%), for study (1.4%), and other functions (7.9%).
7. Fawzi 2011	Some medicolegal aspects concerning tramadol abuse: the new Middle East youth plague 2010. An Egyptian overview.	To examine impact of lax tramadol trade controls and rising abuse rates on observed increase in aggression and violence among Egyptian youth.	Retrospective observational study	N= 640 Male= 77% Female= 23% Age= 67.9% adults Emergency unit (ER) patients with acute tramadol toxicity and trauma related to violent actions and suspected drug abuse	Structured questionnaires and urine screening	Poison Control Centre of Ain Shams University Hospitals, Egypt. Urban	Tramadol abuse was associated with various co-presenting incidents: 48.3% of cases involved accidental falls, 33% were linked to acts of violence, including fights and domestic altercations, and 18.7% resulted in road accidents.
8. Bassiony et al. 2015	Adolescent tramadol use and abuse in Egypt.	To determine the prevalence, correlates, and motivation for tramadol use among Egyptian adolescents.	Cross-sectional	N=204 Male=75. Female= 25 Mean age= 15.26± 1.59 (Range 13–18) Students	Questionnaires and urine screening	Zagazig, Sharkia governorate, Egypt. Urban	Tramadol abuse led to a significant lack of concentration, as reported by 77.7% of people who used it. Financial difficulties were experienced by 55.5% of individuals abusing tramadol. Passivity and reduced motivation were reported by 55.5% of people who abused tramadol. A perception of overwhelming chaos in life was reported by 44% of people who abused tramadol. A considerable 55.5% of those abusing tramadol became inconsiderate towards others. Tramadol abuse was linked to the disruption and destruction of family life, as stated by 55.5% of respondents.
9. Nagy et al. 2022	Assessment of addiction management program and predictors of relapse among inpatients of the Psychiatric Institute at Ain Shams University Hospital.	To evaluate the effectiveness of a combined pharmacotherapy/ Cognitive Behavioural Therapy model in terms of abstinence/relapse rate and quality of life in a sample of substance use disorder (SUD) patients.	Case control	N=150 Male= 150 Age Range= 18-55 SUD patients split equally between inpatient and outpatient groups	Structured clinical interviews, psychometric assessments, and quality of life questionnaires	Institute of Psychiatry, Ain Shams University Hospital, Egypt. Urban	While tramadol abuse was more often linked with abstinence (18.92%), abuse of multiple drugs tended to be associated with relapse. However, regression analysis showed that neither the type of drug abused nor the extent of polydrug use significantly influenced relapse rates, suggesting that recurrence of abuse did not depend on the number of substances used. Additionally, patients who had previously attempted substance detoxification were less likely to maintain remission during a six-month follow-up. The study found that having a legal history could predict relapse or abstinence, as indicated by significant multivariate analysis results (p=0.004, OR=0.19).
10. Iorfa et al. 2019	Tramadol abuse and value for life among young persons: moderating effects of moral identity.	To study the link between tramadol abuse and life value among Nigerian youth and the influence of moral identity on this relationship.	Cross-sectional survey	N=158 Males= 75.95% Female= 24.05% Mean age= 23 Persons who identified as using tramadol	Standardised questionnaires	Nigeria	Tramadol abuse led to a reduced appreciation for life compared to individuals who did not use the drug. Those who abused tramadol displayed lower levels of moral integrity and self-worth. There was a significant negative correlation between tramadol use and the value placed on life (B = -11.00, p = .00). Additionally, the interaction between tramadol use and moral integrity was significant (B = -1.24, p = .00), indicating that moral integrity influenced how tramadol use affected one's value for life.

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11. Barahmand, Khazaee and Hashjin 2016	Emotion dysregulation mediates between childhood emotional abuse and motives for substance use.	To assess the relative mediating effects of impulsivity and emotion dysregulation in the relationship between childhood maltreatment and motives for opiate use.	Cross-sectional	N= 74 Male= 74 Mean age= 17.46±1.6 (Range 15.21-19.84) Adolescents who abused tramadol and were referred for the first time to a boot camp for deaddiction and rehabilitation services	Series of questionnaires	Boot camp for de-addiction and rehabilitation services, Iran.	Emotion dysregulation mediated the link between childhood emotional abuse and motives for tramadol use aimed at enhancing experiences. Severity of tramadol abuse varied by type of childhood abuse, with physical neglect and emotional neglect showing more severe cases. Motives for tramadol use included seeking euphoria, socialising, and fitting into groups. Emotional abuse was linked to using tramadol to avoid social rejection, physical abuse to manage negative emotions and seek social rewards, and emotional neglect to avoid rejection and gain social benefits.
12. Khayredinova et al. 2020	A complex of risk factors for developing dependence on the combined abuse of hashish and tramadol.	To investigate a set of risk factors for a socially premorbid narcological personality, which is dependent on hashish and tramadol abuse.	Case control	N= 129 Males= 129 Age range= 21-35 Patients being treated for drug addiction	Questionnaires	City Narcological Dispensary and the Republican Narcological Centre, Uzbekistan. Urban	Being overly sheltered and excessively controlled by family members (84%), feeling neglected and emotionally distanced by family members (9.1%), having abusive familial relationships (4.5 %) and having family members with alcoholism, drug addiction or both were associated with tramadol abuse.
13. Sadir et al. 2013	Outcome evaluation of therapeutic community (TC) model in Iran.	To assess the effectiveness of the TC model in treating drug addiction in Iran.	Cross-sectional	N= 378 Male= 378 Mean age= 32.5 ± 7 People who voluntarily enrolled in a TC centre and had completed a 14-week residential course	Standardised questionnaires and urine test	TC centre in Kerman, Iran. Urban	Individuals with higher educational levels, current employment, and a history of incarceration demonstrated a greater probability of successfully completing the Therapeutic Community programme. Participants who abstained from tramadol and other substances consistently displayed better physical and mental health outcomes in comparison to those who did not. Abstinence rates post-treatment were recorded as follows: 87% at the end of the first year, 58% by the fourth year, and 22% by the sixth year.
14. Omar and Ahmed 2021	Abuse and misuse of tramadol among the youth in Hodan district Mogadishu Somalia.	To evaluate the tramadol-related knowledge and contact traces in the Hodan district of Mogadishu, Somalia.	Descriptive cross-sectional	N= 130 Male=83.1% Female= 16.9%. 62.3% were aged 21-25, while 15.4% were 16-20 years Youth	Face-to-face semi-structured questionnaires	Hodan district Mogadishu Somalia. Urban	The study revealed that 58.5% of the participants were aware of people who use tramadol, predominantly friends and co-workers. Additionally, 83.1% of the respondents knew locations where tramadol could be easily obtained. Among these respondents, the majority (26.2%) identified their friends as people who used, followed by 10.8% who cited co-workers. Smaller percentages indicated that family members (9.2%), other acquaintances (6.9%), and neighbours (5.4%) also used tramadol. 44.6% of respondents used tramadol to experience euphoria, while 9.2% used it to boost energy or enhance sexual performance. Other reasons included overcoming feelings of inadequacy (7.7%), managing stress and anxiety (6.2%), coping with daily challenges (3.1%), and boosting confidence (2.3%).
15. Abd-Elkader et al 2020	Tramadol abuse among workers in an industrial city in mid-Nile Delta region, Egypt.	To investigate the pattern of tramadol abuse among workers and the different motives for abuse to help policy makers in the development of intervention programmes.	Cross-sectional	N= 900 Male=900 Mean age= 30.93 ±7.38 (Range= 18–53) Three hundred each from minibus driving, construction, and textile industries	Predesigned questionnaires	Mahalla El Kubra City, Egypt. Urban	The primary source of tramadol was identified as friends (45.4%), with drug dealers being the second most common source (16.6%). The main motive for tramadol abuse was mood enhancement, cited by 54.3% of respondents, while 37.3% used it for pain relief and to assist in continuing work. Among textile workers, 7.9% used tramadol as a treatment, and a substantial 69.7% used it to facilitate work.
16. Chikezie and Ebuenyi 2019	Tramadol misuse in the Niger Delta; a review of cases presenting within a year.	To review tramadol misuse cases in a rural teaching hospital in Niger Delta.	Case report	N= 5 Male= 4 Female= 1 Age range= 18 to 28 People who presented at the hospital Emergency Room (ER) for tramadol misuse	Textual analysis of medical records	ER of rural teaching hospital in the Niger Delta region of Nigeria. Rural	One patient was introduced to tramadol by his friends. Patients used tramadol for pain relief (body pains such as back aches and ulcer pain, for its calming effect and to be confident and happy. Tramadol misuse led to incoherent speech in some patients. Others exhibited irrational speech patterns. It affected day-to-day functionality, with individuals experiencing symptoms like dizziness and excessive daytime sleepiness, which affected productivity at work.

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17. Onu et al. 2021	Adverse childhood experiences (ACEs) and tramadol use in Nigeria: the mediating role of sociosexuality in a predominantly male student sample.	To examine how sociosexuality mediates the relationship between ACEs and tramadol use in a sample of Nigerian college students.	Cross- sectional	N=301 Male=289 Female= 12 Mean Age=22.6± 3.5 University students	Questionnaires	Federal University, Southeast region of Nigeria. Urban	Adverse childhood experiences (ACEs) contributed to initiating tramadol misuse. Participation in casual or uncommitted sexual relationships was associated with tramadol misuse.
18. Hassan et al. 2019	Sexual dysfunctions among male patients with tramadol abuse.	To assess the effect of tramadol abuse on sexual functions in males.	Case control	N= 111 (cases 68, controls 43) Male= 111 Mean age of cases= 33.66±5.666 (Range 21-44) Mean age of controls= 32.23±4.535 (Range 24-42) Patients attending clinic for SUD and use tramadol and those who do not	Structured clinical interviews and urine analysis	Minia Psychiatric Hospital, Egypt. Urban	The control group experienced significantly better sexual function compared to those abusing tramadol. Within the tramadol abuse group, all sexual function parameters were notably higher before they began using tramadol. Tramadol abuse led to decreased intercourse satisfaction, reduced sexual desire, and overall lowered sexual satisfaction.
19. Pourmoham madi and Jalilvand 2019	Tramadol abuse and its related factors among higher education students in the city of Damghan, Semnan Province, Iran.	To ascertain the prevalence and factors related to tramadol abuse among Damghan's higher education students.	Descriptive-analytical study	N=730 Male= 49.42% Female=50.58% Mean age= 24.78 Students from seven higher education centres	Researcher-made questionnaires	Damghan, Iran. Urban	Academic performance declined among students with a history of tramadol use, who generally scored lower on average than their non-using peers. There was a clear correlation between lower academic scores and tramadol use. Additionally, a significant link was found between students' smoking history and tramadol use, with a higher prevalence of tramadol use among smokers (P=0.001). Furthermore, students with drug-using friends were more likely to use tramadol, with notable differences in usage rates compared to their peers without such associations (P=0.003).
20. AbdelWahab et al. 2018	An examination of motives for tramadol and heroin use in an Egyptian sample.	To examine the motivations for tramadol and heroin use in an Egyptian sample.	Cross-sectional	N= 100 Male= 100 Mean age= 28.5 (Range= 19-46) Persons seeking treatment for tramadol or heroin use	Semi- structured interviews	Addiction treatment centres in Cairo, Egypt. Urban	People who used tramadol typically started using the drug for pleasure (p=0.002) and were more likely to cite gaining more energy (p=0.017) and staying awake (p=0.001) as initial motivations. Pain avoidance, seeking more energy (p<0.008), deeper insights (p<0.05), and the ability to stay awake (p=0.001) were key motivations for continuing tramadol use.
21. Argungu, Sa'idu and Sanda 2021	Effect of tramadol on sexual life quality of tramadol users in Nigeria.	To evaluate the impact of tramadol on sexual function in patients with long-term tramadol abuse.	Case control	N= 92 (cases 50, controls 48) Male= 92 Mean age of cases= 42 (Range 20- 45) Mean age of controls= 41.65 Persons who tested positive for tramadol during clinic for SUD visit and those attending but did not test positive	Structured clinical interviews	Federal Neuropsychiatric Hospital Kware, Sokoto State, Nigeria. Rural	The quality of sexual life was significantly higher in the control group compared to those who abused tramadol.
22. Sarkar et al. 2012	Tramadol dependence: a case series from India.	To present series of seven cases of men seeking treatment for tramadol dependence at a centre.	Case series	N= 7 Age range= 24-46 People with tramadol dependence	Reviewing medical records and patient interviews	Treatment centre in India.	One patient was introduced to tramadol use through a friend (recommended for alleviating exhaustion from working in the fields). Substitution for other opioids, mitigation of opioid withdrawal symptoms and pain relief (headaches) were reported as reasons for initiation. To experience euphoria was reported as a reason for continued use.
23. Bashirian, Barati and Fathi 2014	Prevalence and factors associated with tramadol abuse among college students in west of Iran: an application of the Theory of Planned Behaviour (TPB).	To investigate the prevalence and factors associated with tramadol abuse among college students based on the TPB as a theoretical framework.	Descriptive analytical study	N= 400 Male= 46.2% Female= 53.8% Mean age= 22.1± 2.2 (Range 18-30) College students	Self-administered questionnaires	Hamadan City in west of Iran. Urban	Participants scored their attitudes, subjective norms, and perceived behavioural control at 50%, 35%, and 77% of the maximum possible scores, respectively. Factors such as influence from close friends, family, and accessibility of tramadol were identified as stronger predictors of tramadol abuse.

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24. Stoehr et al. 2009	The risk of tramadol abuse and dependence: findings in two patients.	To describe the clinical progression of tramadol abuse and dependence in two patients.	Case report	N= 2 Male= 1 Female= 1 Aged 38 and 59 Patients (one was a physician) with tramadol dependence and addiction	Textual analysis of patient records	United States (US)	Case 1 began using tramadol to manage headaches. He continued to use tramadol to experience euphoria and for increased energy levels. Following a seizure induced by tramadol use, he acknowledged his dependency and sought treatment. After completing a six-week inpatient detoxification and residential programme, he met with an addiction medicine physician for follow-up care. Case 2, who had a history of emotional, physical, and sexual abuse, expressed a desire to discontinue using tramadol.
25. Carmel et al. 2019	Misuse of tramadol among motorcycle taxi.	To determine the extent of misuse of tramadol among motorcycle taxi drivers.	Prospective descriptive transversal survey	N=111 Male=111 Mean age= 32.7 Motorcycle taxi drivers who used tramadol	Survey questionnaires	Lome, Togo. Urban	Tramadol use was initiated by friends (44.2%), on one's own or autonomously (24.3%), influenced by girls (27%), and by sellers (4.5%). It was predominantly purchased on the street (96.4%). The primary reasons for using tramadol included feeling stronger (93.7%), pain relief (91%), staying awake (85.6%), increasing motivation (85.6%), enhancing sexual performance (84.7%), experiencing well-being (73%), achieving euphoria (71.2%), and combating cold (70.3%). Fourteen cases reported sexual weakness accompanied by spontaneous ejaculation (without sexual arousal). Additionally, 20.7% of individuals reported having accidents, such as highway crashes or falls from motorcycles, while under the influence of tramadol.
26. Bio-Sya et al. 2021	Nonmedical use of tramadol among secondary school students in Benin, Africa.	To assess the prevalence, risk factors associated with non-medical use of tramadol, and to determine the required types of therapeutic intervention.	Cross-sectional survey	N= 384 Male= 58.3% Female= 41.7% Mean age= 17 ± 2 (Range 20-24) Students in grades 8 to 12	Interviewer-administered surveys and urinalysis detection	Secondary schools in Benin.	Experimentation was the most frequent initial reason for tramadol use among males, who also used it to boost sexual performance and combat fatigue. Women primarily used it for pain relief. Additionally, in a multivariate logistic regression model, significant associations with nonmedical tramadol use were found for tobacco (P < .001), cannabis (P = .023), and amphetamine (P = .037). The primary motives for nonmedical tramadol use were experimentation (45.9%), and the main source for obtaining tramadol was street-level markets (86.5%).
27. El Wasify et al. 2018	The sociodemographic and clinical characteristics of tramadol dependence among Egyptians and their relationship to the associated insomnia.	To examine the sociodemographic and clinical traits of tramadol abuse in Egyptians, assess the prevalence of insomnia among these users, and explore the link between insomnia and their sociodemographic and clinical characteristics.	Descriptive cross-sectional	N= 400 Males=338 Female= 62 Mean age= 30.72 ±9.61 (Range 12-72) Inpatients and outpatients dependent on tramadol in psychiatry	Structured clinical Interviewing	Four psychiatric departments in upper and lower Egypt.	The four primary reasons for tramadol abuse reported include premature ejaculation/erectile dysfunction (22.8%) in males, novelty seeking (22.8%), escaping troubles (31%), and peer pressure (23.5%).
28. Zaki et al. 2016	Help-seeking patterns in an Egyptian sample of substance use disorder patients.	To investigate the most frequent help-seeking behaviours of substance use disorders patients, their referral sources, and how their social and addiction severity influences these patterns.	Descriptive cross-sectional	N= 40 Male= 40 Age range= 18-65 Substance dependent patients attending outpatient and inpatient addiction services	Questionnaires	Ain Shams Institute, Egypt. Urban	Outpatient and inpatient addiction services for tramadol use were examined. No observable correlations were identified between the duration of illness, age, and the extent of social support received and degree of proximity of service. Family members were the most common referrers to professional help for patients visiting the clinic, while friends facing similar issues and emergency services were the least frequent source of referral.
29. Ohaju-Obodo et al. 2019	Tramadol abuse: a case report.	To report an atypical withdrawal symptom caused by four years of tramadol abuse.	Case report	N= 1 Age= 25 University student who presented to the clinic with withdrawal symptoms from four years of tramadol abuse	Textual analysis of patient records	Nigeria	The patient experienced a lack of attention and concentration during conversations, which negatively impacted his academic performance. He had a history of using tramadol for pleasure at a daily dose of at least 400mg for the past four years and had attempted to quit nine months before seeking help. Psychotherapy was recommended for treatment.
30. Mohamed et al. 2015	An epidemiological study of tramadol HCl dependence in an outpatient addiction clinic at Heliopolis Psychiatric Hospital.	To determine the prevalence of tramadol HCl dependence among individuals who abuse substances, evaluate the severity of addiction, identify coexisting psychiatric illnesses, and identify the variables that contribute to the initiation of tramadol abuse.	Cross-sectional	N= 330 Male= Does not specify Female= Does not specify Mean age= 26.02 (Range 12-70) Egyptians attending outpatient addiction clinic at Heliopolis Psychiatric Hospital for substance abuse	Semi-structured questionnaires	Outpatient addiction clinic at Heliopolis Psychiatric Hospital, Egypt. Urban	Predictors of tramadol abuse included a family history of substance use (25%), psychiatric disorders (23%), seeking euphoria (20%), prolonging intercourse (19%), delaying fatigue (13%), pain relief (13%), managing anxiety (10%), and treating depression (11%). Peer pressure accounted for 9%, while other less common reasons like curiosity (3%), treating insomnia (1%), and weight loss (1%) totalled 5%.

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31. Yassa and Badea 2019	Patterns of drug abuse in Upper Egypt: cause or result of violence?	To determine the relationship between type of drug abuse and type of violence, the degree of violence associated with each type of drug abuse, and the patterns of drug abuse in Upper Egypt.	Cross-sectional	N= 300 Male= 295 Female=5 Age range= 10-50 Individuals seeking medical advice in mental health hospital	Urine analysis and questionnaires	Addiction clinic, Assiut Mental Health Hospital, Egypt. Urban	Tramadol abuse was associated with increased verbal aggression (Mean ± SD= 3 ± 1), physical aggression towards objects (Mean ± SD=3 ± 1), physical self-aggression (Mean ± SD==2 ± 1), and physical aggression towards others (Mean ± SD= 3 ± 1).
32. Jonathan and Samuel 2018	Assessment of tramadol abuse impact on academic performance among undergraduate students in Ignatius Ajuru university of education, Port-Harcourt, rivers state Nigeria.	To determine how tramadol abuse affects undergraduate students' academic performance at Ignatius Ajuru University of Education.	Descriptive survey	N= 400 Male= 57.6% Female= 42.4% Mean age= 24.5±4.5 Undergraduates	Structured questionnaires	Ignatius Ajuru university of education, Port-Harcourt, Rivers state Nigeria. Urban	Students reported negative effects from tramadol abuse, including aggressive and violent behaviours (22.5%), reduced concentration on academic work (16.9%), and a decrease in grades accompanied by higher absenteeism (28.5%). These findings suggest that most respondents perceive a detrimental impact of tramadol abuse on their academic and personal lives. Conversely, 45.5% of students strongly disagreed that they were consistently aggressive and violent when under the influence of drugs, 45.1% denied a lack of concentration in academics due to drug use, nearly half (49.9%) disagreed with experiencing a drop in grades, and 36.5% disagreed that they missed classes due to drug use. Nonetheless, the overall grand mean of 2.98, exceeding the criterion mean of 2.5, supports the conclusion that tramadol abuse significantly affects the students involved.
33. Bassiony et al. 2022	Suicide risk and ideation among patients with substance use disorders in Egypt.	To estimate the prevalence and correlates of suicide among patients who sought treatment for SUDs.	Cross-sectional	N= 100 Male= 93% Female= 7% Mean age= 30.7 SUD patients	Simple questionnaires and urine analysis	Outpatient clinic and inpatient ward of psychiatry department, Zagazig University hospitals, Sharkia, Egypt. Urban	This study revealed that 92% of the participants used tramadol for various reasons: to combat fatigue and extend working hours, to self-manage anxiety and depression, and to address premature ejaculation.
34. El-Sawy and Abd Elhay 2011	Characteristics of substance dependence in adolescents with and without a history of trauma.	To address substance dependence and coexisting psychiatric issues in adolescents with a history of trauma, especially those with post-traumatic stress disorder.	Cross-sectional	N= 78 Male = 60% Female= 40% Age range= 12-17 Adolescents with drug dependence being treated for addiction	Standardised questionnaires	Drug dependence outpatient clinic of Psychiatry, Neurology and Neurosurgery Centre, Tanta University, Egypt. Urban	Adolescents exposed to trauma were found to initiate drug use earlier than those without such experiences. Within this group, tramadol was the drug of choice. Among those with PTSD, 93% (N=15) used tramadol, while 94% (N=34) of those without PTSD but who experienced trauma also used tramadol.
35. Saapiire et al. 2021	The insurgence of tramadol abuse among the most active population in Jirapa municipality: a study to assess the magnitude of the abuse and its contributory factors.	To assess the prevalence of tramadol/related substance abuse and the associated factors.	Analytic cross-sectional	N= 420 Male=342 Female= 78 Age distribution: under 18 (9), 18-25 (171), 26-30 (113), and between 30 and 55 (127) People who abuse/ misuse tramadol	Face-to-face semi-structured questionnaires with both open and closed-ended questions	Jirapa Municipality of the Upper West Region, Ghana. Rural	The most common reasons for tramadol use were peer influence (38.8%), improving physical performance (37.5%), and enhancing physical strength/activity (24.3%). Influence from friends was the primary reason cited for both initial (34.9%) and continuous use of tramadol, while curiosity motivated 19.1% of first-time use. Respondents who believed tramadol enhanced sexual performance were four times more likely to use it without a prescription [Adjusted Odds Ratio (AOR) = 3.776; 95% CI: 1.352-10.545; p=0.011]. Those with a history of substance abuse were five times more likely to abuse tramadol than those without such a history [AOR = 5.15; 95% CI: 1.501-17.656; p=0.009]. Other reasons for tramadol use included managing sickness (18.4%), enhancing sexual performance (8.6%), achieving euphoria (14.5%), escaping problems (13.8%), managing post-traumatic pain (38.2%), enhancing sleep (7.9%), appearing strong and youthful (24.3%), relieving stress (17.1%), and experiencing a road traffic accident (5.3%). Additionally, 7.2% received tramadol from a parent or relative, 15.1% had a physician's prescription. Notably, 16.4% reported no specific reason for using the drug.
36. Ibrahim et al. 2017	Tramadol abuse among patients attending an addiction clinic in north-eastern Nigeria: outcome of a four-year retrospective study.	To ascertain the prevalence of tramadol abuse among a drug user subgroup, understand its usage pattern, and assess the reasons for its use.	Retrospective cross-sectional	N=237 Male= 92% Female= 8% Mean age= 33.79±5.68 (Range 18-65) People diagnosed with drug issues	Observing and analysing clients' medical records	Addiction clinic of Federal Neuropsychiatric Hospital, Maiduguri, North-eastern Nigeria. Urban	Initiation into tramadol use was primarily influenced by peer groups (53.5%), curiosity (17.8%), prescriptions from health professionals (12.4%), and other factors such as socialization (16.3%). The most common reasons for continued use included relieving fatigue (28.7%, 95% C.I. = 25.4 - 31.2) and prolonging sexual intercourse (22.5%, 95% C.I. = 20.1 - 24.7). Additional motivations for continuous use were to enhance mood or achieve euphoric effects (9.3%), manage pain (10.1%), prevent withdrawal symptoms (10.8%), satisfy cravings (14.7%), and other less specified reasons (3.9%).

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37. Elliason et al. 2018	Abuse and misuse of tramadol among the youth in the Wassa Amenfi West municipality in the Western region of Ghana	To evaluate tramadol awareness and use in Wassa Amenfi West municipality. To examine the influence of socio-demographic factors on abuse, knowledge and practices related to its misuse, and the underlying reasons for its use.	Descriptive cross-sectional survey	N= 300 Male=258 Female= 42 Age range= 13- 35. Youth in Wassa Amenfi municipality	Secondary data sources (books, journals, magazines, reports and internet. Survey structured questionnaires were used for primary data collection	Wassa Amenfi West municipality, Western Region, Ghana. Rural	The survey revealed that 69.3% of respondents were aware of where to obtain tramadol easily. Over half (55%) primarily used tramadol as an energy booster, while 30% used it to enhance sexual performance and experience sexual ecstasy. Additionally, 15% used tramadol for pain relief. Other reasons participants cited for taking tramadol included feeling high, boosting confidence, coping with daily challenges, overcoming feelings of inadequacy, and managing stress and anxiety.
38. Obekpa et al. 2021	Self-esteem, peer influence and family relationship as predictors of tramadol abuse among young people undergoing rehabilitation at a private facility in North Central Nigeria.	To investigate the role of self-esteem, peer pressure and family relationship in tramadol abuse among young people receiving treatment.	Retrospective cross-sectional	N= 50 Male= 66% Female= 34% Mean age= 24.5 (Range 21-35) Tramadol abuse rehabilitation patients	Observing and analysing clients' medical records for the period of one year retrieved from the Health Information Management Department of the hospital	Rescue City Medical Centre, Makurdi, in North-central Nigeria. Urban	Self-esteem, peer influence, and family relationships were significant, independent predictors of tramadol abuse, with self-esteem and family relationships showing a negative correlation with abuse. Together, these factors significantly influenced tramadol use, explaining 59.1% of the variance in abuse symptoms among the study population [$R = .641$, $R^2 = .591$, $F (3, 39) = 4.311$, $P < .01$].
39. Cicero and Ellis 2012	Health outcomes in patients using non-prescription online pharmacies to purchase prescription drugs.	To explore why people choose online pharmacies without prescriptions over the usual doctor-pharmacy model and compare their health outcomes.	Cross-sectional	N= 445 Traditional buyers =349 Male= 33% Female =67% Mean age= 47.2 Non-traditional online buyers without a prescription= 96 Male= 43% Female= 57% Mean age= 8.5	Standardised questionnaires through an online survey	US	Almost all non-traditional tramadol users (95%, 91/96) cited inadequately managed pain as their main reason for use, with many (55%, 41/75) turning to non-prescription online pharmacies (NPOPs) due to inadequate access to prescribed doses. Additionally, 29% (22/75) used NPOPs as a cheaper alternative to traditional healthcare, particularly relevant for the 37% (35/96) without insurance. While the majority used tramadol solely for pain relief (63%, 60/96), a portion also sought its euphoric effects (32%, 31/96), and only a few (5%, 5/96) primarily for recreation. Other motivations, such as anonymity, accounted for 16% (12/96) of NPOP usage.
40. Elsawy et al. 2019	Social phobia among tramadol and opioid users.	To determine the relationship between social phobia and the use of tramadol and opioids, and whether social phobia plays a role in initiating drug use.	Sequential study (cross-sectional)	N= 103 Male= 77 Female= 26 Age range= 18-50 People who use tramadol and/or admitted to psychiatry	Structured clinical interviews, urine analysis and physical examinations and various psychometric tests	Outpatient and inpatient clinic in Tanta University Psychiatry, Neurology & Neurosurgery Centre, Egypt. Urban	Tramadol use is reported to be associated with higher levels of social phobia compared to other drugs studied, exhibiting increased rates of social anxiety. Notably, people who used tramadol experienced a significant increase in social phobia symptoms after a month of withdrawal.
Qualitative							
Author (s), year	Title of study	Aims and objectives	Study design	Population and sample	Data collection methods	Context and setting	Outcomes
41. Wazaify, Alhusein and Scott 2022	Qualitative exploration of the experiences of men who use drugs of obtaining psychoactive medicinal products in Jordan.	To describe the lived experiences of people in treatment for drug dependence in obtaining prescribed or over the counter psychoactive medicines in Jordan, prior to the rescheduling of alprazolam.	Qualitative exploratory	N= 17 Male= 17 Median age 27.5 (Range 21-39) People in addiction treatment for non-medicinal use of prescribed or over the counter medicines	Semi-structured, audio-recorded interviews	Addiction treatment centre, Amman, Jordan. Urban	A participant described to the researcher how his uncle helped him obtain tramadol injections.
42. Madukwe and Klein 2020	Tramadol as a pain relieving and physical work performance enhancement medication.	To evaluate the use of tramadol as a pain reliever and physical work performance enhancer.	Qualitative exploratory	N= 30 Male= 18 Female= 12 Age range=16-27 Emerging adults who use tramadol (self-diagnosed and medically diagnosed)	Interviewer-administered questionnaires containing both open ended and close ended questions	Owerri, South-eastern Nigeria. Urban	Many respondents started using tramadol following peer recommendations, appreciating its pain relief for various conditions better than alternatives like paracetamol. Particularly, those with limited formal education and involved in labour-intensive jobs such as bricklaying and farming used tramadol to enhance work performance and energy. The practice was more common among men, including one notable for high productivity and distributing tramadol in his network. Poverty influenced tramadol use, helping people who used to cope with harsh working conditions and the impacts of poverty. Tramadol use led to mood fluctuations and decreased energy.

Author (s), year	Title of study	Aims and objectives	Study design	Population and sample	Data collection methods	Context and setting	Outcomes
43. Nwafor et al. 2023	"It worked for my friend": non-medical use of tramadol among manual labourers in Anambra state, Nigeria.	To explore the dynamics involved in the non-medical use of tramadol among manual labourers in Nigeria.	Phenomenology	N= 40 Male= 38 Female= 2 Mean age= 28±4.30 (Range 19-36) Manual laborers (25 bricklayer servers, 5 tilers, 5 welders, and 5 carpenters/roofers)	In-depth interviews	Awka and Onitsha in Anambra state, Nigeria. Urban	Most participants were introduced to tramadol by co-workers or relatives and used it to increase energy and work capacity, relieve pain, enhance sexual performance, and experience euphoria after work. The findings indicate that while friends were the primary influencers, a few others were introduced by their relatives.
44. Fuseini et al. 2019	Facilitators to the continuous abuse of tramadol among the youth: a qualitative study in Northern Ghana.	To explore the facilitators to the abuse of tramadol by young people.	Qualitative exploratory descriptive design	N= 18 Male= 83% Female= 16.7% Age distribution= 18-25 years (72.2%) and 26-35 years (27.8%) People dependent on tramadol in treatment	Focus Group Discussions and three in-depth interviews	Psychiatric unit of the Tamale Hospital, Tamale, Ghana. Urban	The study identified four main themes: factors initiating abuse, desirable physical effects, desirable psychological effects, and undesirable effects. Many young individuals began abusing tramadol due to peer pressure, curiosity, or post-traumatic addiction. They often continued tramadol use to achieve various benefits such as euphoria, increased attentiveness and energy, pain relief, and enhanced sexual performance. Tramadol abuse led to significant negative side effects, including emotional detachment/ aloofness and irritability. Despite drawbacks, many participants expressed a desire to discontinue use due to social stigma and the severe adverse effects associated with prolonged use of the drug.
45. Owonikoko et al. 2023	"What a man can do, a woman can do better": women farmers, livelihood and drug abuse in Adamawa State, north-eastern Nigeria.	To explore the relationship between women farmers, their means of subsistence, and drug abuse.	Ethnography	N= 50 Male= 24% Female= 76% Age distribution= 6% under 18, 18% aged 18-24, 26% aged 25-31, 20% aged 32-38, 16% aged 39-45, and 14% were 46 and older Farmers, community leaders, business professionals, and NDLEA security officials	In-depth interviews and non-participant observation	Adamawa State north-eastern Nigeria. Rural	The study revealed that tramadol is frequently abused due to its affordability and availability and, particularly to enhance performance in farming. Women farmers took tramadol to feel courageous and invincible, which aids them in managing the strenuous demands of farm work. They reported using the drug both before starting work to boost energy and after work to recover, stating that it allows them to resume work the following day without fatigue. Tramadol use among women affected their spousal relationships and led to behavioural issues such as domestic violence towards husbands.
46. Alhassan 2022b	Where is the pain? A qualitative analysis of Ghana's opioid (tramadol) 'crisis' and youth perspectives	To understand the Ghanaian tramadol crisis, explore youth perspectives, pain as a motive, and media portrayal over five years. To understand the experiences of tramadol use.	Discourse Analysis. Phenomenology	Discourse analysis: Review of 295 newspaper articles. Phenomenology; N= 11 Male= 10 Female= 1 Age range= 19-35 Individuals who had used tramadol in the past year and four health system stakeholders (a journalist, a mental health nurse, a program manager and a divisional head of one of Ghana's drug regulatory bodies)	Analysing newspaper sources. Qualitative interviews	Ghana	Media coverage commonly linked the rise in tramadol use to moral failings, portraying it as a drug used for enhancing sports and sexual performance and for recreation, often associating it with promiscuity and crime. This narrative, which sought to provoke societal disdain, was supported by instances like an official from the Food and Drugs Authority citing sexual performance enhancement as an abuse factor, while nearly half of the reports connect tramadol use with youth crime. This narrative was reinforced by neo-traditionalist views, where community leaders like chiefs and religious figures blame the increase on inadequate moral upbringing by parents, calling for cultural education to instil proper values in youth. These moral discussions are prevalent, with the older generation frequently criticising the declining moral standards among the youth. Participants reported taking tramadol to cope with the pressures of youthful life, such as handling grief, overcoming boredom, and alleviating pain from demanding physical work. Many expressed feelings of alienation and a desire to be seen as 'normal' within their communities. Societal stigmatisation was reported, with widespread negative perceptions towards people who used it.
47. Alhassan 2022a	"Here in Ghana hard work don't deserve money": the uncertainty and precarity of youth who use tramadol.	To explore the factors driving tramadol use among Ghanaian youth, emphasising structural contributors to its popularity, and to gain a deeper understanding of the lived experiences of people who use tramadol and the social dynamics that harm marginalised groups.	Qualitative case study methodology	N= 11 Male= 10, Female= 1 Age range= 19-35 People who use tramadol N= 4 Journalist, a mental health nurse, a program manager and a divisional head of one of Ghana's drug regulatory bodies	Primary data was collected via telephone interviews. Secondary data was collected via 295 newspaper articles published on tramadol	Ghana	The study identified several factors underlying tramadol use, including peer pressure, curiosity, and post-traumatic addiction. Other motivations include enhancing sexual experiences, coping with financial challenges that impact educational opportunities, managing anxiety, stress, and uncertainty, overcoming shyness, increasing energy, alleviating physical pain, promoting calmness, and aiding sleep, and responding to unmet personal goals and work-related pressures. Additionally, participants reported disillusionment due to low compensation for hard labour in Ghana, feelings of responsibility and hopelessness as the eldest in financially struggling families.

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48. Ngwa 2022	Drug abuse and its implication on regional security in West and Central Africa: case studies of Nigeria and Cameroon.	To identify the consequences of tramadol abuse on youths and the effect of the drugs on national security in West and Central Africa.	Qualitative exploratory	Cameroonian case N=30 Male= 25 Female=5 Age distribution= 13-35 (10), 35-60 (20). Youth with SUD (10), teachers (8), illegal vendors (6), medical practitioners (4), and rehabilitation experts (2)	Cameroonian case: in-depth interviews with medical personnel and teachers. Nigerian case: secondary sources of information drawn from the WHO Report, UNODC, and the national bulletin on narcotics	Rehabilitation centre in Cameroon and Nigeria	Workplace challenges arose for those who abused tramadol, affecting job performance and stability. Academic difficulties were prevalent among people who abused tramadol. Family relationships became tense and strained due to tramadol abuse. Community relations and standing were negatively affected for people who abused tramadol.
49. Peprah et al. 2020	"With tramadol, I ride like a Jaguar": a qualitative study of motivations for non-medical purpose tramadol use among commercial vehicle operators in Kumasi, Ghana.	To record the motivations for tramadol use for non-medical purposes in Kumasi.	Qualitative exploratory	N= 18 Male= 15 Female= 3 Age range= 18-43 Fifteen commercial vehicle drivers and 3 female assistants, who use tramadol for non-medical purposes	In depth face to face interviews	Kumasi, Ghana. Urban	The initiation of tramadol use was facilitated by introductions made by friends, relatives, and community members. Factors such as curiosity, peer pressure, and allure were significant in influencing initial use. Additionally, workplace dynamics played a role; for instance, some employers in the commercial driving sector reportedly dismissed assistants who refrained from using tramadol, thereby promoting its use among employees. Factors that contributed to the continuous misuse of tramadol included perceived enhancements in sexual performance and the prolongation of sexual intercourse. Participants also reported using to experience euphoria, increased alertness, and attentiveness. Additional reasons included tramadol's role as an energy booster and a remedy for tiredness or fatigue. The sense of hope and belonging it provided, along with its affordability and easy accessibility, further contributed to its continuous use. Irritability, anger, and feelings of discouragement and sadness were reported among individuals misusing tramadol. They experienced a significant loss of interest or pleasure in daily activities, leading to a pervasive feeling of discomfort. The non-medical use of tramadol also resulted in pronounced social stigma and a noticeable lack of respect from the community. This widespread disapproval further heightened the stigmatisation of those using tramadol for non-medical purposes.
50. Diab et al. 2021	Risk and protective factors of tramadol abuse in the Gaza strip: the perspective of tramadol abusers and psychiatrists.	To ascertain tramadol recreational use perceptions among users and medical providers.	Qualitative exploratory	Group 1: N= 13 Male= 12 Female=1 Age range= 32-58 Psychiatrists with an average of 16.6 years of experience. Group 2: N= 13 Male=13 Age range= 24-52 People receiving care and treatment for tramadol use	Qualitative interviews	Gaza Strip. Urban	Tramadol misuse in Gaza is reported to be driven by a mix of emotional, psychological, and socio-economic factors. Individuals used the drug to cope with social/family conflicts, feelings of low self-esteem, hopelessness, marginality, depression, and traumatic experiences, often related to military conflicts. Economic challenges like poverty and unemployment, exacerbated by the Gaza blockade, were reported to have increased susceptibility to tramadol use. Social factors, including peer pressure and the need for belonging in stigmatised groups, also contributed to its misuse. Women were reported to be forced by their husbands to take tramadol. The increased availability of tramadol through the illicit drug trade is reported to make it more accessible to vulnerable groups in Gaza. The study reports that people often turn to tramadol to improve their mood during stressful conditions, reinforcing its perceived necessity. The protective influences of religion and spirituality were reported to have diminished amidst these deteriorating living conditions, leading to use. Domestic violence within Palestinian society is also linked to tramadol use in the study. Tramadol use is associated with aggressive behaviours and mood alterations. It is reported to lead to social isolation and increased feelings of hopelessness. The stigma surrounding drug use exacerbates this isolation, heightening the risk of further drug use. A critical social impact of tramadol is the disruption of family dynamics. People who use tramadol are reported to be particularly concerned about the negative effects on social bonds and the perceived decline in moral and spiritual values within the community. Recovery from tramadol use in Gaza is reported to be hindered by several factors. Psychiatrists note the absence of specialised recovery centres as a major obstacle. Economic difficulties and scarce job opportunities further diminish motivation and resources for recovery. Additionally, the social status of women and cultural stigmas associated with tramadol use present significant barriers to overcoming addiction.

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51. Dumbili et al. 2021	Enhancement motivations for using prescription drugs among young adults in Nigeria.	To explore how young adults in Nigeria access prescription drugs and factors that motivate their use.	Qualitative exploratory	N= 23 Male= 19 Female= 4 Age range= 23-29 College-educated young adults	Semi-structured interviews	Anambra State, South-Eastern Nigeria. Urban	Tramadol use is reported to be introduced through friendship groups. Reasons for continuous use include; to enhance performance through improving stamina/enhancing energy and skill in sports, easy availability or accessibility (purchased from pharmacies without a prescription), Peer influence, for feelings of completeness and for confidence.
52. Abood, Scott and Wazaify 2018	User experiences of prescription and over the-counter drug abuse in Aden City, Yemen.	To examine prescription and over-the-counter drug misuse from the users' perspective in community pharmacies in Aden city	Qualitative exploratory	N= 15 Male= 11 Female= 4 Age range= 21–40 Known or suspected people who misuse drugs. Among them, a 35-year-old physician and a 32-year-old housewife discussed specific experiences with tramadol	Qualitative in-depth-interviews	Community Pharmacies in four districts of Aden, Yemen. Urban	Tramadol use is reported to be introduced through friends. Reasons for first time use include out of curiosity and as an escapism from problems. Some people used tramadol continuously to proficiently handle household tasks without anxiety and completely free from back pain.
53. Klantschnig and Dele-Adedeji 2021	Opioid of the people: the moral economy of tramadol in Lagos.	To investigate tramadol's usage in Lagos and its societal and health implications and contributing socio-economic drivers from a moral economy perspective. To challenge the oversimplified portrayals of West African tramadol markets often cited in policy discussions. To elucidate the legitimacy discourse of drug use and trafficking in Lagos, Africa's thriving drug markets.	Qualitative exploratory	N= 22 Male= Does not specify Female= Does not specify Age= Does not specify Tramadol traders (importers/wholesalers, community pharmacists, local drug shop owners, and innerant drug sellers) and regulators (mostly midranking officials from NDLEA and NAFDAC)	In-depth interviews	Lagos, Nigeria. Urban	The consequences of tramadol use reported include stigmatisation from being involved in crime and deviant behaviours. Tramadol use is reported to be associated with criminality and deviance and with the insurgents causing unrest in the country.
54. Arve 2023	“You get stuck in it”: young people’s accounts of attempting to quit non-medical tramadol use.	To explore the experiences of young individuals attempting to discontinue of tramadol use, identify the challenges they face and factors that promote their willingness to abstain over time and investigate how the psychosocial context influences the fulfilment of autonomy, competence, and relatedness needs among youth.	Qualitative exploratory	N= 12 Male= 10 Female= 2 Age range= 19-24 People who had experience with non-medical use of tramadol	Semi structured interviews.	Norway	Outpatient care, treatment institutions, foster care, inpatient psychiatric care are reported as types of treatments for tramadol use. Barriers to access reported include; a notable absence of intrinsic motivation among individuals, general dissatisfaction with the provided services, past negative experiences stemming from prior interventions, coexisting mental health challenges, experiences of dependency and the withdrawal symptoms that accompany discontinuing tramadol use. Facilitators to access to treatment and recovery reported include; constructive and supportive relationships with professionals, strong support networks comprising family and friends, an environment that nurtures fundamental needs, specifically autonomy, competence, and relatedness. The initial stages of treatment are reported to have been frequently characterised as tumultuous, with many participants still engaging in drug use or facing multiple relapses. Over time, there was a marked enhancement in participants' capability to withstand drug cravings and sustain sobriety.
Mixed methods							
Author (s), year	Title of study	Aims and objectives	Study design	Population and sample	Data collection methods	Context and setting	Outcomes
55. Gallois, van Andel and Pranskaityté 2021	Alcohol, drugs and sexual abuse in Cameroon's rainforest.	To examine the actual consumption of alcohol and drugs, their drivers, context, and related individual and social consequences.	Convergent mixed methods	Qualitative data N= 70 Male= 25 Female= 30 Children= 15 Quantitative data N= 64 Male= 65 Female= 99 Persons	Individual semi-structured interviews, surveys, informal discussions, participant observations and dietary recalls	Baka communities in south-eastern Cameroon. Rural	Enhanced energy and improved work efficiency or performance were reported as initiating factors for tramadol use. It was used to alleviate pain and facilitate more comfortable intimate interactions, either with official partners or unfamiliar men in paid encounters, enhance sexual prowess and increase energy levels for work. Children used it for its recreational effects. Tramadol use resulted in sexual abuse, victimisation, and exploitation of young girls encouraged to drink alcohol and use tramadol and exposed to inappropriate content such as pornographic videos by persons who use tramadol by individuals who used tramadol. It was associated with incidents of rape and accidents.

Author (s), year	Title of study	Aims and objectives	Study design	Population and sample	Data collection methods	Context and setting	Outcomes
56. Cicero et al. 2008	Source of drugs for prescription opioid analgesic abusers: a role for the Internet?	To examine and elucidate the role of the internet as a potential source of drugs for individuals who misuse prescription opioid analgesics.	Exploratory sequential	N=1116 Male= 57.6% Female= 42.4% Mean age= Does not specify People who abuse prescription admitted for treatment	Standardised questionnaires. Purchasing analgesics, both scheduled and unscheduled, from a random sampling of 10% of the 467 Internet sites promoting such purchases	US	Tramadol is reported to be easily accessible, obtained through various sources such as dealers, doctor's prescriptions, friends or relatives, forged prescriptions, and the internet. Between 50–65% of people who used indicated they had used one or more of these sources to obtain the drug.
57. Danso and Anto 2021	Factors associated with tramadol abuse: a cross-sectional study among commercial drivers and assistants in the Accra metropolitan area of Ghana.	To identify factors associated with and experiences and perspectives on tramadol abuse among commercial drivers and assistants in Accra, Ghana.	Exploratory sequential	N= 458 Male= 458 Age range= 18-66. 228 commercial drivers and 230 assistants	Structured questionnaires Focus group discussion among three drivers and three assistants of different vehicles	Accra, Ghana. Urban	Tramadol use is reportedly introduced by their friends or colleagues at the transport terminals. Factors linked to tramadol abuse include childhood parental supervision, family conflicts, and close associations with people who use drugs. Participants with very strict parents during childhood were 33% less likely to abuse tramadol compared to those with unconcerned parents. Conversely, having a family member or a friend who abused drugs significantly increased the likelihood of tramadol abuse, with adjusted odds ratios of 2.27 and 2.17, respectively. Participants who consumed alcohol, tobacco, or marijuana were significantly more likely to abuse tramadol. Specifically, alcohol users were 4.74 times more likely, tobacco users 3.18 times more likely, and marijuana users 4.17 times more likely to abuse tramadol compared to those who did not use these substances.
58. Ezenwa et al. 2019	Tracking opiate routes in Nigeria: identifying trafficking routes through dealers and users of tramadol and codeine.	To understand the dynamics of obtaining and using substances, including user demographic profiles, their motivation for use, and the factors impeding their willingness to receive treatment.	Explanatory sequential	Group I N=70 Male= 70 Students, artisans, and professionals, using tramadol and codeine. Group II N= 24 Male= 11 Female= 13 Registered pharmacists N=95 Male= 69 Female=26 Members of the Nigerian Association of Patent and Proprietary Medicine, Dealers	Semi-structured questionnaire survey (the drug use assessment scale) for group I. Focus group discussion for group II	Enugu State, Nigeria. Urban	A smaller proportion of people who used tramadol (31.6%) faced arrest compared to people who used codeine (45%). Despite regulations, 58% of people who used it reported easy access to tramadol. Tramadol was commonly used by manual labourers like masons and quarry workers for pain relief and to aid sleep after work. It was also sought by orthopaedic patients and the elderly for managing pain and arthritis symptoms. Tramadol was continuously used for various reasons: it helped users sleep well after work, boosted energy during extended work periods, and relieved or prevented pain after strenuous tasks for artisans and labourers. Lax border controls and corruption facilitated its accessibility. People also used tramadol to gain boldness, suppress fear, manage epilepsy and convulsions, delay ejaculation for prolonged sexual activity, produce euphoric feelings, and improve focus and efficiency. Nearly half of the people who used tramadol (47.4%) expressed a need for help to discontinue, but many (47.5%) were unsure where to seek assistance. Some others reported not being aware that cravings for tramadol are manageable and treatable. There was a prevalent fear among people who used tramadol for non-medical purposes about potential arrests by law enforcement. Concerns about the costs associated with treatment deterred them from seeking help.
59. Maiga, Seyni and Sidikou 2013	Social representations of consumption of tramadol in Niger, perceptions and knowledge of communities: issues for action.	To characterise the social representations of tramadol evaluated through the knowledge and attitudes of communities - represented by local elected officials, street vendors of pharmaceutical products and administrators, and to relate these representations with the consumption patterns.	Embedded (Qualitative, cross-sectional and descriptive).	N= 442 Male= Does not specify Female= Does not specify Age= excluded minors Local elected officials, street sellers of pharmaceutical products and administrative officials	Focus group discussions and surveys	Urban municipalities, Niger.	Continuous tramadol use was driven by factors such as improving work performance, managing work-related fatigue, and alleviating physical pain. People who used it also sought the euphoric sensations and pleasure it provided. Additionally, patterns of delinquency and dependence emerged as significant factors in continuous use.

Non-empirical evidence							
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60. Salm-Reifferscheidt 2018	Tramadol: Africa's opioid crisis.	To highlight the increasing non-medical use of tramadol in Africa.	Opinion piece	One 28-year-old automobile mechanic, one 32-year-old truck driver. One pharmacist, one illicit tramadol seller and one regulatory expert	Based on a qualitative testimonials and expert opinions	Lomé, Togo. Urban	Tramadol is reported to be popular among those engaging in labour-intensive work due to its perceived ability to enhance strength and performance. The necessity to excel at work, often to avoid job loss in poverty-stricken areas of Africa, is reported to lead many to rely on tramadol. According to the report, despite being a prescription medication, tramadol is cheap and readily available without a prescription in places like Togo, where nearly all pharmacies reportedly sell it without a prescription. It is reported to be used to embolden individuals in committing acts like car robberies, as confirmed by police, and has been linked to road accidents. Tramadol is reported to be commonly mixed with energy drinks to enhance sexual performance. Cross-border smuggling is reported to be easy due to porous frontiers. Individuals like Lucien express regret over starting tramadol, noting significant negative changes in their health and wellbeing and a desperate desire to quit. The report highlights the lack of adequate infrastructure to support recovery from addiction.
61. The Times of India 2018	Use of 'designer drugs' on the rise [Chandigarh].	To highlight the region's growing use of synthetic or designer drugs. Designer drugs are substances that have been chemically altered to mimic the effects of illegal drugs, avoiding legal restrictions.	Opinion piece	One expert (Physician)	Based on expert opinion	India	Tramadol is reported to be used to enhance their physical state and experience a sense of relief.
62. Ebo'o 2018	Trade-offs in managing tramadol abuse in Central Africa. ISS Today.	To highlight the trade-offs between ensuring access to pain relief for legitimate medical needs and the risk of diversion and misuse of tramadol, which is a growing issue in many African countries.	Opinion piece	None	Not specified	Ghana and Gabon	Affordability and availability were reported as key factors contributing to the initial use of tramadol. Tramadol is reported to be continuously used to alleviate the discomfort and stress of lengthy drives on poor roads. It is also reported to be administered by Boko Haram, a recognised terrorist organisation, to suicide bombers for terror operations. Tramadol abuse is reported to be linked to increased violence and crime in countries like Gabon and Ghana, with direct associations to robbery, rape, and stabbings.
63. Freeman 2019	Boko Haram leave trail of opioid addicts in Nigeria desperate to numb the pain of war and hopelessness	To draw attention to Nigeria's growing opioid addiction problem, especially in the Boko Haram insurgency's affected regions.	Opinion piece	One expert and one person with history of tramadol abuse	Based on a qualitative testimonial and expert opinion	Nigeria	Initial use of tramadol is reported to be influenced by various factors, including traumatic experiences, where individuals used it to escape memories of violent assaults by Boko Haram and to endure survival situations. According to the report, Boko Haram also administered tramadol to captives to numb their feelings and to combatants to overcome fear during battles. Additionally, tramadol was used medically to treat wounded comrades in conflict settings. Continuous tramadol use is reported to be motivated by a desire to mask the anguish and monotony of life in Nigeria and the prevailing sense of despair. Drivers are reported to use it to cope with the fatigue and strain from navigating the dusty roads of Maiduguri, while farm labourers use it for an energy boost. Its widespread use is reportedly further facilitated by its availability and affordability. According to the report, tramadol use has been perpetuated socially by Boko Haram fighters who administer it to the young individuals they abduct and indoctrinate. When these individuals escape or are released, many continue using tramadol, further spreading its misuse within their communities. This cycle significantly contributes to the ongoing problem of tramadol use.
64. Inveen 2017	Opioids: Sierra Leone's newest public health emergency.	To increase awareness about Sierra Leone's growing opiate addiction problem.	Opinion piece	A 27-year-old motorbike taxi driver with history of tramadol use	Based on a qualitative testimonial	Freetown, Sierra Leone. Urban	The 27-year-old motorbike taxi driver was introduced through co-workers. Continuous tramadol use was reported to be driven by its ability to enhance his wakefulness and sexual performance, alleviate pain, and combat sickness during work. Its widespread use was also reported to be supported by its affordability, availability, and a culture that tolerates or supports illegal activities, particularly among youth gangs.
65. Ebhota 2018	Corruption: a major reason for drug abuse in Nigeria.	To highlight the relationship between corruption and the increasing incidence of drug abuse in Nigeria.	Opinion piece	One expert	Based on expert opinions	Nigeria	Tramadol is reported to be associated with erratic behaviour.

	Author (s), year	Title of study	Aims and objectives	Study design	Population and sample	Data collection methods	Context and setting	Outcomes
66.	Smith 2014	Painkillers in the peloton	To illuminate the issue of tramadol use in professional cycling and its potential risks and consequences.	Opinion piece	25-year rider with history of tramadol use	Based on qualitative testimonials	UK	Tramadol use among cyclists is reported to be influenced by its ability to enhance performance and alleviate pain from intensive training like Peloton sessions. The 25-year-old also mentioned adhering to perceived norms, especially in time trials where experienced riders commonly use it, reinforcing its acceptance and consistent use. Tramadol use is reported to be associated with a significant number of crashes during the concluding stages of one-day 'Classics' races.
67.	Obaji 2019	Boko Haram survivors in an Internally Displaced Persons (IDP) camp: we are hooked on tramadol.	To shed light on the problem of tramadol addiction among Boko Haram survivors living in an IDP camp in Nigeria and highlight the difficulties these individuals face and the need of interventions and support in resolving the issue.	Opinion piece	Three people who abused tramadol after Boko Haram attacked their city. One social worker and counsello.	Based on qualitative testimonials and expert opinions	Maidugur, Nigeria. Urban	According to the report, numerous cases have documented that IDPs who regularly abuse tramadol often exhibit aggressive behaviours, including bullying, intimidation, and unwarranted sexual advances.
68.	Curnow 2018	Tramadol abuse addiction sweeping Egypt as part of the world's growing opioid crisis: Mohamed, a Cairo donkey barber, uses tramadol daily to cope with gruelling work and grinding poverty like a growing number of Egyptians, another example of the opioid.	To shed light on Egypt's growing tramadol abuse and addiction problem as part of the larger global opioid crisis.	Opinion piece	41 and 67 year old persons who use tramadol for non-medical purposes. Both work as donkey and horse barbers. 27-year-old freelance photographer who is in recovery from tramadol abuse. Expert (physician)	Based on qualitative testimonials and expert opinions.	Cairo district of El Malek El Salah, Egypt. Urban	Continuous tramadol use is reported to be influenced by factors such as alleviating discomfort from animal bites and sustaining energy during prolonged work periods, unfavourable economic circumstances, recreational use, relaxation, a desire to feel powerful, and coping with life's pressures and struggles. The social effects of tramadol use reported include neglecting familial duties, life-altering negative impacts such as ruined lives, and the accumulation of significant debts. Participation in Narcotics Anonymous meetings several times weekly is reported as treatment/support for tramadol abuse. Barriers to accessing tramadol addiction treatment reported include a lack of knowledge about where and how to get help. According to the report, there was initial resistance and refusal to seek assistance. Factors reported as facilitating access to treatment include support from a middle-class family, the birth of a daughter, escalating debts, and the tragic death of a family member due to tramadol use, all of which motivated consideration for cessation and pursuing treatment.

2.8.2 Terminology and definitions of phenomenon

Terms used to delineate the specific instances of non-medical use of tramadol include ‘tramadol use’, ‘tramadol dependence’, `tramadol misuse’, `tramadol abuse’ and `tramadol addiction’. Several reports used multiple terms to describe non-medical use, while others did not specify the type, referring to it simply as non-medical use. Most reports did not provide definitions for the terms used. When provided, definitions for abuse or misuse included inappropriate use of tramadol or use without a physician’s approval (Saapiire et al. 2021; Pourmohammadi and Jalilvand 2019). Others operationally defined misuse as the non-medical use encompassing both occasional and regular consumption within the past year among individuals in their social circle (Nasiri et al. 2019).

2.8.3 Population groups and contexts explored

The existing literature on the non-medical use of tramadol covers diverse groups and settings. Predominantly, the reports were related to urban settings (n=42), with a limited number (n=6) related to rural regions. Additionally, a significant portion of the reports, totalling 21, did not specify the exact area or the specific part of the countries they were related to. Reports included medically diagnosed individuals, encompassing those dependent on tramadol and those with broader substance use disorders, in psychiatric, rehabilitation facilities and private hospitals, which were either inpatient or outpatient facilities (Bassiony et al. 2022; Nagy et al. 2022; Wazaify, Alhusein and Scott 2022; Diab et al. 2021; Obekpa et al. 2021; Shamseldin et al. 2021; Khayredinova et al. 2020; Naem et al. 2020; Elsawy et al. 2019; Hassan et al. 2019; AbdelWahab et al. 2018; El Wasify et al. 2018; Ibrahim et al. 2017; Barahmand, Khazaee and Hashjin 2016; Zaki et al. 2016; Mohamed et al. 2015; Sadir et al. 2013; Sarkar et al. 2012; El-Sawy and Abd Elhay 2011; Fawzi 2011; Stoehr et al. 2009). Other included reports focused on persons who did not necessarily have a medical diagnosis but self-reported a history of tramadol use (Carmel et al. 2019; Iorfa et al. 2019; Saapiire et al. 2021; Alhassan 2022a; Arve 2023; Salm-Reifferscheidt 2018; Freeman 2019; Inveen 2017; Smith 2014; Curnow 2018). Furthermore, two of the reports comprised a sample that included both individuals who had been medically diagnosed and those with a history of tramadol use (Madukwe and Klein 2020; Abood, Scott and Wazaify 2018). One report distinctly included individuals who, during hospital visits, tested positive for tramadol use (Argungu, Sa’idu and Sanda 2021). Certain reports focused on individuals from the general population, conducting surveys and interviews to evaluate potential tramadol abuse or to ascertain the prevalence of associated factors

(Gallois, van Andel and Pranskaityté 2021; Omar and Ahmed 2021; Elliason et al. 2018; Winstock, Borschmann, and Bell 2014).

Another report considered traditional and non-traditional online buyers acquiring tramadol without a prescription (Cicero and Ellis 2012). Critical medical situations were also examined, with a focus on patients who experienced acute tramadol toxicity (Fawzi 2011) and those who presented to a clinic with withdrawal symptoms from tramadol abuse (Chikezie and Ebuenyi 2019; Ohaju-Obodo et al. 2019). Furthermore, the perspectives of various professionals were considered, including pharmacists, psychiatrists, social workers, rehabilitation counsellors, medicinal herb sellers, physicians, teachers, journalists, and regulatory experts (Owonikoko et al. 2023; Alhassan 2022a; Alhassan 2022b; Ngwa 2022; Diab et al. 2021; Klantschnig and Dele-Adedeji 2021; Ezenwa et al. 2019; Nasiri et al. 2019; Maiga, Seyni and Sidikou 2013; Stoehr et al. 2009). One report in addition to expert opinions sought the perspectives of individuals who occupy influential or authoritative positions within their communities (Owonikoko et al. 2023). Some reports also included illicit tramadol traders in their research cohorts (Ngwa 2022; Klantschnig and Dele-Adedeji 2021; Ezenwa et al. 2019; Maiga, Seyni and Sidikou 2013).

Another notable setting featured in the literature is a correctional facility, with a sample comprising inmates charged with violent crimes (Nnam et al. 2022). Others sampled academic populations across diverse educational tiers, encompassing university, secondary, and preparatory levels (Bio-Sya et al. 2021; Dumbili et al. 2021; Onu et al. 2021; Madukwe and Klein 2020; Ezenwa et al. 2019; Pourmohammadi and Jalilvand 2019; Yassa and Badea 2019; Jonathan and Samuel 2018; Bassiony et al. 2015; Bashirian, Barati and Fathi 2014; Negm and Fouad 2014). Commercial vehicle drivers (Danso and Anto 2021; Abd-Elkader et al 2020; Peprah et al. 2020; Carmel et al. 2019; Inveen 2017) and individuals involved in manual labour (Nwafor et al. 2023; Owonikoko et al. 2023; Abd-Elkader et al 2020) were sampled. Despite this diversity, a significant gender disparity is evident in the evidence base, with the majority of reports heavily skewed towards male participants (n=60), only a few primarily focusing on female participants (Owonikoko et al. 2023; Gallois, van Andel and Pranskaityté 2021; Pourmohammadi and Jalilvand 2019; Bashirian, Barati and Fathi 2014; Cicero and Ellis 2012) and even fewer having an equal representation of genders (Shamseldin et al. 2021; Nasiri et al. 2019; Stoehr et al. 2009). Participant ages ranged from 11 to 74 years in included reports, indicating an extensive demographic consideration within the existing literature. The diversity in populations and settings explored in the existing evidence base underscores the multifaceted nature of tramadol use and the need for a nuanced understanding of its impact across various segments of society.

2.8.4 Contributing factors

The contributing factors of tramadol use were categorised into two domains in this review: those relating to the introduction and initiation and those relating to the continuation (see sections (see sections 2.8.5 & 2.8.6). Factors leading individuals to initiate drug use can differ from those that contribute to their continued use (Gorsuch and Butler 1976). Therefore, this categorisation allowed for the mapping of the differing factors reported in the existing evidence.

Seven reports, consisting of six primary studies and one opinion piece, highlighted factors that were not clearly differentiated as either associated with initial use or continuous use. These unclassified factors included familial influence; family conflicts; peer pressure; societal pressure and expectations; and social belonging. Various forms of childhood abuse and neglect (emotional, sexual and physical); low self-esteem; easy obtainability and accessibility; to maintain consistency; normalisation; alleviating fatigue, pain and worries; and work performance were also reported as contributing factors. Additionally, the misconceptions regarding tramadol's effectiveness, linked to its prescription status, perceptions of moral acceptability and substance use history were reported as key factors contributing to its use.

Furthermore, some included reports specifically focused on predetermined contributing factors, such as pain as a motivation for tramadol use and the influence of self-esteem, peer pressure, and family relationships, rather than engaging in a wider examination of potential contributing factors. Of these reports, three were quantitative, utilising structured questionnaires and medical records as data collection tools to systematically assess these factors. Two employed qualitative research designs, whereas one adopted a mixed-methods approach. Lastly one opinion piece did a targeted exploration of specific contributing factors of tramadol use.

2.8.5 Introduction and initiation factors

The scoping review revealed a multifaceted array of factors reported to be contributing to the introduction and initial use of tramadol. Three primary studies and one opinion piece highlighted introductions via co-workers, two studies cited relatives, eight studies pointed to friends and acquaintances, and one study noted neighbours as sources, underscoring the influence of immediate social circles. Furthermore, one study detailed that tramadol introduction occurred through vendors, while another elucidated that introduction was via prescription by health workers. One primary study highlighted that individuals initiated

tramadol use autonomously, without external influence. The variety of sources reported underscores the diverse pathways through which individuals can encounter tramadol. Figure 7 illustrates the various pathways through which tramadol use is introduced, as reported in the included reports.

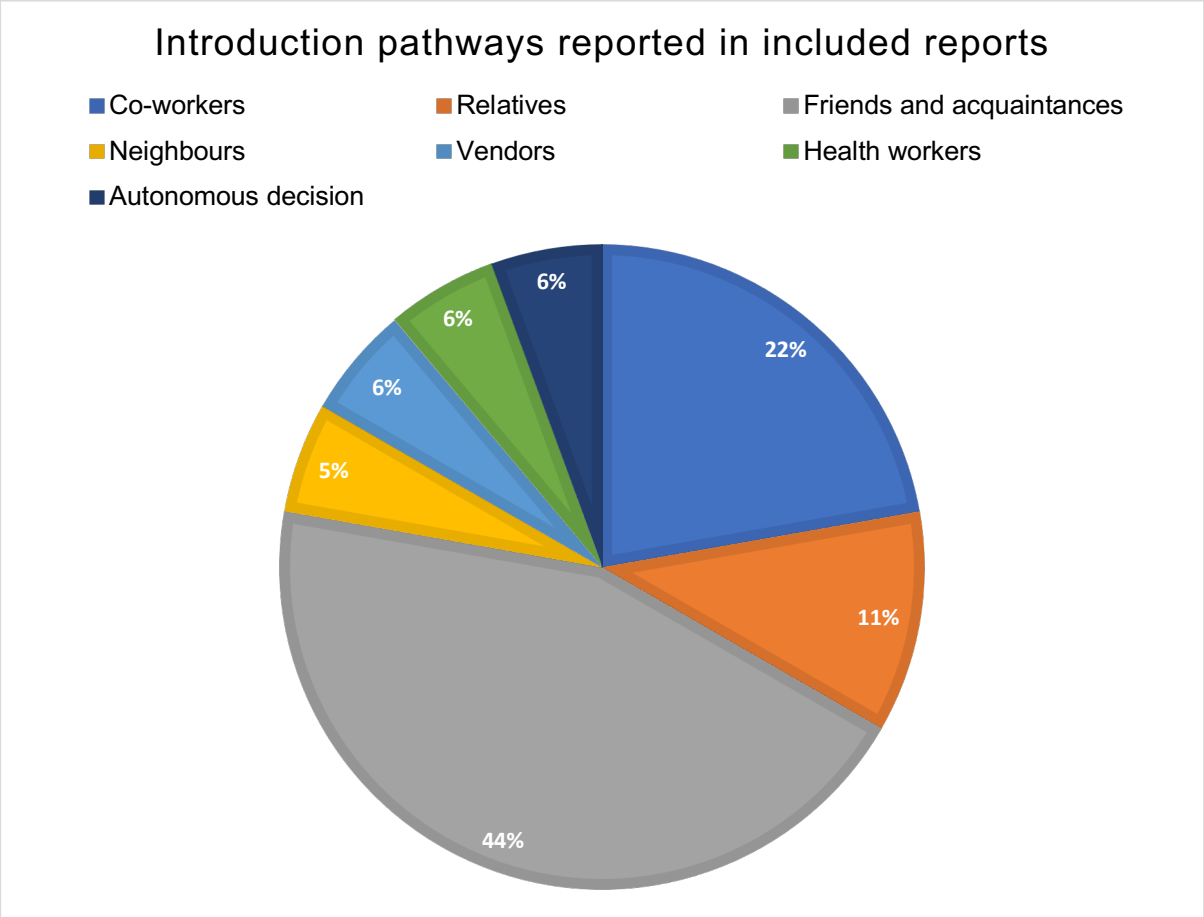

Figure 7. Introduction pathways to tramadol use reported in included reports.

Coping mechanisms and emotional vulnerability factors such as abusive familial relationships; various adverse childhood experiences; traumatic experiences such as those endured by escapees from conflict zones and adolescents; feelings of neglect and being emotionally distanced from family; and coping with personal difficulties were reported by eight of the included reports as factors contributing to initial use. Of the eight reports, seven of them were primary studies and one was an opinion piece. Four primary studies and one opinion piece reported psychological and physical effects including the pursuit of euphoria; pain relief from headaches, back aches, ulcer pain and wounds; substitute for other opioids; and mitigating opioid withdrawals as initial use factors.

Other included reports (n=10) reported social and cultural factors encompassing a perceived safety among youth due to tramadol's prescription status; its use in conflict situations for detachment and courage; its accessibility and affordability; peer influence; and family dynamics such as being overly sheltered and controlled by family and having family members with alcoholism, drug addiction or psychiatric disorders. Among these reports, eight constituted primary studies, while the remaining two were opinion pieces.

Sexual related and performance issues such as participation in casual sexual relationships and premature ejaculation/erectile dysfunction/ prolongation of the time of intercourse in males were also reported by three studies. Other key initial use factors highlighted in seven primary studies were around exploratory behaviours such as novelty seeking; experimentation; and curiosity. Performance enhancement factors such as boosting energy, reducing fatigue to increase work performance were also reported by three primary research studies. Lastly, a history of substance use, such as tobacco, alcohol, and marijuana, was also reported to be linked to initial tramadol use by four studies. Figure 8 presents the clusters of factors contributing to initial tramadol use and the number of included reports that document these factors.

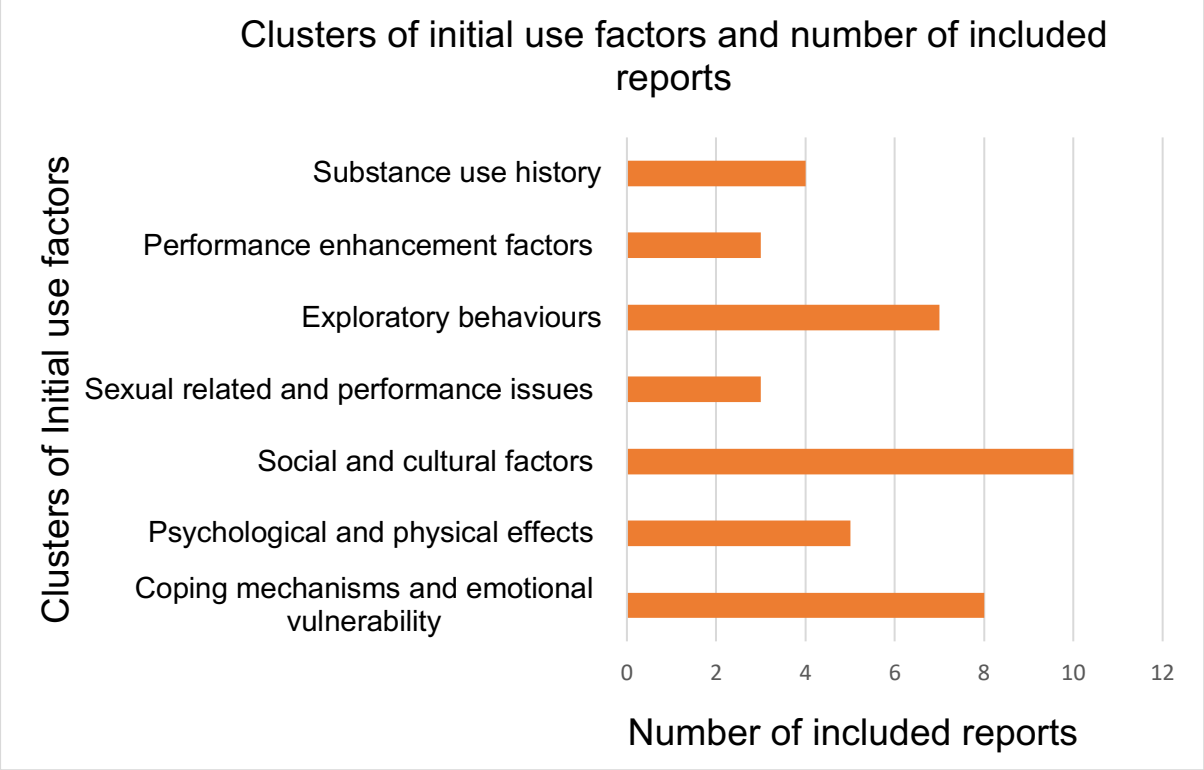

Figure 8. Clusters of contributing factors to initial tramadol use reported in included reports.

2.8.6 Continuous non-medical use factors

The factors reported to be contributing to the continuous non-medical use of tramadol primarily revolved around managing emotional and physical distress and enhancing various aspects of life performance. It is pertinent to note that several factors associated with initial use were also implicated in its continuous use in included reports. Emotional and mental health factors, including: to cope with negative and undesirable emotions; escape boredom or the monotony of daily life; manage anxiety; worry/ uncertainty; depressive mood; life struggles; and unmet personal aspirations were reported by seven primary studies and two opinion pieces. Thirty reports indicated psychological and physical effects such as inducing euphoria for leisure and promoting relaxation; enhancing mental attentiveness; alleviating pain, discomfort and medical treatments such as pain from animal bites, strenuous work, lengthy drives on bad roads, arthritis, rheumatoid pain, epilepsy, convulsions and cold; alleviating fatigue; feelings of well-being or completeness and sense of relief; relieving addiction withdrawal symptoms; aiding sleep; for tramadol's prolonged effects; and suppressing fear and enhancing boldness as influencing continuous use. Out of these 30 reports, three were opinion pieces and the remainder constituted primary studies.

Work and economic factors reported by 18 primary studies and two opinion pieces as continuous use divers include: navigating demanding work conditions such as laborious tasks and prolonged work hours; boosting energy to improve workplace and sports performance, handling socio-economic pressures like intense labour with minimal earnings and other financial difficulties; coping with stress, often related to economic factors. Peer influence; perception of low risks; lack of awareness about the associated risks; socialisation; tramadol's availability and affordability due to porous borders, a large illicit market along with wider systemic issues like corruption; use of tramadol in illicit activities, including terrorism and gang-related crimes; and ability to discreetly conceal tramadol, attributed to its prescription status were reported as social and environmental Influences by nine primary research studies and three opinion pieces.

Furthermore, sexual well-being and enhancements factors reported by 14 primary studies and an opinion piece include: mitigating symptoms of sexual dysfunction or prolonging intercourse, increasing sexual prowess, and facilitating more comfortable intimate interactions with spouses and unfamiliar men. Three primary studies highlighted that certain individuals either had no specific reason or were uncertain about the influences of their continual use of tramadol while one reported compulsive urge as a factor contributing to the continuous use of the drug.

Figure 9 shows the clusters of factors contributing to continuous tramadol use and the number of included reports that document these factors.

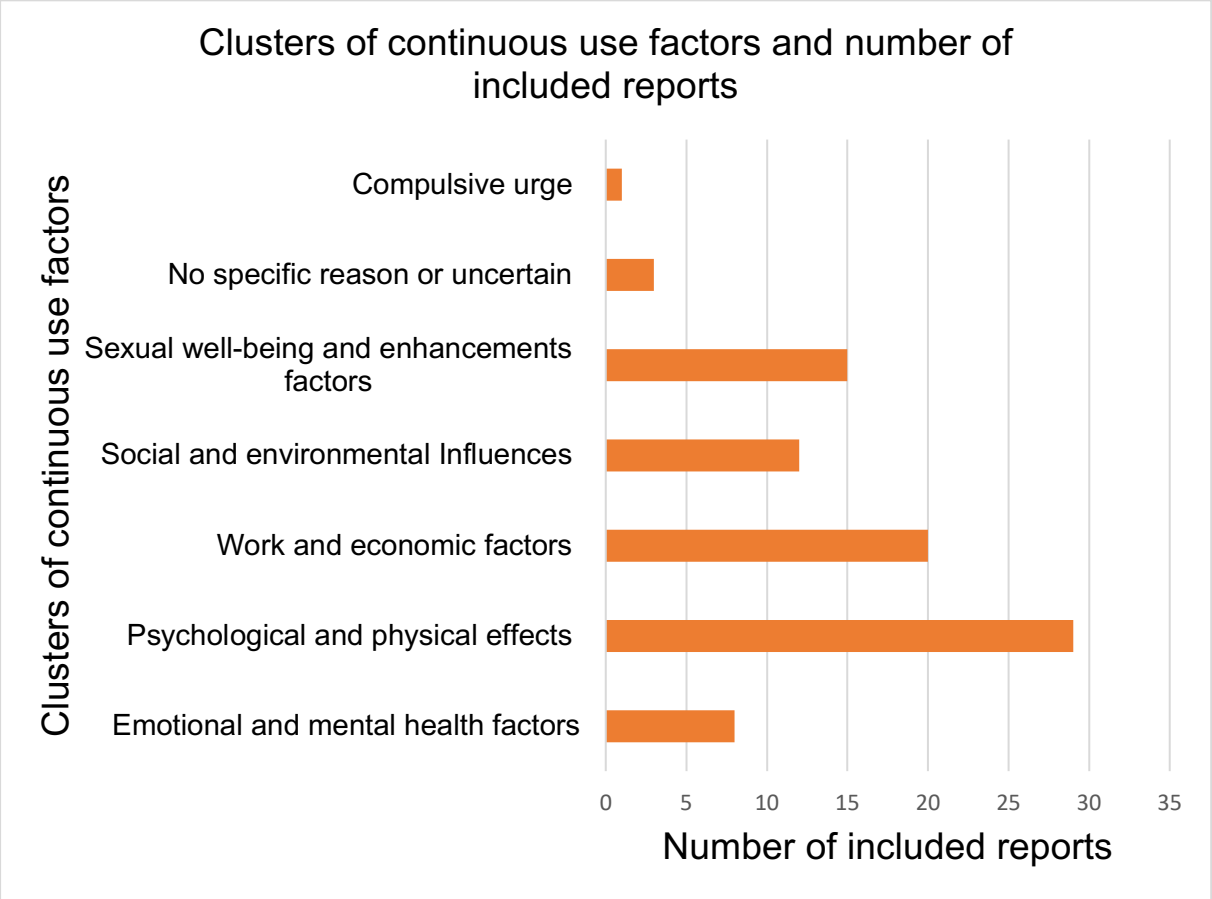

Figure 9. Clusters of contributing factors to continuous tramadol use reported in included reports.

2.8.7 Social effects

Several included reports concentrated on predetermined social effects, including the impact of tramadol use on sexual well-being, life value, and academic performance, as opposed to a broader investigation of possible social consequences. Among these, one utilised a mixed methods approach, while eight adopted quantitative research designs, employing structured questionnaires to methodically evaluate these specific effects.

The social effects of the non-medical use of tramadol were grouped into intrapersonal social effects, which focused on the individual, and interpersonal/societal level social effects, which pertained to interactions with others and broader societal impacts. The review revealed reports of various intrapersonal social effects of the non-medical use of tramadol, including a cluster

of emotional and psychological challenges such as reduced emotional awareness and clarity; difficulties managing impulsive behaviours and accepting negative emotions; disorientation; feelings of discouragement and sadness; feelings of hopelessness, erratic behaviours such as mood fluctuations, self-harm, incoherent speech and irrational speech patterns; social isolation/ alienation; emotional detachment/ aloofness; social phobia and social anxiety. These challenges were reported by ten primary studies and one opinion piece.

Behavioural challenges, including anger; irritability; physical and verbal aggression and violent behaviours, were highlighted by five primary research studies as consequences of tramadol on individuals. Social and economic challenges reported by seven primary studies and one opinion piece included stigmatisation faced by individuals' involvement in criminal and deviant behaviours due to tramadol use; financial difficulties; passivity and reduced motivation; neglect of familial duties; legal challenges; diminished value for life; erosion of moral integrity and self-worth; life-altering impacts; significant debts, highway accidents, and accidental falls or self-inflicted unintentional injuries; and a perception of life's overwhelming chaos as consequences of tramadol use. Three studies highlighted several interrelated issues that affect the sexual well-being of people who use tramadol. These include a decline in the quality of sexual life, decreased intercourse satisfaction, reduced sexual desire, lower sexual self-esteem, negative perceptions of one's sexuality, and reduced preoccupation with sexual thoughts. Reported effects related to occupational and academic decline by nine primary research studies encompassed workplace challenges affecting job performance, noticeable impact on day-to-day functionality and productivity, decreased academic performance, decreased concentration and grades and increased class absenteeism. Figure 10 depicts the clusters of intrapersonal social effects of tramadol use, as reported in the included reports.

Seven studies and two opinion pieces reported criminality, deviance, and acts of violence such as robbery, rape, knife attacks, murder, causing public unrest, physical and verbal altercations, bullying, intimidation, inconsiderateness, and domestic abuse towards others as interpersonal/societal level social effects. Tramadol misuse was also reported by one primary study and one opinion piece to be linked to sexual abuse and exploitation such as exposing young girls to pornographic content and unwarranted sexual advances by individuals engaged in misuse. A significant correlation was reported by six studies between tramadol use and family and social issues, with many admitting to strained relationships with family, friends and spouses. In certain contexts, groups such as Boko Haram, were reported to use tramadol to subdue young abductees, with its continued use spreading within communities even after being freed from captivity by one opinion piece. It was reported by three studies that societal stigmatisation led to marginalisation and exclusion of these individuals from the community.

Lastly, the erosion of moral and spiritual traditions was also reported by one primary research study as a societal level consequence of tramadol abuse in the Palestinian context.

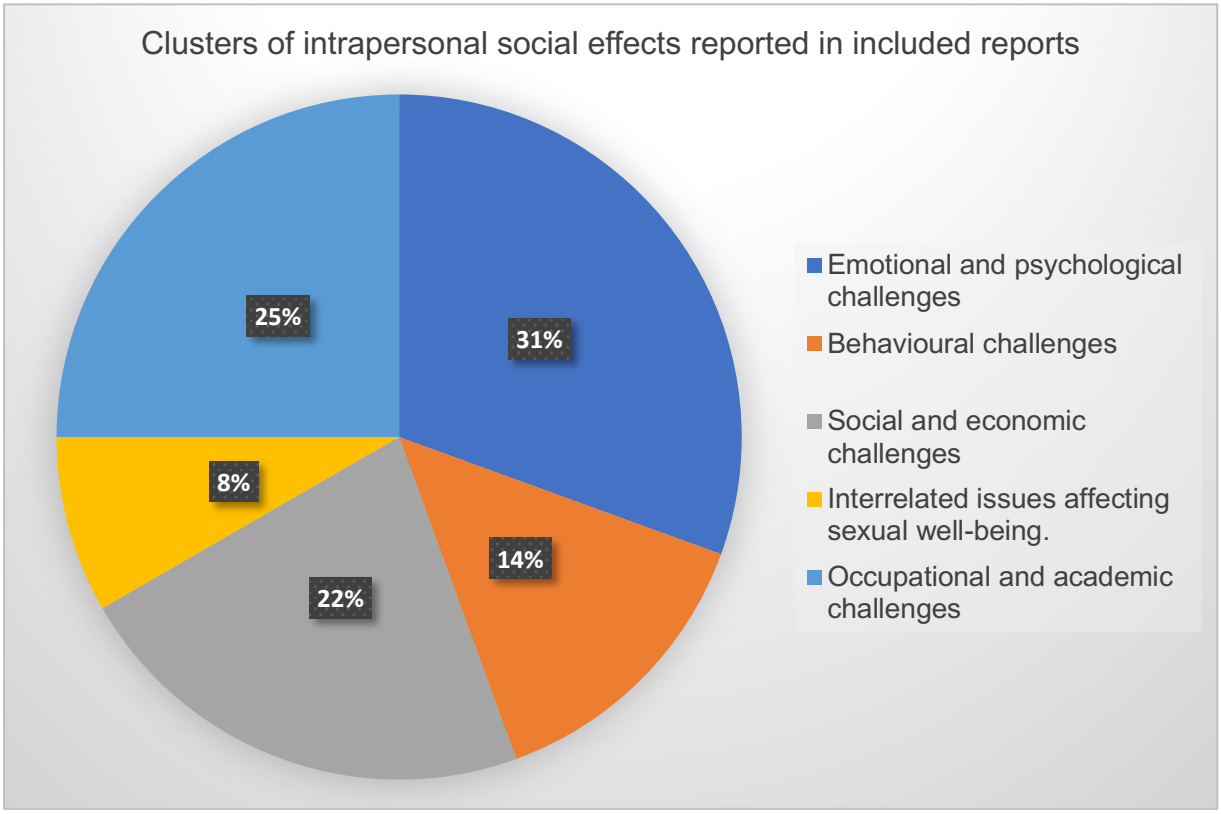

Figure 10 Clusters of intrapersonal social effects of tramadol use identified in included reports.

2.8.8 Rehabilitation and support services

The scoping review highlighted a range of rehabilitation and support services available for individuals with non-medical use of tramadol. These services, reported in five primary research studies and one opinion piece encompassed inpatient and outpatient services as well as programmes that integrate elements of both, including the 12-step meetings, such as Pills Anonymous and Narcotics Anonymous meetings; Residential Treatment Programmes, such as Therapeutic Community (TC), with Cognitive Behavioural Therapy (CBT) model and psychotherapy employed within residential (and non-residential) treatment settings; Follow-up care involving addiction medicine physicians, voluntary monitoring programmes and bimonthly group counselling sessions were also reported by one primary study.

Three primary studies and one opinion piece reported several barriers to accessing and engaging in rehabilitation and support services for the non-medical use of tramadol. A

significant proportion of people who used tramadol were reported to have lacked knowledge about where to seek help and treatment, while others were reported to be unaware that tramadol cravings were manageable and treatable. According to some of these reports, a common fear of legal repercussions, such as arrest by law enforcement, was a prevalent barrier. Additionally, there were reports of a general lack of awareness about accessing treatment facilities and the processes involved. Resistance to seeking treatment was reported to be often observed when individuals were initially approached about treatment options. In specific regions like Gaza, reports highlighted that societal factors, particularly the status of women, posed challenges in accessing treatment for tramadol abuse. Cultural stigma within communities regarding tramadol use was also reported as a significant barrier. Economic challenges, such as hardships and limited employment opportunities, were reported to have impacted both the willingness to access these services and the resources required to access such treatment. An observable lack of intrinsic motivation among many individuals, coupled with previous negative experiences with services and a general dissatisfaction with the treatment provided was also reported. The presence of coexisting mental health issues, experiences of dependency and withdrawal symptoms from discontinuing tramadol use were further reported to have impeded individuals' ability to effectively seek and access rehabilitation and support services.

On the other hand, three primary studies and one opinion piece reported on key facilitators in accessing rehabilitation and support services. These facilitators encompassed social support, with family members reported as being the main source of referrals for many individuals, experiencing impactful life events, such as the birth of a child, accumulating debts, and the tramadol-related death of a family member. Additionally, higher education, employment status, and prior incarceration history were reported to be associated with greater success in rehabilitation, while environments that support key psychological needs like autonomy and competence were reported to have significantly facilitated recovery. Two primary studies reported consistent abstinence and better physical and mental health as outcomes of tramadol use rehabilitation. One of these studies highlighted that though the initial stages were tumultuous with participants still engaging in use and experiencing relapses, they progressively improved their ability to resist cravings and maintain sobriety over time.

Appendix 5, 6 and 7 presents the relevant data from included articles related to the initial and continuous non-medical use of tramadol, social effects and rehabilitation and support services and identified gaps in the existing evidence respectively. A comprehensive discussion of the identified gaps is presented in the review discussion in the subsequent section.

2.9 Review discussion

The international evidence on the contributing factors, social effects and rehabilitation and support for the non-medical use of tramadol is extensive, encompassing 68 reports, of which 59 are primary studies and nine are non-empirical pieces of evidence. These reports included primary studies and non-empirical evidence report on various aspects: 21 report on initial non-medical use factors, 28 on continuous non-medical use factors, 26 on intrapersonal social effects, and 19 on interpersonal and/or societal level effects. Additionally, the evidence base explores rehabilitation and support services for non-medical use of tramadol, with seven reports discussing types of services, four reporting on barriers to accessing these services, three on facilitators for accessing them, and one on facilitators for successful recovery. Notably, some reports overlap, covering more than one of these aspects of non-medical use. This comprehensive array of evidence shows the extent and nature of research associated with the non-medical use of tramadol globally.

The scoping review highlighted significant insights but also methodological gaps in the existing literature. The universal applicability of findings on the interested aspects of tramadol use is limited because the reports mainly focus on specific geographical areas. Although most of the included reports are related to Africa, it is important to acknowledge the continent's diverse cultural, economic, social, and health landscapes. These distinctions can limit the understanding of how cultural norms, societal values, and regional behaviours influence drug use, as reasons, patterns, and consequences can vary significantly across different regions. Consequently, interventions, strategies, and policies developed based on such geographically confined studies risk being ineffective in other cultural or societal landscapes.

The limited reports (n=5) on how people are introduced to non-medical tramadol use suggests a gap in understanding first-time use trajectories. Investigating these pathways is critical for identifying early warning signs and vulnerabilities that predispose individuals to tramadol use (SAMHSA n.da; Rose, Picci and Fishbein 2019). A nuanced understanding of these introduction pathways is essential to developing effective, culturally adaptable prevention strategies. Moreover, the lack of distinction between factors for initial and continuous use in some reports (Wazaify, Alhusein and Scott 2022; Klantschnig and Dele-Adedeji 2021; Khayredinova et al. 2020; Nasiri et al. 2019; Ebhota 2018; Smith 2014), highlights a significant gap, important for understanding tramadol use progression and developing targeted interventions (de Wit and Phillips 2012).

Some reports focus on only predetermined contributing factors (Alhassan 2022b; Obekpa et al. 2021; Onu et al. 2021; Madukwe and Klein 2020; Elsawy et al. 2019; Ebhota 2018;

Barahmand, Khazaee and Hashjin 2016) and social effects (Argungu, Sa'idu and Sanda 2021; Naem et al. 2020; Shamseldin et al. 2020; Hassan et al. 2019; Iorfa et al. 2019; Yassa and Badea 2019; Elsawy et al. 2019; Jonathan and Samuel 2018; Fawzi 2011), limiting a comprehensive understanding of unexpected influences and consequences. This limitation narrows the breadth of knowledge and could hamper the development of effective interventions. Additionally, while some reports explore the occupational impacts of tramadol use (Carmel et al. 2019; Rudisill 2015; Smith 2014), there is a need for more holistic studies that assess its effects on education, family dynamics, and broader social interactions.

Furthermore, research on the broader societal impacts of non-medical tramadol use is limited, partly due to the challenges in designing studies that effectively capture these complex effects. A multidisciplinary approach involving sociology, economics, and public health is necessary to comprehensively understand the personal, interpersonal, and societal consequences of tramadol use (Wadley 2016). A deeper exploration into the personal, interpersonal, and societal effects of tramadol use is crucial to understanding its consequences fully and developing effective public health strategies. Most reports on rehabilitation and support services for tramadol use lack detailed analysis of their outcomes, types, and accessibility, highlighting a significant gap in research on intervention and recovery options.

Additionally, most reports had predominantly male participants due to recruitment barriers for women in drug use studies and higher rates of non-medical use among men, limiting the findings' applicability to women (Cook and Larson 2021; Saapiire et al. 2021). Gender-specific differences in tramadol use may limit the development of gender-sensitive interventions. Similarly, research focused on homogeneous demographic groups such as adolescents and commercial drivers hinders the applicability of findings to other groups. Factors unique to subgroups, such as developmental influences in adolescents or occupational factors in manual workers, may not apply to adults or white-collar workers.

The limited perspectives from individuals who are not accessing treatment or rehabilitation for tramadol use in many of the reports echoes and further substantiates the preceding arguments and significant shortcoming of the lack of representation and insight from diverse groups. Excluding individuals not in treatment limits understanding of the diverse reasons and barriers they face, missing key insights into tramadol use patterns, societal impacts, and experiences unrepresented by those in treatment. Additionally, the absence of direct engagement with individuals engaged in the non-medical use of tramadol in some reports (Klantschnig and Dele-Adedeji 2021; Nasiri et al. 2019; Ebhota 2018), presents a notable gap. The absence of first-hand accounts creates a gap in authentic insights, which limits public health strategies' effectiveness in addressing the complex realities of tramadol use. Addressing these

representational gaps is crucial to develop a deeper understanding of tramadol's impact across diverse demographics and to tailor interventions that meet the specific needs of various subgroups.

The use of quantitative methodologies (n=40), while useful for analysing trends and patterns, often overlooks the phenomenon's depth and subtleties. While qualitative reports (n=14) exist, a more detailed exploration of individual experiences, the personal meanings attributed to their drug use and contextual factors such as psychological, social, cultural, and environmental influences is needed. These intricate and subjective aspects sequentially impact the development of targeted and effective interventions. Case report designs (Chikezie and Ebuenyi 2019; Ohaju-Obodo et al. 2019; Stoehr et al. 2009), which analyse medical records, provide objective clinical insights but miss nuanced, subjective experiences of individuals. Recognising that data saturation is not a methodological priority for case reports, the approach limits the depth, comprehensiveness, and applicability of the findings. To complement and enhance research outcomes, studies should integrate diverse perspectives and aim for data saturation, enhancing their relevance and applicability.

Additionally, using telephone interviews to research sensitive topics like non-medical tramadol use (Alhassan 2022a; Alhassan 2022b), while flexible, convenient, and pandemic suitable, limits the depth of data by missing non-verbal cues important for capturing deep human emotions and experiences, which may lead to superficial insights (Blackman 2002). The absence of face-to-face interaction in interviews may reduce trust and rapport, crucial for discussing sensitive topics like tramadol use, potentially leading to restrained or biased responses and a lack of depth in understanding experiences (Irvine, Drew and Sainsbury 2013; Gratch et al. 2006). Furthermore, without visual cues, researchers might miss emotional reactions, limiting their ability to adapt questions and explore the emotional aspects of participants' experiences (Novick 2008). Poor network connectivity, especially in remote or undeveloped areas, can compromise the representativeness of samples in research, leading to disruptions and potential inaccuracies in data collected through telephone interviews (Block and Erskine 2012; Boland et al. 2006). This connectivity instability, often requires repeated call attempts, causing inconvenience and posing ethical concerns due to unwanted intrusion into participants’ lives (Novick 2008).

Contrasting perspectives exist regarding the efficacy of telephone interviews in sensitive research. While some studies suggest that they may facilitate more honest responses in sensitive topics (Trier-Bieniek 2012), critics argue they may lead to more guarded answers due to privacy concerns and the risk of third parties overhearing the conversation (Mneimneh et al. 2015; Mealer and Jones 2014; Glogowska, Young and Lockyer 2011; Holbrook, Green

and Krosnick 2003). Addressing the ethical and methodological challenges of telephone interviews necessitates face-to-face interactions to capture better the nuanced and emotional aspects of participants' experiences. Direct interactions enable a deeper and more empathetic understanding of participants' feelings and thoughts, creating a more ethical and responsive research environment (Knapik 2006).

Given the sensitive nature of the non-medical use of tramadol, qualitative findings gathered through focus group discussions present its set of limitations (Danso and Anto 2021; Ezenwa et al. 2019). The group setting may inhibit participants from openly discussing stigmatised experiences, leading to constrained or socially acceptable responses and impacting the depth and authenticity of the findings (Smithson 2000). Hesitation to divulge sensitive information can dilute the richness of insights into tramadol use. Furthermore, dominant voices may overshadow quieter ones, potentially leading to biased findings and impeding the development of truly resonant interventions (Lloyd-Evans 2017).

While journalistic narratives based on expert opinions and qualitative testimonials provided valuable insights, they inherently introduce a methodological limitation. These sources often provide a simplified and sensationalised view of topics, lacking the depth and rigour found in peer-reviewed studies (Antonelli and Perrigo 2018). These reports, influenced by journalistic styles and editorial decisions, may prioritise storytelling over systematic analysis (Antonelli and Perrigo 2018), limiting the breadth of insights into the phenomenon.

Narrowing the identified research gaps to the Ghanaian context, the research landscape, includes two quantitative reports (Saapiire et al. 2021; Elliason et al. 2018), four qualitative reports (Alhassan 2022a; Alhassan 2022b; Peprah et al. 2020; Fuseini et al. 2019), one study with a mixed method design (Danso and Anto 2021) and one opinion piece (Ebo'o 2018). The quantitative reports, while providing statistical analysis of factors associated with tramadol abuse and misuse, lack experiential exploration of the subject. These studies are useful for understanding broader trends and patterns but need to be complemented with other types of research to gain a comprehensive view of tramadol use.

Many of the qualitative reports employed varied data collection methods, including telephone interviews (Alhassan 2022a; Alhassan 2022b), focus group discussions (Danso and Anto 2021), and discourse analysis of newspaper articles (Alhassan 2022b). These methods offered important insights into diverse tramadol use experiences, each with unique benefits for gathering detailed information. However, acknowledging their methodological limitations, as discussed in preceding paragraphs, highlights the need for further research using different or complementary approaches. Other qualitative reports focused on specific groups like

commercial vehicle drivers and assistants (Peprah et al. 2020) or individual undergoing addiction treatment (Fuseini et al. 2019), enriching the understanding of tramadol use within particular occupational demographics and treatment-seeking populations, showcasing the diverse contexts in which tramadol use occurs. However, while these focused investigations reveal important details, they also indicate an opportunity for future research to explore tramadol use across a broader range of occupational demographics and among individuals not currently in treatment.

Furthermore, while some reports explored social effects of tramadol use, their primary emphasis were on individual-level effects, thereby not fully exploring the consequences that extend beyond the individual such as the impact on interpersonal relationships. Additionally, the journalistic narrative style of the opinion piece introduced limitations related to empirical rigour, as discussed earlier in this section. Lastly, none of the reports related to Ghana attempted to explore experiences of rehabilitation and support services, representing a notable gap in the existing research landscape.

2.10 Strengths and limitations of review

This section evaluates the strengths and limitations of the scoping review, which is essential for ensuring rigour, transparency, and credibility. Importantly, acknowledging the strengths and limitations facilitates a balanced interpretation of the review's findings. Firstly, the scoping review adopted a comprehensive and systematic approach, searching a range of databases and sources to encapsulate a wide range of findings (Levac, Colquhoun and O'Brien 2010), enabling an exhaustive exploration of the contributing factors, social effects, and rehabilitation and support services associated with the non-medical use of tramadol. Additionally, the inclusion of studies examining diverse perspectives, such as those of healthcare professionals, patients, and policymakers, enriched the review’s findings. This methodological rigour of the review enhances the reliability and validity of the findings, ensuring that the conclusions drawn are grounded in robust scholarly practices.

Moreover, the inherent flexibility of the scoping review method allowed for the inclusion of emerging evidence, ensuring the consideration of the most current and relevant information (Gottlieb et al. 2021). Notably, the review was not limited to a specific geographic location, enhancing the generalisability of findings and insights. This inclusive criterion also enables a multifaceted understanding of the issue, recognising the complexity and subtleties of the non-medical use of tramadol. Furthermore, following a predefined methodological protocol ensured a thorough and in-depth exploration and analysis of the literature, enhancing the depth,

reproducibility, and quality of the review. Significantly, the timeliness of the review is a significant strength. With increasing concerns about the non-medical use of tramadol, particularly in North and West Africa (WHO 2019), this review facilitates the identification of gaps in current research, laying the groundwork for future research.

While the scoping review has notable strengths, it is equally important to highlight its limitations to comprehensively assess the review. Though, the methodological quality of reports was evaluated in this review, it was not to determine inclusion or exclusion, but to provide an overview of the overall quality of the evidence base. Consequently, the conclusions drawn from the review are only indicative of the scope of literature available rather than a definitive assessment of the evidence. Secondly, while aiming for a comprehensive overview of the available literature on the subject, there were exclusions of two records that could not be translated by reviewers that may have been relevant, limiting the representativeness of the review's findings. Notably, based on their titles, only one of the two might have provided additional insights into specific aspects of tramadol use.

2.11 Review conclusion

The scoping review revealed significant gaps in existing research on the non-medical use of tramadol, highlighting confinement on specific demographics and geographic areas, with most reports examining individuals already in treatment. The review found limited data on initial use trajectories and the effectiveness of rehabilitation services. Reports exploring social effects, predominantly focused on the occupational aspects, with limited exploration of its effects on family, work, and education. Quantitative studies may have missed deeper, nuanced elements of non-medical tramadol use, while qualitative research showed significant methodological shortcomings in data collection. These limitations highlight the need for detailed qualitative research to understand the complexities of the non-medical use of tramadol fully. Such insights are crucial for developing nuanced and effective interventions and support. This thesis aims to deeply explore tramadol use in Ghana, addressing key research gaps. The next chapter outlines the methodology used to achieve the research aim of deeply understanding the subject in the Ghanaian context.

3 CHAPTER 3: METHODOLOGY

The world is not black and white; there are varying shades of grey- and that comes from a human dimension (Moning 1964).

3.1 Chapter overview

To achieve the thesis' aim of deeply understanding the complexities and lived realities of the non-medical use of tramadol in Ghana, informed by a comprehensive scoping review, the lived experience of the phenomenon among people in Ghana was explored. This chapter describes how Interpretative Phenomenological Analysis (IPA) methodology was selected for the study and provides a justification for the choice. It begins by describing the ontological and epistemological perspectives that influenced the study design and briefly outlines other alternative research paradigms used in existing research on the non-medical use of tramadol. A broad overview of qualitative methodology with a particular focus on its application in drug use and misuse research is provided. Additionally, various qualitative approaches frequently employed in this field are outlined, along with a rationale for their non-selection. Finally, a more comprehensive overview of IPA and the justification for its selection is provided.

3.2 Introduction

A study's methodology is a systematic approach used in conducting the study, determining the methods to be employed and ensuring they are aligned with the study's objectives (Alharahsheh and Pius 2020). Many considerations go into a researcher's choice of methodology for their study. While the researcher's background, interests, and expertise can all play a role in determining what questions to ask (Creswell and Poth 2016), deciding on the research methodology goes beyond mere practical considerations and requires a philosophical solution (Bryman 2016; Holden and Lynch 2004). Furthermore, a well-defined methodology is integrally linked to the research questions at hand, serving as a compass, directing the researcher to the most appropriate tools and techniques for answering those questions (Creswell 2017).

3.3 Philosophical paradigms

The term "research philosophy" refers to the collection of beliefs, presumptions, and guiding principles that shape the approach to carrying out research (Clark et al. 2021; Bryman 2016; Saunders, Lewis and Thornhill 2009; Guba and Lincoln 1994). However, the role of research philosophy in shaping the research approach and interpretation is contested and subject to a variety of perspectives and interpretations (Johnson and Onwuegbuzie 2004). Proponents argue that it offers a crucial theoretical foundation that enhances the reliability and significance of the research (Creswell and Creswell 2017; Bryman 2016). It guides the researcher in understanding the problem and navigating the research process. Critics, however, suggest that an overemphasis on research philosophy can restrict the research process and reduce researchers' ability to think creatively and constructively about research questions and methods (Denzin and Lincoln 2011; Denzin 2010). Furthermore, it has been argued that the research philosophy is intrinsically subjective and can compromise objectivity in research outcomes, particularly when researchers integrate their personal biases into the research design and interpretation (Morse 2015; Gergen 1992). While these criticisms are valid, it is evident that research philosophy plays an important role in defining the research process. Creswell and Poth (2016) however, encourage researchers to be reflective and acknowledge their biases and prejudices when developing their research philosophy, taking into account its potential impact on the research design and analysis.

To develop a philosophical viewpoint, the researcher must make certain fundamental assumptions (Reamer 2022; Mulisa 2022; Aliyu et al. 2015; Killam 2013; Bryman 2008). Several perspectives on how to develop your research philosophy have emerged. In certain instances, researchers may initiate their research projects by adopting a research philosophy, which serves as a roadmap for formulating their research questions and methodology (Creswell and Creswell 2017; Saunders, Lewis and Thornhill 2009; Denzin, Lincoln and Giardina 2006). In other cases, the research process rather helps the researcher to become more cognizant of their own philosophical assumptions, which then influences the type of methodology (Denzin, Lincoln and Giardina 2006). For example, the existing research gaps, the type of data and its availability, and ethical considerations can help the researcher to determine their philosophical stance (Creswell and Creswell 2017; Denzin 2010). This study acknowledges the intricate connection between the philosophical assumptions of the researcher and the research aims and objectives, regarding them as mutually reinforcing and enhancing constituents of the research procedure.

The next section of this chapter first discusses the epistemological and ontological

assumptions that influenced this study, as well as how the gaps in knowledge and other practical considerations reinforced these assumptions. Subsequently, it examines other research philosophical paradigms used in existing tramadol use research.

3.4 Ontological and epistemological viewpoints that informed the research methodology

Ontology refers to the theory of being or existence (Nasution 2018; Heidegger 2008). It is essentially concerned with resolving the question, 'What is reality, and what shapes reality?' (Effingham 2013). The researcher's ontological beliefs enabled an assessment of the certainty of the nature and existence of the phenomenon under investigation. The ontological view that there are multiple truths or realities, and we can only learn about these multiple realities by understanding the meanings that research participants assign to the phenomenon being studied, influenced this study (Levers 2013; Erlingsson and Brysiewicz 2013). Truth or reality was viewed as relative and largely depended on how research participants perceived it.

Epistemology, also known as 'the theory of knowledge', is used to describe how we know what we know, why we believe what we think, and what standards of evidence we should utilise to discover truths about the universe and human experience (Sprague 2010; Audi 2010; Fumerton 2009). In simpler terms, it is how we find out about the truth or collect knowledge. The epistemological viewpoints underpinning the research methodology, data collection methods, and interpretation of findings have a substantial bearing on the emergence and understanding of new knowledge in this study. Epistemologically, the researcher believed knowledge is interpretative in nature. Knowledge was viewed as immeasurable and thus was subject to explanation.

A research paradigm is the guiding overarching framework for a researcher's approach to research, encompassing their ontological, epistemological, and methodological assumptions (Creswell and Creswell 2017; Crotty 1998). The epistemological and ontological perspectives of the researcher informed the development of the research paradigm guiding this PhD. The researcher's recognition of the possibility of multiple truths compelled the integration of multiple subjective perspectives into the research methodology. Therefore, the study adopted an interpretivist perspective, which considers knowledge as relativistic, pluralistic and subjective, with all constructions being relative to the researcher and the context (Potrac, Jones and Nelson 2014; Greene 1992). This perspective influenced the study's overarching aim of gaining an in-depth understanding of the complexities and lived realities of the non-

medical use of tramadol in Ghana. Furthermore, the gaps in evidence identified from the scope of the literature around the contributing factors, social effects and rehabilitation and support for non-medical use of tramadol reinforced the researcher's ontological and epistemological awareness. While reflecting on the research objectives formulated from these gaps, it was recognised that new knowledge should be gained through giving a voice and listening to persons who had experienced the non-medical use of tramadol. This was also because lived experience had not been prioritised in the existing literature.

3.4.1 Interpretivism

Interpretivism is a research paradigm that holds that reality is socially constructed and knowledge is shaped mostly by interpretations of the meanings humans ascribe to their actions (Ryan 2018). Interpretivism seeks to gain deep insights and is focused on the complex variables and factors related to the phenomenon (Alharahsheh and Pius 2020; Durden-Myers 2018; Saunders, Lewis and Thornhill 2007). According to Creswell and Creswell (2017), interpretivist researchers appreciate the complexity and variability of social phenomena and tend to obtain a deeper understanding in a unique context. The study took an interpretivist stance to understand the social, cultural, environmental and economic factors influencing the non-medical use of tramadol. It focused on individual experiences and interpretations to gain a nuanced understanding of the issue, moving beyond simplistic explanations and generalisation.

In line with the interpretivist understanding, this study recognised that the reality of the non-medical use of tramadol is complex and multifaceted, and, therefore, lent itself to multiple interpretations which could be developed among those who had experienced it first-hand (Hammersley 2012). The interpretivist framework thus enabled the buried nuanced understanding that different people assigned to their experiences of tramadol's non-medical use, to enrich the researcher's knowledge of the phenomenon. Moreover, the researcher was drawn to the notion that all perspectives on a given topic are equally important in determining its nature and scope (Rorty 2020), which aligns closely with the fundamental tenets of interpretivism. It was believed every person with a history of using tramadol for non-medical purposes had a unique experience, and the interpretation they assigned to this experience was considered valid. This is consistent with the idea that reality is subjective and determined by the people experiencing and making meaning of it (Guba and Lincoln 2005). This study understood that there are diverse ways of perceiving and interpreting tramadol use, and research participants had the capacity to provide rich insights and interpret meanings in considerable detail (Pham et al. 2017). The researcher was willing to accept that people would

communicate the reality and sensitivities of non-medical use of tramadol based on their own experiences.

Furthermore, this study acknowledged that individuals construct their own reality and aimed to understand tramadol use based on their experiences and interpretations of that construct. Interpretivism acknowledges the interactive and interpretive nature of research (Hay 2011). This perspective refutes the notion that the researcher is a detached observer and acknowledges their active involvement in understanding and interpreting the data (Schwandt 1994). In this study, the researcher acknowledged that complete detachment from the people being investigated was not possible. The researcher was inextricably involved in the construction of the understanding of the non-medical use of tramadol.

Consequently, the theoretical perspective of interpretivism was considered well-suited for this study as it acknowledges the complexities and subjectivities of reality and knowledge and the importance of understanding social phenomena through the lens of the people involved. Evidently, the complexity of tramadol use necessitates a comprehensive approach that considers the perspectives and experiences of the individuals involved. This understanding can facilitate the development of interventions tailored to the unique needs and experiences of persons involved in tramadol use. Figure 11 presents a visual representation of the ontologically and epistemologically informed research paradigm guiding this PhD.

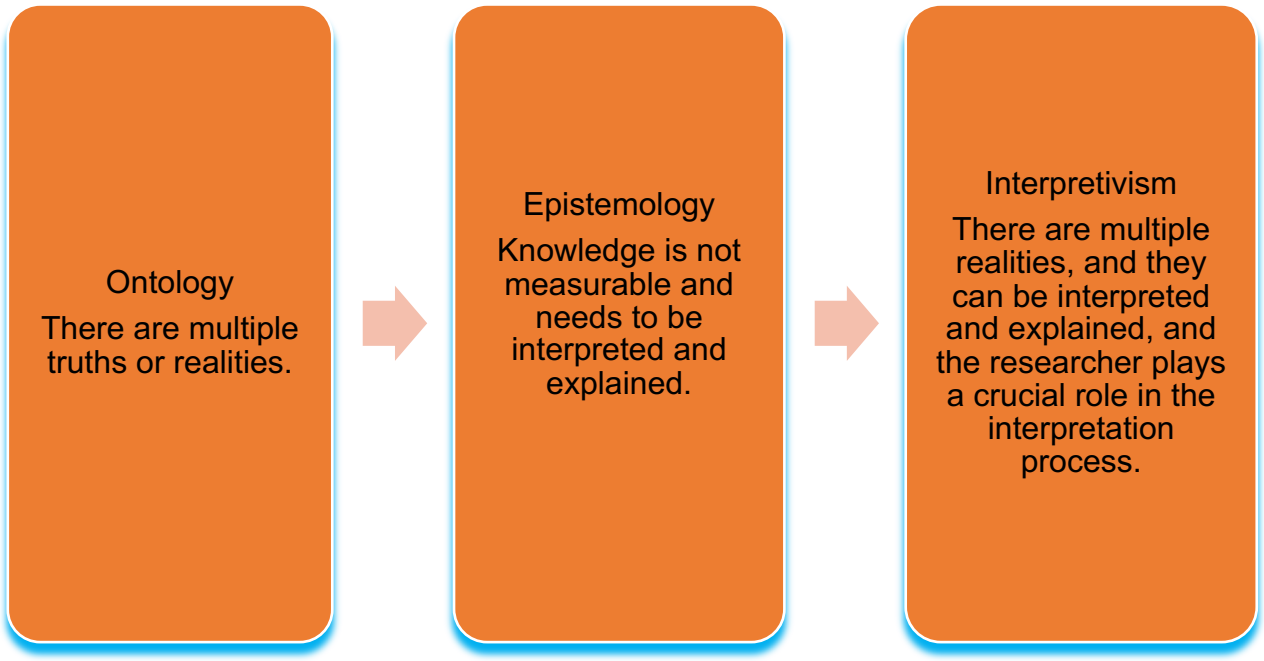

Figure 11. Summary of research paradigm guiding PhD.

3.4.2 Positivism

To further demonstrate why interpretivism is suitable for this study, other philosophical perspectives common in research on tramadol use are discussed. Positivism is a philosophical viewpoint, founded on the ontological assumption that only one reality exists independent of the observer (Stahl 2007). Epistemologically, positivist research seeks to discover knowledge through objective approaches like observation and measurement and prioritises drawing conclusions based on quantifiable data (Babbie 2020; Scotland 2012; Poole and Jones 1996). It upholds a singular view of reality, dismissing the possibility of multiple perceptions of a phenomenon, and avoids subjective human interpretation, favouring generalisable quantitative methods and hard data (Scotland 2012; Saunders, Lewis and Thornhill 2009).

Quantitative research aims to assess facets of a phenomenon and explain any variable changes between groups or over time using hypothesis testing (Creswell and Creswell 2017; Polit and Beck 2008). A hypothesis is a proposed explanation based on limited knowledge that serves as a starting point for further investigation (Creswell and Creswell 2017). The primary investigative method is experimenting, often employing randomised controlled trials to evaluate interventions, such as tramadol's effects on physical performance (Holgado et al. 2018). Various study designs are used, including cross-sectional studies to assess prevalence such as tramadol abuse among college students (Bashirian, Barati and Fathi 2014), case-control studies to identify causes by comparing affected and unaffected groups, and retrospective studies that observe a population using existing datasets to determine behavioural or feature associations with the phenomenon, for example tramadol abuse among patients attending an addiction clinic (Ibrahim et al. 2017).

Positivist approaches validate findings on tramadol use by providing numerical data and establishing causal links (Choy 2014; Finlay 2011), but may overlook the nuanced, complex, and individualised experiences and contextual meanings associated with it. These meanings, shaped by cultural, social, historical, and individual factors, are better understood through a qualitative approach, as they may not be adequately represented by numerical data alone (Denzin and Lincoln 2011).

3.5 The rationale for using a qualitative methodology

The interpretivist perspective, with its focus on the complexities and subjectivities of human experiences, naturally led to the adoption of a qualitative methodology for this study. Qualitative methodology, as outlined by Patrik Aspers (2019), is adept at exploring and

interpreting the complexity and variation of human experiences, behaviours, and social phenomena and therefore aligns with the study's aim of deeply understanding the complexities and lived realities of tramadol use. This methodological choice is characterised by its integrative and contextual nature, delves into exploring the meanings that underlie the social world, and encourages inductive and exploratory methods for data collection and analysis (Denzin and Lincoln 2011). In qualitative research, non-numerical data, gathered through varied mediums like interviews and observations, facilitate understanding perspectives, cultural practices, and societal processes, generating nuanced, contextual knowledge (Fossey et al. 2002).

Qualitative methodology is a suitable way of collecting sensitive data from seldom heard populations of people who use substances, and is ideal for capturing the complexities and ambiguities of individual drug use experiences (Sterk and Efilson 2005; Rosiek 2003; Fountain and Fountain 2000; Rahmati, Herfeh and Hosseini 2018). Furthermore, the selection of qualitative methodology was influenced by its potential to facilitate the understanding of meanings, which people who use tramadol ascribe to their behaviours, within the broader socio-cultural and political context. Additionally, the adaptability and flexibility of qualitative methodology made it suitable for exploring the volatile and fluid nature of drug use behaviours within varying contexts and timeframes (Trainor and Graue 2013).

3.5.1 Types of qualitative methodologies considered and why they were not selected for the study

Once qualitative methodology was deemed most suitable for exploring the subjective experiences and the complexities of the non-medical use of tramadol, the next step involved selecting the specific type of qualitative approach to utilise. Several qualitative methodologies, commonly used in researching drug use, were critically evaluated to ascertain the most appropriate type of qualitative method for the study.

3.5.1.1 Narrative analysis

Narrative analysis is a qualitative research method that analyses the content and structure of individual narratives or stories (Riessman 2008). Smith (2011) asserts that discursive methodologies like narrative analysis focus entirely on the linguistic elements used by participants to convey experiences and the conversational dynamics occurring during those accounts. The narrative analysis methodology concentrates on understanding how individuals construct and articulate their experiences via storytelling (Creswell and Creswell 2017). Even

though a narrative analysis could elucidate how individuals narrate their tramadol use experiences, it may have offered more surface-level insights into those experiences, possibly neglecting the deeper, psychological components and the intricate details of such experiences. The focus of a narrative analysis on identifying overarching patterns or themes in experiences (Riessman 2008), might have led to the oversimplification of the complex and varied experiences related to drug use, possibly missing the diversity and uniqueness of individual experiences.

3.5.1.2 Grounded theory

Grounded theory is an inductive approach to developing theory, based on evidence gathered during the research process (Charmaz 2014). The process entails an iterative approach to gathering and analysing data, which facilitates the generation of theories that arise from the patterns in the data (Charmaz 2014). Grounded theory was excluded because it is primarily focused on the generation of theories from data and may not have allowed the researcher to sufficiently prioritise the individual subjective interpretations to the extent required to answer the study's research questions. Moreover, the methodology entails a systematic and structured approach to formulating theories, potentially limiting the interpretive flexibility and reflexivity necessary for in-depth exploration of individual experiences of tramadol use (Charmaz 2014; Oktay 2012). Lastly, the approach may not have enabled the researcher to adequately focus on the contextual variables and meaning-making processes required to answer the research questions of the study (Charmaz 2014).

3.5.1.3 Ethnography

Ethnography is a research methodology that entails the examination of a particular community or group and its cultural beliefs, norms and behavioural patterns (Atkinson 2007). It employs methods such as participant observation, fieldwork, and in-depth interviews to gain a deeper understanding of social and cultural factors that underpin human behaviours (Spradley 2016; Spradley 1980). Several factors informed the non-selection of ethnography as the research methodology for this study. Firstly, it typically centres on the observation and description of social and cultural themes within the context of specific communities or groups rather than individual experiences, interpretations, and meanings (Denzin and Lincoln 2011). Additionally, like narrative analysis, ethnography often adopts a nomothetic orientation, aiming to identify generalisable patterns or trends applicable to a group or community, leaving little room for flexibility (Denzin and Lincoln 2011; Emerson, Fretz and Shaw 2011). The use of ethnography posed several practical difficulties, such as gaining access to drug-using communities due to

their marginalisation or stigmatisation, as well as their mistrust of individuals outside of their group, mostly connected to their fear of getting into trouble with law enforcement (Moore 2004; Bourgois 1996). It was recognised that the researcher would be required to cultivate trust and establish rapport with members of the community over time, which was not feasible within the designated period and resources for the PhD.

3.6 Taking a phenomenological look- prioritising lived experience

Lived experience entails understanding people's experiences, choices, values, and actions and how these elements influence their perspectives of their social world (Boylorn 2008). Individuals who use drugs are commonly labelled as `addicts', a term that carries substantial burden of moral and social prejudice as previously highlighted (NIDA 2021). People who are categorised as `addicts' are often perceived by society as lacking credibility (Luty and Grewal 2002; Waldorf and Reinarman 1975). Consequently, they experience epistemic injustice, which refers to the unfair treatment they receive in their capacity as knowers. This can occur either through being discredited based on prejudice or not being considered reliable to express and interpret their own experiences (Byskov 2021). Valuing lived experience aligned well with the argument of centring the voices of people involved in tramadol use and humanising them, as it acknowledged the nuanced and varied experiences of the population and sought to understand their perspectives, needs, and emotions non-judgmentally and respectfully. This approach also reflects the researcher's ontological and epistemological beliefs of trusting individuals' ability to explain and interpret their own experiences. Through a lived experience approach, people involved in tramadol use were offered the opportunity to tell their stories and share their insights on the subject.

Phenomenological approaches have been widely adopted in drug use research because of their emphasis on exploring people's subjective experiences and perspectives (Larkin, Watts and Clifton 2006; Smith 2004). These approaches are ideal for exploring the complex and often multifaceted nature of drug use, including the various emotional, social, and cultural elements that contribute to its emergence and persistence (Moore and Fraser 2006; Rhodes and Moore 2001). It was determined that a phenomenological approach which prioritised lived experience and interpretations would be well suited for providing valuable insights into the meanings and reasons behind tramadol use, ultimately informing the development of effective interventions and treatment programmes that cater to unique needs (Co and Canoy 2022;

Sarang, Rhodes and Sheon 2013; Larkin, Watts and Clifton 2006; Reid, Flowers and Larkin 2005; Smith 2004; Grund 1993).

3.6.1 Deciding on the type of phenomenological approach for the study

3.6.1.1 Traditional Phenomenology

The origins of Traditional Phenomenology can be traced back to the philosophical contributions of Edmund Husserl, a German scholar in the late 19th and early 20th centuries (Moran 2000). Variants of definitions of Traditional Phenomenology have emerged over time. Building on Merleau-Ponty, Maurice and Smith's (1962) assertion that phenomenology's objective is to provide descriptive accounts of the phenomena, Langdridge (2007 p.4) further elucidates it as "…….. the collection of naturalistic first-person accounts of experience…….". It is an approach that seeks to understand the fundamental nature of human experiences (Smith 2004; Moran 2000). Husserl's primary focus was the investigation of consciousness and the nature of experience (Moran 2000). Traditional Phenomenology entails exploring the lived experiences of people, their perceptions, emotions, and interpretations associated with a particular phenomenon which aligned with the goals and context of the study (Creswell and Poth 2016). Nonetheless, the focus is intricately placed on the mere descriptions and examination of experiences without necessarily engaging in an in-depth exploration of individual-level interpretations and meanings (Creswell and Poth 2016). Therefore, using this approach may have failed to account for the subtle nuances and complexities underlying individuals' interpretations of their tramadol use experiences.

Moreover, Husserl suggested that the key to understanding experience required the suspension of preconceived notions and perceptions, focusing on the immediate, first-person experience of the phenomenon being explored (Smith, Flowers and Larkin 2009). Husserl developed a technique called `bracketing' (Smith, Flowers and Larkin 2009). The researcher would be required to bracket pre-existing theories and preconceived notions on tramadol use and completely detach themselves from the analytical procedure (Smith 2004). It was recognised early in the study that the researcher's background, experiences and knowledge of the topic may influence the interpretation of how participants made sense of their experiences. Consequently, mindful of their own positionality and potential biases, the researcher took deliberate steps to navigate these influences. Away from this practical self-awareness to a philosophical standpoint, the ontological and epistemological perspectives underpinning the study recognised the critical role of the researcher in co-constructing

meanings with participants, therefore, Traditional Phenomenology was rejected.

3.6.1.2 Phenomenological Hermeneutics

Renowned philosopher and phenomenologist Martin Heidegger created his own distinctive approach to phenomenology that he called ‘Hermeneutics’ (Heidegger 1962). His work was profoundly influenced by Edmund Husserl, but he diverged significantly from Husserl's approach in a number of significant ways. Heidegger prioritised the study of `Being’ and the relationship between `Being’ and human existence over Husserl's investigation of consciousness and experience. Additionally, he critiqued the method of `bracketing’ in phenomenology. Bracketing, in his opinion, was inadequate for the purpose of attaining insight into the essential character of `Being’ (Crowell 2001; Merleau-Ponty 1962; Heidegger 1962). Heidegger (1962) advocated for a more comprehensive approach that highlighted the interconnectedness of many aspects of human experience and the context in which they occur. He argued that rather than simply describing immediate experiences, phenomenology should focus on revealing the underlying structures and meanings that affect our view of the world. The hermeneutic dimension to phenomenology originated from the belief that the stories we tell about our experiences are key to fully understanding and making sense of those experiences (Langdridge 2007). Hans-Georg Gadamer, a well-known philosopher, also made significant contributions to Hermeneutics. Influenced by Martin Heidegger, Gadamer believed that human understanding is shaped by historical and linguistic contexts, emphasising the significance of tradition and language in thought processes (Gadamer 1989). He proposed that understanding is not about following rules but engaging in a dialogue with the subject of interpretation, with his primary concepts detailed in "Truth and Method." (Gadamer 1989).

3.6.1.3 Applying the hermeneutic circle of interpretation

To generate the most accurate interpretation of a phenomenon, Heidegger proposed the use of the hermeneutic circle. According to Heidegger, understanding entails a cyclical movement between the whole and the parts, requiring the interpreter to understand the parts in the context of the whole and the whole in the context of the parts (Heidegger 1962). He asserted that interpretation is a process of bringing out the meaning that is already inherent in the events being researched, rather than decoding a pre-existing meaning (Heidegger 1962). By assessing the parts in relation to the whole and the whole in relation to the parts, and the contexts in which the whole and parts are situated, the hermeneutic circle encourages researchers to interact with their data in a dynamic, iterative, and non-linear manner (Eatough and Smith 2017). This concept informed the development of the double hermeneutic circle, a

term introduced by Anthony Giddens to describe a framework for conceptualising the iterative process of interpretation and understanding between the researcher and the participant in qualitative research (Debesay, Nåden and Slettebø 2008).

Anthony Giddens defined the double hermeneutic circle as: “The intersection of two frames of meaning as a logically necessary part of social science, the meaningful social world as constituted by lay actors and the metalanguages invented by social scientist” (Giddens 1986 p.347). In the context of the double hermeneutics circle, researchers must interpret the experience being described by participants while remaining cognizant of the fact these interpretations are based on the participants' own interpretations of the situations they have encountered (Jackson 2015). The process entails a dual and interrelated framework of interpretation, whereby the outer circle involves the researcher's interpretation of the participant's experiences, while the inner circle pertains to the participant's interpretation of their own experiences (Tomkins and Eatough 2018; Smith 2011). This process is repeated iteratively, with each new cycle of interpretation refining and deepening the researcher's understanding of the participant's experiences (Robinson and Kerr 2015). Figure 12 shows the hermeneutic circle as described by Anthony Giddens.

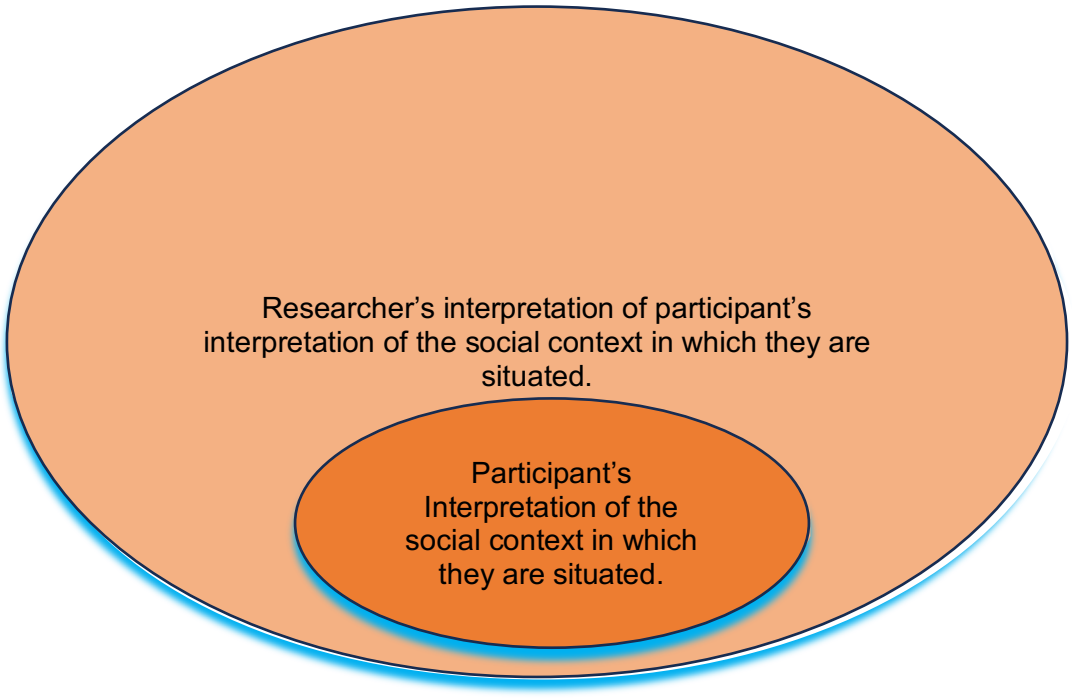

Figure 12. Double hermeneutic circle.

Phenomenological Hermeneutics is a methodology that merges phenomenology and hermeneutics to explore the interpretive processes that people use to make sense of their

experiences. It entails a reflective and interpretive analysis of data to reveal the underlying meanings and interpretations that people attribute to their actions (Rosfort 2019). The central idea of uncovering deeper meanings and interpretations that people assign to their behaviours by analysing the language, metaphors, and other linguistic cues used in their narratives aligned with the researcher's philosophical points of view, as it allowed a reflection on the researcher's preconceptions and biases throughout the process. Phenomenological Hermeneutics typically emphasises collective experiences and interpretations (Laverty 2003). Although collective experiences could be useful for gaining significant insights into the social and cultural variables that contribute to tramadol use, it was important to recognise that various power dynamics could influence these experiences and may not be representative of the experiences of all individuals within a group (Larkin and Thompson 2012; Smith and Shinebourne 2012). Furthermore, prioritising individual experiences could help offset stigma and discriminatory behaviour associated with tramadol use, as it recognises the broad spectrum and complexity of experiences within the population. Therefore, IPA, a type of phenomenological research approach that accounted for both individual and collective experiences, was determined to be the most effective approach for this study (Smith and Shinebourne 2012).

3.6.1.4 Interpretative Phenomenological Analysis

Interpretative Phenomenological Analysis is defined as a "qualitative research approach committed to the examination of how people make sense of their major life experiences" (Smith, Flowers and Larkin 2009 p.1). Emerging in the 1990s in the field of psychology, this phenomenological research approach, was first developed by psychologists Jonathan Smith, Paul Flowers, and Michael Larkin specifically to explore individual experiences and their interpretations of health conditions (Smith, Flowers and Larkin 2009). Smith (2011) indicates that, although it is theoretically feasible to use IPA in any type of experience, it is most frequently used to explore experiences that have existential significance for the participant. Tramadol use may not be thought of immediately as fundamentally existential, but it can have profound existential implications for individuals involved in it (Chen 2010). Therefore, IPA was deemed suitable as it is useful for understanding how individuals make sense of their experiences within the context of their social world (Giorgi and Giorgi 2003; Smith, Flowers and Larkin 2009).

The theoretical framework of IPA is based on the philosophical principles of phenomenology and hermeneutics, with the aim of facilitating a more profound understanding of the personal and subjective experiences of individuals (Eatough and Smith 2006). It is primarily concerned

with the exploration and examination of lived experience with special emphasis on how individuals interpret and make sense of their experiences to understand a particular phenomenon (Pringle et al. 2011; Tindall 2009; Reid, Flowers and Larkin 2005; Smith, Jarman and Osborn 1999).

The interpretive nature of IPA encourages scholars to look beyond content that is transparently evident in the data (Smith 2004). It adheres to the previously discussed double hermeneutic circle, iterative cycle of interpretation. The iterative nature of IPA is extremely valuable to drug use research, as they are complex and multifaceted phenomena that require a deep and nuanced understanding of individual experiences and perspectives. The iterative data collection and analysis process enabled the researcher to gain a comprehensive and in-depth understanding of the meanings ascribed to tramadol use.

Interpretative Phenomenological Analysis also goes beyond the Phenomenological Hermeneutic approach as it explores cases idiographically by according the same importance to every single case, and thereafter examining and identifying the divergence and convergence among their individual views (Pietkiewicz and Smith 2014; Finlay 2011; Charmaz et al. 1995; Smith, Flowers and Larkin 2009). The researcher adopts a person-centred approach and aims to fully represent each participant's view or story of the phenomenon under exploration through first-person accounts. The underlying principle of idiography is the in-depth examination of every unique case and perspective, before making general statements (Pietkiewicz and Smith 2014). The researcher thereby dwells on specific individual accounts because the analysis is based on a detailed case-by-case exploration. According to Smith and colleagues, another element that sets IPA apart from the traditional phenomenological approach is the consideration of the interpretation of both researcher and participants involved in the analytical procedure of the research (Smith 2018; Pietkiewicz and Smith 2014; Chapman and Smith 2002). Additionally, because it is essentially research participant-focused, it offers the researcher the opportunity to develop a bonding connection with the participants (Alase 2017). Prioritising individual experiences and perspectives also allowed the researcher to explore the complex interaction between emotional, social, and cultural factors that influence tramadol use, as well as the underlying structures and themes that shaped individual experiences.

Furthermore, IPA has been successfully employed in exploring experiences of similar stigmatised and vulnerable groups, including members of the LGBTQQIA community, prisoners, and homeless individuals (Nulty, Winder and Lopresti 2019; Farmer and Byrd 2015; Kennedy 2014; Davies 2011). Non-medical use of tramadol involves behaviour that is viewed as intimate, morally questionable and humiliating, making it a highly sensitive topic, as

highlighted in previous chapters. Therefore, IPA was deemed appropriate for this study due to the ability to handle nuanced, and complex lived experiences with sensitivity (Smith 2014). Interpretative Phenomenological Analysis was also found to be appropriate for exploring the suitability of rehabilitation and support services. When examining the acceptability and usefulness of an intervention or service, lived experience is a powerful approach (Deegan 1988). Marino, Child and Campbell (2016) agree to this being true for all services but especially useful for mental health services. The idiographic component of the IPA approach also aligns with acknowledging the importance of understanding and addressing the personal and individualised aspects of a person's experiences and challenges when designing interventions or providing support. This alignment is particularly relevant to the study's objective of exploring individual experiences with rehabilitation and support services, with the intention of identifying access and success barriers, as well as facilitators of positive outcomes.

To conclude, IPA was determined to be a useful and appropriate approach for studying tramadol use in Ghana. Through its emphasis on exploring individual subjective experiences and meanings, phenomenological framework, interpretative and reflexive analysis, and focus on contextual meaning-making, IPA offered a robust methodology for understanding the complexities and subtle nuances of tramadol use in Ghana. The choice of IPA significantly contributes to the progression of understanding within the field of non-medical use of tramadol and provides valuable insights for informing prevention, intervention, and policy initiatives. Having selected the IPA methodology, aligned with the study's aim, objectives, and the researcher's ontological and epistemological inclinations, the next chapter details the specific methods employed in this study to achieve the aim and objectives.

4 CHAPTER 4: METHODS

4.1 Chapter overview

The IPA methodology discussed in the previous chapter provided a guiding framework, influencing the choice of specific methods employed in this study. This chapter describes the methods used to achieve the research aim and objectives, which includes the sampling and recruitment strategy, data collection methods, data analysis process and ethical considerations. The rationale for using one-on-one face-to-face interviews is provided in this chapter. Furthermore, the theoretical concepts that influence the study and the steps taken to ensure the study's trustworthiness are also detailed. Personal reflective descriptions that entail the journey that the study has undergone, ultimately leading to its finality, are presented throughout the chapter to allow the reader to visualise the challenges and complexities of the research process.

4.2 Introduction

The study adhered to Larkin, Flowers and Smith's (2021) guidelines for IPA methodology. In addition, the study was informed by Smith's (2011) recommendations for producing a high-quality IPA postgraduate thesis. These guidelines were used to ensure methodological rigour and the highest standards of quality and validity in the data collection and interpretation process.

4.3 Context and setting

The study was conducted in the Ashanti and Greater Accra regions of Ghana. The Ashanti region is situated in the middle part of Ghana and represents the second most densely populated region in the country (GSS 2014a). The Greater Accra region, home to Ghana's capital city, Accra, is found in the southern part and is distinguished as the most populated region in the country (GSS 2014b). Both regions have experienced significant rates of urbanisation, characterised by thriving cities and cultural diversity (GSS 2014b; GSS 2014a).

A substantial proportion of the population in the Ashanti region relies on agriculture as their primary source of income (Ministry of Food and Agriculture 2021). Additionally, the region has several gold mines, which offer employment opportunities in the mining sector (Barenblitt et al. 2021; Mensah and Okyere 2014; Arhin 1978). Its capital Kumasi has several businesses and a central location for transportation and commercial activity (Poku-Boansi

and Cobbinah 2018). The Greater Accra region has a more diversified economy, with a higher concentration on services and industry than the national average (GSS 2014b). Wholesale, retail trade, transport, and equipment operation are common occupations in the area (Greater Accra Regional Coordinating Council 2016).

As indicated in earlier chapters, evidence suggests urbanisation is positively correlated with drug use and drug misuse (Galea, Nandi and Vlahov 2004). There are frequently parallel increases in social and economic pressures in densely populated areas that might fuel drug use and misuse (Galea, Nandi and Vlahov 2004). Furthermore, current literature underscores a high prevalence of tramadol abuse in occupations like mining, commercial driving, and farming (Saapiire et al. 2021; Danso and Anto 2021). The distinct economic landscapes of Ashanti and Greater Accra allowed for a diverse sample of participants, providing a nuanced understanding of tramadol use. The research was carried out in Kumasi and Accra, with the research interviews being conducted at one rehabilitation facility in each of these cities that offer essential treatment and support for individuals dealing with drug addiction.

4.4 Population and sample

The leading figures in the field of IPA, Smith, Larkin, and Flowers, note that determining the ideal sample size for an IPA study does not have a definitive answer (Smith, Larkin, and Flowers 2009). The appropriate sample size depends on several factors, such as the research questions and objectives, the richness of individual cases, depth of analysis, the researcher's intention to compare single cases and the complexity of the phenomenon under investigation (Pietkiewicz and Smith 2014; Smith, Larkin, and Flowers 2009). The organisational limitations within which the research is conducted may also influence the decision on sample size, further underscoring the multifaceted considerations involved in this determination (Smith, Larkin, and Flowers 2009). Notwithstanding these considerations, smaller concentrated samples are typically used to fulfil the idiographic commitment of analysing single cases and the aim of exploring the in-depth experiences (Larkin, Flowers and Smith 2021; Smith 2016; Pietkiewicz and Smith 2014; Smith and Shinebourne 2012; Smith, Flowers and Larkin 2009).

A priori sample size of 10 was targeted for this study, adhering to Clarke's recommendation of 4-10 for IPA doctorates (Clarke 2010). However, to comprehensively capture the complexity of tramadol use, the study ultimately expanded its sample size to 16, exceeding Clarke's recommended range. This modification aligns with guidance from Smith, Larkin, and Flowers (2009), who emphasise that determining the number of participants to include in an IPA study does not adhere to a rigid rule, as previously noted. Firstly, the study's exploration of a broad

spectrum of facets of tramadol use, including drug introduction and initiation, continuous use factors, its social consequences on various life domains and rehabilitation required a larger sample size than recommended to capture the diverse and nuanced experiences of the different aspects. Significantly, the research targeted three distinct subgroups including individuals who are not accessing rehabilitation, those engaged in rehabilitation, and those who have completed rehabilitation for their tramadol use. Consequently, a sample size of 16 was necessary to ensure a comprehensive exploration of experiences and perspectives within each subgroup. This sample size also allowed for a detailed exploration of the differences and commonalities in their experiences as well as an in-depth analysis of each case (Eatough, Smith and Shaw 2008; Eatough and Smith 2006).

Furthermore, given the depth and variety of experiences within these subgroups, a larger sample size was essential to reach data saturation, a key concept in qualitative research where the collection of new data no longer reveals additional insights (Braun and Clarke 2021). Moreover, IPA research with a sample of more than sixteen has been published (Castle, Greasley and Burland 2022). The research conducted by Castle, Greasley, and Burland in 2022, titled "The Musical Experiences of Adults with Severe Sight Impairment," although distinct in its subject matter, shares significant similarities with the present study on tramadol use. Particularly, both studies explore the emotional and psychological impacts on their participants. Music serves as a vital emotional and social outlet for those with sight impairment (Dorris et al. 2021), akin to how drug use interweaves with psychological and emotional states (Koob and Volkow 2016). This complexity highlights the need for a diverse range of experiences to understand these intricate emotional and psychological aspects fully.

Initial recruitment yielded 10 participants, only two of whom were female. Extra efforts were made to recruit four more women for a more gender diverse sample. Two pilot interviews were initially conducted to refine, assess the clarity and relevance of the interview questions, and ensure that they effectively elicited comprehensive and pertinent information. It also aimed to gauge the average duration of each interview, evaluate participant comfort and engagement levels, and identify any potential biases or unforeseen challenges in the interview process. However, the pilot interviews were later included in the analysis due to their unique insights, adhering to the idiographic commitment of IPA. Moreover, the conducting of internal pilot interviews with supervisors and gatekeepers, extensively discussed subsequently in this chapter, justifies the inclusion of data from these external pilots in the analysis, aligning with standard academic practice. The inclusion of these external pilot interviews and the additional female participants brought the final sample size to 16.

4.4.1 Inclusion criteria

Persons 18 years or older who lived in Ghana and had a history of tramadol use.

4.4.2 Exclusion criteria

- Persons who had no history of tramadol use.
- Persons who were below 18 years.
- Persons who did not live in Ghana.
- Persons who could not provide voluntary and informed consent.

4.5 Recruitment strategy

Purposive sampling was used to identify and select people who, based on their experiences, could provide rich information relevant to the phenomenon of interest (Rai and Thapa 2015; Larkin and Thompson 2012). All participants were recruited through drug support and rehabilitation service staff referrals. The researcher contacted six facilities that offer treatment, support and care for people with drug use and addiction problems. A brief introduction to the study was given verbally via phone calls to drug support and rehabilitation facility staff. They were asked if they would be interested in knowing more about the study. Four out of the six facilities expressed interest in the study and were subsequently sent emails explaining the research study in more detail (Appendix 8). Information shared in the email included: the study's objectives; eligibility criteria; data collection method; study duration; how privacy and confidentiality concerns would be addressed; and how potential risks would be minimised.

Following this stage, the researcher, being based in the UK and not in Ghana, made attempts to establish further communication with the four facilities to clarify and agree the next steps in the recruitment process. Despite these efforts, there were no responses to follow-up emails and phone calls. To address the challenges posed by the lack of in-person interaction, due to the researcher not being present in Ghana, a professional local contact was enlisted to assist with engagement. This contact, a public health practitioner, played a crucial role in building trust, as well as establishing rapport with gatekeepers. This approach helped the researcher overcome communication challenges and build connections with gatekeepers, enhancing access to essential information and resources needed for the successful recruitment of potential participants. After implementing this strategy, gatekeepers showed increased openness to interaction with the researcher. The researcher provided them with comprehensive information about their role in the recruitment process and satisfactorily

addressed all their queries regarding the procedure. Rehabilitation service staff were actively included in the research process, not just as gatekeepers but as partners. Their feedback on the interview guide was sought, acknowledging their expertise and contextual knowledge. This collaborative approach fostered a sense of ownership among the staff, facilitated recruitment, provided access to potential participants, and ultimately supported the research process.

The researcher maintained frequent and ongoing communication with rehabilitation and support staff during the ethics application and pre-fieldwork phases. This fostered trust and addressed any logistical or ethical issues. Rehabilitation and support staff also helped the researcher to gain access to potential participants who may have been hesitant to participate in the study. Their trusted and respected status within the community of persons with substance use disorders, enabled them to effectively endorse and introduce the researcher, thereby enhancing the study's credibility and making participants feel more comfortable to participate. Moreover, their ability to articulate the study's importance in terms that resonated with the group, further facilitated participation. Additionally, gatekeepers also provided valuable insights into the characteristics and needs of the potential participants. This proactive approach enabled early identification and resolution of recruitment barriers, including concerns about potential legal consequences of disclosing tramadol use and transportation challenges for non-residents of rehabilitation facilities, streamlining the eventual fieldwork.

Although four rehabilitation facilities expressed interest in the study, only two were able to successfully recruit eligible participants for the study. The reasons for the inability of the other two to recruit included the lack of current residents with a history of tramadol use at their rehabilitation facility, challenges reaching out to individuals who had completed the programme and lack of contact mechanisms for people not enrolled in their rehabilitation programme. The researcher actively recruited three distinct groups of participants, with the first consisting of people currently accessing rehabilitation and support services for their use of tramadol. Rehabilitation facility staff used medical reports and researcher-provided screening questions (Appendix 9) to confirm their eligibility. The second group consisted of people who had never engaged in a rehabilitation programme for their use of tramadol. Rehabilitation service staff initially identified two such individuals during routine outreach and screened them for eligibility using researcher-provided screening questions. Additional participants in this group were then recruited using a snowball sampling method, where initial recruits are asked to suggest other contacts who might meet the study's eligibility criteria and are potentially willing to participate (Parker, Scott and Geddes 2019). The suggested participants were screened for eligibility, and those who met the study's criteria were included. Those who did not meet the profile were thanked for their interest and excluded from the study.

The snowball sampling method helped to extend the participant pool by leveraging the networks of initially selected individuals.

The last group comprised individuals who had previously engaged with rehabilitation and support services for their use of tramadol and were in recovery. Staff contacted potential participants who had completed the rehabilitation programme in their facilities and informed them about the study. Participants who expressed an interest were then screened by the staff for their eligibility using their previous admission records to the facility and the eligibility screening document. The rehabilitation service staff provided those who were eligible to participate in the study with the Participant Information Sheet (PIS). Further details regarding the PIS are provided later in this chapter. After reviewing the PIS with all participants, the researcher obtained informed consent prior to conducting interviews. As demonstrated in Figure 13, the journal entry documents personal reflections on the recruitment process.

Excerpt from a self-reflective journal entry on recruitment process.

November 8, 2021, 10:40 am

I am starting to think trying to reach gatekeepers in Ghana from here in Aberdeen is nearly impossible. Despite receiving positive feedback during their initial interaction, some gatekeepers have not responded to subsequent communication attempts via both phone and email. In light of these challenges, I am considering the possibility of engaging a local contact who could conduct an in-person meeting with them on my behalf.

Figure 13. Excerpt from a self-reflective journal entry on the recruitment process.

4.6 Data collection methods

Various methods are available for gathering qualitative data, such as conducting interviews, organising focus groups, engaging in participant observation, and doing a document analysis (Patton 2014). The methods are generally of an exploratory nature, with the objective of producing comprehensive and detailed data that can be analysed to acquire a deeper understanding of the social phenomena being investigated (Creswell and Creswell 2017; Denzin and Lincoln 2011). One-on-one semi-structured interviews, widely accepted as the

most suitable data collection method for conducting IPA research (Pietkiewicz and Smith 2014), were used to gather data in this study.

4.6.1 Justification for using one-on-one face-to-face semi-structured interviews

The semi-structured format allows for flexibility in the interview process, making it ideal for gaining a deeper and more nuanced understanding of the research topic (Ruslin et al. 2022; Sankar and Jones 2007; Fylan 2005). To keep the interview focused on the study's aim and objectives, the researcher followed an interview guide (Appendix 10) (Gill et al. 2008). As Kallio et al. (2016) posit, while an interview guide provides a focused direction for the discussion, it does not necessarily dictate it. This flexibility enables the researcher to explore emerging themes from earlier interviews with subsequent participants. In pursuit of an in-depth understanding, follow-up questions are asked depending on participants' initial responses to allow the researcher to probe interesting areas that come up (Kvale and Brinkmann 2009; Chapman and Smith 2002). This probing technique can be a useful method for enhancing the reliability of the data collected as it facilitates the clarification of interesting and relevant issues raised by the respondents (Hutchinson and Wilson 1992). Furthermore, Horton, Macve and Struyven (2004), highlight that it enables the researcher to explore and clarify inconsistencies within participant narratives.

Questions in the interview guide included "Can you tell me about how you started using tramadol?" with potential follow-up prompts like "How long ago was this?" and "How old were you when you started using tramadol?" to explore experiences around their initial use. Additionally, participants were asked "Do you think tramadol has affected you?" with subsequent prompts like "In what areas of your life do you feel tramadol use has had an impact?" Further potential probing questions such as "Has using tramadol influenced your personal life, and if so, how?" and "Do you feel it has impacted your family life or relationships, and in what ways?" were also included in the interview guide.

Conducting one-on-one interviews provides privacy for participants, and a safe space to share their experiences and perspectives with the researcher (Rubin and Rubin 2011). Beyond privacy, the approach affords participants a certain level of autonomy to articulate their experiences and perspectives. Additionally, face-to-face interaction aids in fostering a sense of trust and rapport between the researcher and the participant and encourages participants to share more freely and provide in-depth insights into the phenomenon (Fontana and Frey 2005). Reinforcing this perspective, Patton (1990) emphasises that face-to-face semi-

structured interviews through rapport building offer a safe space which reduces the potential of socially desirable answers. Lastly, face-to-face interviews allow the researcher to observe non-verbal cues such as tone, body posture, and facial expressions to clarify participants' responses and enhance the interpretation during the analysis process (Knapp 2013a). Moreover, non-verbal cues in semi-structured interviews can reveal valuable information that may not be obvious through verbal communication alone (Ruslin et al. 2022; Fontana and Frey 2005).

4.6.2 Pilot test of interview guide

The interview guide underwent multiple review stages for refinement. First, the supervisory team assessed its clarity, suitability and relevance, suggesting additional questions. The revised guide was then pilot tested in two separate mock interviews with a medical practitioner and an SUD counsellor. They offered feedback on the linguistic and tonal aspects, as well as on their perceived relevance of the questions. After incorporating this feedback and discussing with supervisors, the final interview guide was established, ensuring it was well-aligned with the research objectives. Overall, the pilot tests ensured the adequacy and suitability of the questions and provided the researcher with an opportunity to rehearse interviewing techniques, affirming the assertions of Majid et al. (2017). Similarly, and supported by suggestions of Kvale and Brinkmann (2009), it also helped to identify limitations of the interview design and allowed for further modifications where necessary. For example, to streamline the interview process and allow for more time for an in-depth discussion, demographic questions were removed from the main interview and instead, participants were asked to fill out a short demographic form beforehand. This adjustment significantly reduced the interview length.

Additionally, the structure of the opening questions was refined for more focused responses. For instance, the question “Can you tell me about your experience using tramadol?” was changed to "Can you tell me about your use of tramadol at the moment?" to elicit more specific information. Similarly, "Can you tell me about the first time you used tramadol?" was modified to "Can you tell me about how you started using tramadol?" Moreover, to avoid leading the participants, some questions were rephrased. For example, rather than asking "How could rehabilitation and support services/programmes information be made more accessible to you?" participants were asked a series of open-ended questions about their awareness, consideration, and potential barriers to using support and rehabilitation services, and suggestions for overcoming these barriers. These changes, guided by the pilot test feedback, were aimed at enhancing the clarity, focus, and reliability of the data collection process.

4.6.3 Conducting interviews

The researcher travelled to Ghana to conduct one-on-one face-to-face semi-structured interviews. Interviews involved asking informal and open-ended questions and lasted approximately 35-90 minutes. The researcher asked follow-up questions based on the participants' initial responses to explore and further elaborate on any topics that emerged as particularly interesting. Participants were encouraged to be open and forthcoming with the researcher at the beginning of each interview to build rapport. The researcher also informed participants that there were no right or wrong responses to the questions that would be asked. According to Shenton (2004), employing these strategies ensures that participants can freely share their experiences and perspectives without apprehension of compromising credibility in the eyes of the researcher.

A list of preliminary themes that emerged from earlier interviews was available to the researcher when conducting subsequent interviews, to facilitate the researcher's ability to identify themes raised by participants and probe further. While finding the pre-identified themes useful, the researcher avoided excessive reliance on them to prevent a disproportionate focus on them. Each interview was approached with an open mind with consistent reflection on the interview process to identify any potential new themes that may have been overlooked. Adhering to the phenomenological principles underlying the study's methodology, the researcher followed Fade's advice of refraining from asking questions that were not specifically raised by the participants themselves (Fade 2004). This served to prioritise the participants' own perspectives and experiences, resulting in the emergence of themes and patterns that were more closely aligned with their lived reality.

The researcher, fluent in both English and a local dialect (Twi), conducted thirteen interviews in Twi, one in English, and two in a mix of both languages. All interviews were audio-recorded using an encrypted handheld audio device. The researcher also noted non-verbal cues and wrote field notes during and post-interview. Data saturation was perceived to be reached after the 16th interview, as it appeared that no new perspectives were emerging, and themes became repetitive (Fusch and Ness 2015). A detailed account of the transcription and translation process is available in the data analysis section. Section 4.10 comprehensively addresses the measures implemented to ensure the safety of both participants and the researcher during interviews. Figure 14 illustrates the journal entry documenting personal observations and reflections during the interview-conducting phase.

Excerpt from a self-reflective journal entry on conducting interviews

December 14, 2022; 10:06 am

It has been difficult to navigate the emotional challenges that the participants' distressing encounters have brought me. The stories shared by female participants this week particularly have deeply affected me. I have had disrupted sleep patterns and generally felt really sad. Reflecting on the intensity of these experiences, I am looking forward to my upcoming therapy session on Thursday as an opportunity to process, debrief and address the emotional toll this has taken on me. What a week!

January 20, 2023; 8:12 am

Participants frequently used stigmatising terms like "abuse," "addict," and "junkie". I assume they have internalised the stigma as they are now absorbing the common societal perception that drug use reflects poorly on one's character. Or are these derogatory terms being used as a form of self-deprecation or humour to cope with their situation or to mitigate the potential judgement of others? I imagine that they are trying to reclaim or disarm the stigmatising language and lessen the impact of potential stigma from others by using these terms pre-emptively. I am aware that this preconceived notion might influence how the data are coded and categorised during analysis because I might actively search for instances where participants use self-stigmatising terms and group those instances under themes related to internalised stigma. It will be interesting to find what using these words mean contextually once it is situated in the whole interview.

Figure 14. Excerpt from a self-reflective journal entry on conducting interviews.

4.7 Data management and handling

Participants were assigned a unique research identification (ID) number once they had given their consent and were enrolled in the study. All participant data collected and analysed for the study were stripped of names and other identifiable data and linked to their ID number.

The utilisation of pseudonyms was considered as they are deemed advantageous in establishing a more personable and relatable participant experience (Clarke and Braun 2013). Given the sensitivity of tramadol use, there was a risk that chosen pseudonyms might inadvertently resemble participants' actual names or carry specific cultural, gender, or linguistic connotations, potentially leading to identification. Therefore, to ensure an enhanced level of anonymity and protection for the participants (Hesse-Biber and Leavy 2010; Guest, Bunce and Johnson 2006), the study opted for the use of participant ID numbers instead of pseudonyms.

All electronic data (audios, transcripts and typed field notes) were stored on user-restricted R-Drive on the Robert Gordon University network. Files were uploaded onto R-Drive using participant's personalised ID number, after which interviews were deleted from the digital recording device. Field notes were also shredded after being typed in the recommended format and transferred onto R-drive. The data linking personal information to participant ID numbers were stored separately on the R drive. Only persons identified within the approved Ethics protocol (the researcher and supervisory team) accessed research data (audios, transcripts and typed field notes). Technical University staff also had authorised access to R-drive for network maintenance purposes. Robert Gordon University owns the copyright of the data generated.

4.8 Data analysis

The collected data were analysed using IPA's analytical framework, detailed in this section. As discussed in the preceding chapter, IPA methodology adheres to a double hermeneutic process which consists of two distinct stages of analysis (Larkin, Flowers and Smith 2021; Smith 2011; Smith, Flowers and Larkin 2009). Interpretative Phenomenological Analysis conceptualises the aspect of part/whole dynamic within the double hermeneutic framework as a set of interrelated connections that can be used to engage in an interpretive analysis of the data (Eatough and Smith 2017). The phrase "trying to make sense of the participant trying to make sense of what is happening to them" sums up IPA's analytic framework (Smith, Flowers and Larkin 2009 p.3). In this study, the initial stage of analysis involved describing participants' subjective interpretation of their experience with the use of tramadol. The researcher identified key features in the data which were transparently present in the transcribed text. The key features identified in this stage were further explored in the second stage of the analysis, which involved the researcher's interpretation of how the participant interprets their experience with tramadol use.

Furthermore, the IPA methodology emphasises the importance of analysing interviews sequentially, which entails reading each interview transcript in detail before contrasting and comparing them to find patterns and themes that appear across several interviews (Larkin, Flowers and Smith 2021; Larkin, Shaw and Flowers 2019; Smith, Flowers and Larkin 2009). While this sequential analysis is a common practice across qualitative research, the IPA approach involves a deep engagement of each participant narrative, allowing the researcher to immerse themselves in the specific nuances of each single case as opposed to beginning with a broad coding of the data set. Therefore, the analysis was conducted case by case, thoroughly examining each of the 16 participant narratives.

4.8.1 Transcription process

The researcher listened carefully and repeatedly to audio recordings. Subsequently, each audio-recorded interview was transcribed by the researcher. English interviews were transcribed verbatim, while Twi recordings underwent simultaneous translation and transcription into English. Literature highlights the potential for bias in translating interview data in qualitative research, particularly in the risk of losing or altering nuances, cultural references, and idiomatic expressions unique to the original language (Abalkhail 2018; Behr 2015; Inhetveen 2012; Kirkpatrick and van Teijlingen 2009; Lopez et al. 2008; Smith, Chen and Liu 2008). Academics argue that a researcher whose native language differs from that of study participants may inadequately interpret meanings, as language is deeply tied to culture (Mackey and Gass 2021; Lopez et al. 2008). Missing these nuances is especially critical in studies involving sensitive topics like drug use, where language is shaped by cultural and societal norms. The researcher's fluency in both Twi and English facilitated translations that preserved cultural nuances. While this linguistic capability was beneficial, it did not entirely eliminate the possibility of biases.

To further mitigate biases and address limitations, a translation protocol was employed, enhancing the authenticity and credibility of the translated data (Piazzoli 2015). The protocol included several key steps, starting with the researcher translating the interviews literally, with the order of words and tone of the participant’s response maintained as closely as feasible after thoroughly listening to audio recordings. To achieve this literal translation, paralinguistic features such as pauses, volume changes and laughter were included as notes in the transcript. Additionally, descriptive annotations detailing aspects like soft spoken responses and voice breaks were made. For unfamiliar words or idiomatic expressions that were not clarified during the interviews, the researcher consulted a Twi glossary or dictionary. In instances where these resources did not provide clarity, consultation with a Twi language

expert was sought, ensuring adherence to the study's confidentiality standards. To reduce the risk of misinterpretation and loss of intended meaning by participants, Smith, Chen and Liu (2008) propose ensuring that the original words, phrases, and concepts are closely situated within the context of the interview. Therefore, in instances where a direct translation did not accurately capture the intended meaning within the context of the conversation, the contextual translation was added in parentheses for clarification, as advocated by Lopez et al. (2008). Terms and phrases that had a high risk of being contextually lost were left verbatim in the transcript. Finally, the researcher proofread the translated material to ensure consistency in vocabulary, style, and tone by listening to the audio while reading. Any inaccuracies and omissions made during the translation process were identified and resolved at the proofreading stage. Figure 15 presents a summary of the translation protocol used in the study.

Documenting and reflecting on any potential biases and preconceptions that may have been introduced throughout the translation process is imperative for maintaining the credibility and trustworthiness of qualitative research (Braun and Clarke 2019; Temple and Young 2004). In alignment with this, the researcher documented their feelings, thoughts, and reflections about the translation procedure in their self-reflective journal. This enabled them to recognise any biases or preconceived notions they might have had and consider how these could have affected the translation process. Excerpts from journal entries documenting personal reflections during the transcription and translation phase are shown in Figure 16.

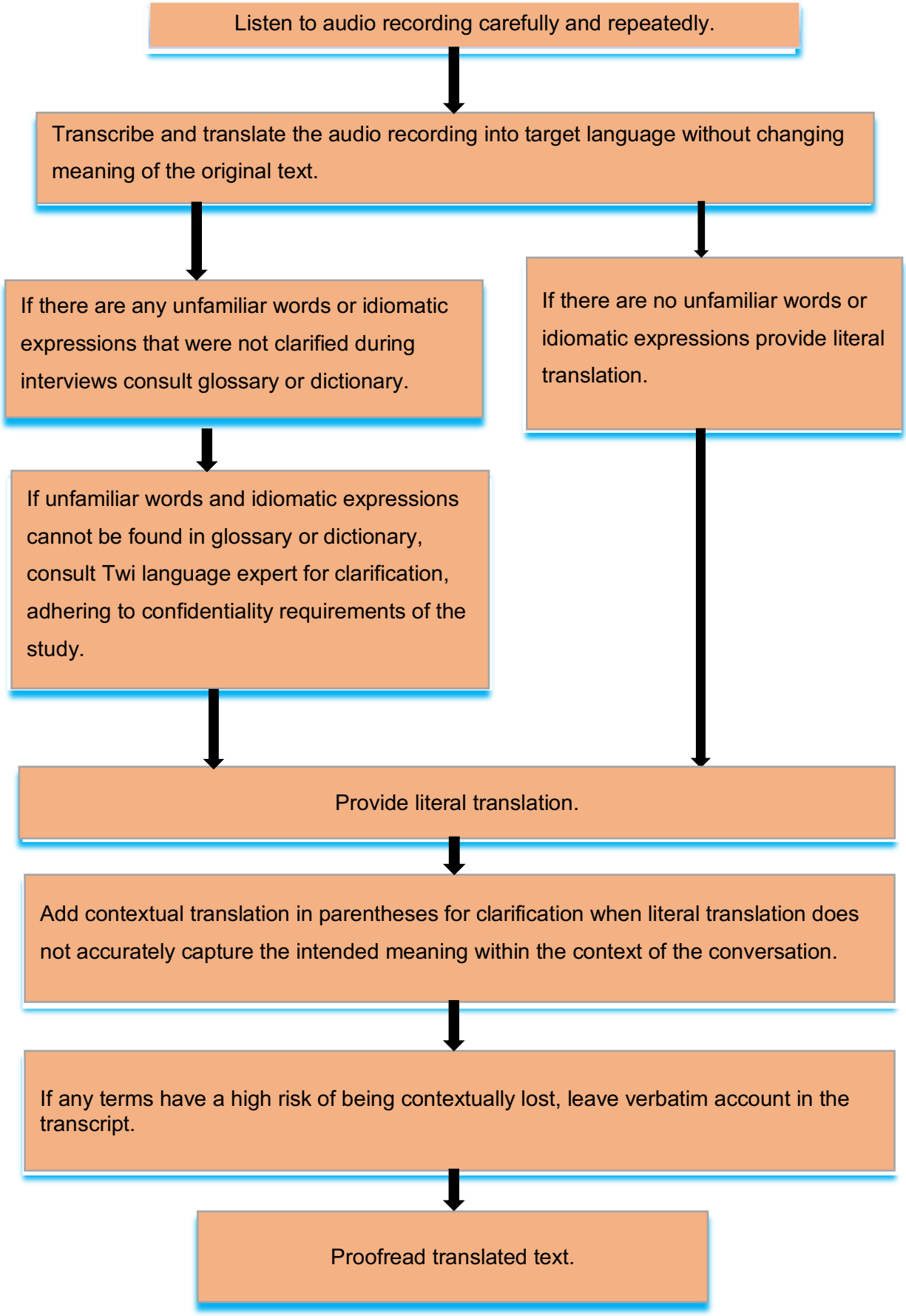

Figure 15. Summary of translation protocol.

Excerpt from a self-reflective journal entries on transcription and translation process.

October 27, 2022, 9:31 pm

I have been surprised by how frequently participants used terminology such as "addiction". I suppose my greatest concern prior to the translation process was how they were going to refer to such terms in the local dialect and how I would translate them to preserve their meanings in the context of the interview.

February 7, 2023, 8:10 am

Today marks the end of my translation and transcribing of interviews. During the process, I was struck by the amount of time and effort it took to make sure the translated material was accurate and reliable. It involved multiple rounds of translation, review, and revision to ensure that the translated text accurately conveyed the original meaning and intent of the participants.

December 9, 2022, 1:21 pm

*I am translating and transcribing interview 13 and have encountered an unfamiliar word, "basate", which does not appear to be an existing word in Twi or English. Instead, it seems to be a slang used by the participant. To gain a better understanding of its meaning, the term has to be contextualised within the participant's dialogue at the time of its use. This is interestingly the only time I did not seek clarification for an unfamiliar word during the interview. ***Make sure to provide a note in the translated content explaining the ambiguity around the term.** Or is it possible to reach out to the participant post-interview for clarification?*

Figure 16. Excerpt from a self-reflective journal on the transcription and translation process.

4.8.2 First level interpretation

4.8.2.1 Read and re-reading transcript to know the data

Repeatedly and carefully reading the text is central to IPA analysis (Smith, Jarman and Osborn 1999). The researcher critically read and re-read the interview transcripts and field notes to familiarise themself with the textual data. This stage of the analysis was extremely important as it allowed the researcher to immerse themselves in the data, observing patterns and insights that were not immediately obvious on first reading. Through the repeated readings of the textual data, the researcher was also able to critically reflect on their assumptions, biases, and values that could influence their understanding of the participants' meaning making further on in the analysis process.

4.8.2.2 Initial noting

Once the researcher had an overall sense of the data, it was possible to engage in a preliminary analysis, making initial analytical notes on the data and highlighting key phrases, sentences or ideas that stood out as interesting and significant. The researcher's initial thoughts on the participant's textual statements were briefly summarised in these analytical notes. It was occasionally appropriate to label the note exactly as it appeared in the text as suggested by Fade (2004). Questions such as "What mattered to the participant, and what did the text mean to them? How was the participant articulating their experience? What emotions were reflected in the participant's accounts of their experiences?" were often necessary for naming the note. These questions helped the researcher understand participants' perspectives, their manner of expression and emotional nuances, thus ensuring the analytical notes accurately captured the essence of their narratives. It is noteworthy that the researcher was able to accurately recall the identity of participants and the emotive cues conveyed through tone of voice, facial expressions, and body language throughout the entire analytical process. This observation highlights the profound and significant connection with the data, emphasising the deep and personal nature of qualitative research (Creswell and Poth 2016; Smith, Flowers and Larkin 2009). Appendix 11 shows examples from the initial noting process of Transcript 1.

4.8.3 Second level of interpretation

4.8.3.1 Identifying emerging themes for each case

The next stage of interpretation involved a thorough evaluation of the initial notes on the data, formulating themes based on the features documented in the notes. This entailed examining the language and metaphors that participants used to describe their experiences and understanding how these contribute to the meanings they attribute to those experiences. Some important questions asked during this stage included “What is the participant trying to achieve in this context? Is there anything meaningful conveyed in this statement which was not necessarily intended? Do I have an impression of something going on here that the participant is possibly less aware of?” (Pietkiewicz and Smith 2014). How is this statement comparable to other similar statements in the data? (Fade 2004). According to Smith, Jarman and Osborn (1999), themes should not be chosen solely based on their frequency of occurrence. Important considerations include the articulacy with which texts illustrate themes; perhaps the eloquence of one participant's summary best encapsulates what many others sought to say in more words and less precisely. Additionally, the extent to which a theme facilitates the understanding of other elements of the narrative is also a crucial factor to consider (Brocki and Wearden 2006).

Observing and recording non-verbal cues at the interview stage proved particularly beneficial during this stage as it allowed the researcher to gain a more contextualised understanding of the participant's experience and how they made sense of it (Hubbard and Burgoon 2019; Knapp 2013). Indeed, the significance of non-verbal communication in research cannot be overstated. It is possible, for instance, that a participant's non-verbal behaviour recorded during the interview suggests an entirely different emotional state or intensity compared to the emotion they expressed verbally. When developing themes, Brocki and Wearden (2006), urge that IPA researchers make an extra effort to verify that each theme is reflected in the transcripts. Following this, the researcher checked for consistency and coherence within and throughout the transcript as themes were generated, ensuring that the themes and notes were grounded in data and accurately reflected the content and context of the interview. Some of the themes were refined based on this procedure.

4.8.3.2 Searching for connections across emergent themes in each case

The objective of this stage is to identify a cluster of themes and to determine superordinate themes that reveal a hierarchical correlation among them (Biggerstaff and Thompson 2008).

This process involved analysing the various themes developed and looking for any association between them. This involved asking questions such as “How do the themes relate to each other? What connections can be made between them? Are there any patterns or trends that emerge?”. Fade (2004) highlights the effectiveness of a strategy that involves asking questions about a specific theme and subsequently examining whether other themes relate to or address those questions to find connections across themes. This approach facilitated the meaningful clustering of themes in this study. It is pivotal to note that other themes did not necessarily belong to a group. The researcher was able to identify the superordinate themes by examining the similarities between the sub-themes. Following Collins and Nicolson (2002) and Smith and Osborn (2015)’s recommendations, the original transcripts were re-read to verify that the researchers' interpretations were consistent with the participants' narrative.

4.8.3.3 Repeating the analytical procedure for the next case

The researcher repeated the analysis procedure with each of the subsequent cases. At this point, the researcher was aware of the themes formulated from earlier cases but approached the analysis with an open mind to ensure the uniqueness of the subsequent cases was adequately represented. As new themes emerged, it was useful to retrospectively revisit earlier interviews to ensure these themes were not overlooked during the initial analysis.

4.8.3.4 Identifying the commonalities and divergence between cases

The final stage of the analysis consisted of identifying similarities and differences between themes across all 16 cases. According to Larkin, Flowers and Smith (2021), this stage typically entails a thorough examination of each individual case's identified emergent themes. The researcher focused on the themes that emerged within each individual and conducted a cross-case analysis to examine how the experiences and perspectives of the participants converge and diverge. This process of comparing emergent themes across cases enabled the researcher to identify broader patterns and trends relevant to the use of tramadol and revealed insights into the unique experiences and perspectives of individual participants. The entire analysis process involved discussing the interpretations derived at each stage with the supervisory team. This activity helped ensure the interpretations were thoroughly examined and misinterpretations were resolved. The valuable insights and constructive feedback provided by the supervisory team added an additional layer of scrutiny and enhanced the overall credibility and reliability of the study. The NVivo software proved useful for organising and managing the data (Castleberry 2014). The use of NVivo allowed the research findings to be presented in a structured manner, including relevant quotes or examples from the data.

As shown in Figure 17, the excerpt from the journal entry provides an introspective look into the processes and challenges of data analysis.

Excerpt from a self-reflective journal entry on the data analysis process

March 31, 2023, 9 pm

Participant 11 disclosed their involvement with a religious leader to seek assistance with their non-medical use of tramadol. The intervention entailed prayer and adherence to religious guidelines. My initial reaction to this was influenced by my prior knowledge of the subject and my expertise in public health, which led me to question or doubt the feasibility of such an intervention. Subsequently, though, I realised I had to adopt a more self-reflective stance, recognising the need to detach my expertise from the participant's communicated reality. It became imperative to avoid judging the authenticity or validity of the participants' experiences and instead concentrate on understanding their subjective perceptions of the help-seeking. journey.

Figure 17. Excerpt from a self-reflective journal entry on the data analysis process.

4.9 Theoretical concepts

While IPA is characterised by its exploratory nature, which seeks to generate new insights from the data, it can also be contextualised within a broader theoretical concept that guides the interpretation of the findings (Larkin Watts and Clifton 2006). As patterns emerged from the qualitative data, the researcher was prompted to engage with relevant theoretical concepts outside of the data, allowing for a deeper understanding of the emergent themes and their significance. According to Willig (2001), this is typically the point in an IPA analysis where psychological concepts and terms can be incorporated.

4.9.1 Sociological theory and public health ethics

The non-medical use of tramadol is a complex social and health problem deeply rooted in sociocultural and economic factors (Alhassan 2022b). Sociological theory provides a suitable

framework for exploring the complex interrelationship between sociocultural and economic factors and drug use and misuse (Calhoun et al. 2022; Wallace 2017). This theoretical perspective acknowledges how societal structures, systems, and cultural variables influence an individual's drug-related behaviour and attitudes (Adrian 2003). As previously indicated, Ghana's approach to dealing with the issue of tramadol use is the criminalisation and enforcement of stringent regulatory laws to regulate the drug's use. This study argues that such an approach may have unintended negative consequences for public health and disproportionately affect vulnerable populations. Public Health Ethics, as a theoretical concept, acknowledges the ethical principles that underpin public health policy and practice, such as the principle of beneficence and non-maleficence (Mastroianni, Kahn and Kass 2019; Lee 2012). It is fundamentally concerned with treating everyone with respect and dignity, even when they engage in harmful behaviour (Faden, Bernstein and Shebaya 2010; Jürgens 2005). In the context of tramadol use, this entails humanising people who misuse the drug and acknowledging that they are individuals who may be dealing with a diverse array of personal and social issues.

This thesis engaged with these theories as concepts to understand the multifaceted determinants of tramadol use and the implications for individuals involved and public health. Both concepts illustrate how the intersection of sociocultural and economic factors and ethical considerations creates a complex issue that cannot be addressed through just legal or regulatory strategies. Therefore, adapting them provided a more comprehensive understanding of the complexities and realities of tramadol use. Particularly, this thesis argues that a multidimensional strategy that addresses the fundamental factors of use, such as challenging socioeconomic circumstances, emotional difficulties, and lack of access to rehabilitation and support services, is necessary to understand the non-medical use of tramadol in Ghana rather than a focus on stigmatising and punishing people for engaging in tramadol use.

4.10 Ethical considerations

This study obtained a favourable ethical opinion from the School of Health Sciences Research Ethics Committee (SCREC), Robert Gordon University (SHS/21/06) (Appendix 12). The Ghana Health Service Ethics Review Committee granted further approval for the study to take place in the country (GIIS-ERC: 029/07/22) (Appendix 13). The ethical considerations involved in conducting qualitative research are of paramount importance, as they directly impact the well-being and dignity of the participants involved, as well as the trustworthiness and research integrity (Bazeley 2020; Creswell and Poth 2016; Denzin and Lincoln 2011). The ethical

principles in qualitative research include autonomy, beneficence, nonmaleficence and justice (Birch et al. 2012; Hammersley and Traianou 2012; Townsend, Cox and Li 2010).

Autonomy

Autonomy, also known as respect for persons, demands that the ability of competent participants to make their own decisions, be recognised and respected (Singh and Hylton 2015; Owonikoko 2013). In simpler terms, it is the capacity to think, decide, and act based on a freely made decision. The researcher took meticulous steps to respect participants' agency and choices. Information about the study was shared at least 48-72 hours before interviews, allowing time for questions and confirmation of willingness to participate. Participants were required to read the PIS (Appendix 14) and complete a consent form (Appendix 15) before proceeding with the interview. The PIS outlined study details, including the process of data recording, handling, and storage, as well as confidentiality measures and participants' right to withdraw at any time without explanation. The researcher also provided a clear verbal explanation of the PIS and consent process in a language understood by the participants. Additionally, a witness statement (Appendix 16), confirming that participants understood the study's purpose and had an opportunity to seek clarification of the document was signed by rehabilitation support staff.

Given the existing power dynamics between rehabilitation facility staff and potential participants, the researcher took precautions to ensure that participation was entirely voluntary. The right to refuse participation without consequence was explicitly stated in the PIS. Participants not affiliated with the rehabilitation centre were given the choice of interview location, either at the facility or a public space of their preference, where both parties felt comfortable. All participants opted to have their interview at the rehabilitation centre. Interviews were conducted in a private room within the facilities.

Beneficence and nonmaleficence

Beneficence is a fundamental ethical principle in qualitative research that stresses the significance of promoting the well-being and safety of research participants (Cheraghi et al. 2023; Artal and Rubenfeld 2017). Complimentarily, nonmaleficence as an ethical principle mandates researchers to avoid causing harm or injury to research participants whether actively or passively (Andersson et al. 2010).

In adherence to these principles, the researcher took actions with the dual objective of benefiting participants and ensuring the safety and well-being of all parties involved, while actively seeking to avoid harm. The researcher completed a thorough risk assessment prior to conducting any field interviews. This entailed identifying potential risks and developing mitigation strategies to protect all parties involved. A summary of the risk assessment conducted for the study is found in Appendix 17. The researcher took comprehensive measures for the emotional well-being of both participants and the researcher. Participants were signposted to professional counselling support and resources. The details of these resources were also provided in the PIS. A licensed psychiatrist was present on-site during interviews to offer professional counselling if participants showed signs of adverse reactions. Participants' difficult and sensitive experiences provoked the researcher's emotions when transcribing interviews and throughout the data analysis process. Therefore, the researcher (MOA) sought counselling services and regularly debriefed with experienced supervisors. MOA also joined the "Emotionally Demanding Research Network," gaining both emotional and practical support to navigate the challenges of the study.

To protect participants from social harm due to the study's sensitive nature, interviews were conducted privately, and no personal identifiers were recorded. The researcher explicitly stated exceptions/exemptions regarding confidentiality in the PIS and verbally reiterated these prior to interviews. In cases involving suicidality, homicide, or child abuse, the researcher had a legal obligation to inform law enforcement (Ryan, Smeltzer and Sharts-Hopko 2019; Finch 2001). While acknowledging that transparency about these exceptions/exemptions might affect participation or openness (Ryan, Smeltzer and Sharts-Hopko 2019; Finch 2001), it was deemed crucial for ethical rigour and to build trust (Fisher 2021; Shaw et al. 2020; Morse et al. 2002; Beauchamp and Childress 1994). This approach aimed to balance participant autonomy with study risks and benefits, ultimately enhancing data quality and research integrity (Fisher 2021; Beauchamp and Childress 1994).

The researcher ensured that the interview environment complied with the COVID-19 guidelines applicable during the data collection period, informing participants in advance about safety protocols, including mask-wearing, entry and exit rules, waiting area upon arrival and social distancing ahead of interviews. A screech alarm was carried by the researcher during interviews for emergency situations to ensure the safety of all involved. The researcher's schedule, including interview locations and times, was shared with the principal research supervisor and a local contact, who were contacted by either email or phone before and after each interview. This communication ensured that support or assistance could be swiftly provided in case of any unforeseen issues or emergencies.

Justice

The fair and equitable treatment of research participants is referred to as justice in qualitative research (Orb, Eisenhauer and Wynaden 2001). The researcher aimed for equitable benefit distribution among participants by ensuring a diverse sample. The researcher made conscientious efforts to proactively mitigate the exclusion of specific groups and the perpetuation of biases. For example, to contribute to demographic diversity, the research effort included actively recruiting six female participants to enhance gender representation in the study. Furthermore, to ensure geographical diversity the researcher ensured recruiting participants from a variety of settings, including urban, rural and suburban areas. Similarly, to capture diversity in experiences, the study recruited individuals currently in rehabilitation, those who have completed the rehabilitation programme and those not undergoing rehabilitation for their use of tramadol. To prevent exploitation, participants were fairly compensated with a ₵150 (approx. £8) shopping voucher, with those commuting to the interview site receiving an additional ₵2O (approx. £2) for transport in line with the National Institute for Health Research (NIHR) payment guidance for researchers and professionals (NIHR 2010). Additionally, measures were taken to minimise power imbalances, including building trust and mutual respect, providing clear information, and actively seeking feedback from participants during the interviews. Figure 18 shows the journal entry providing introspective insights into the ethics application process of the study.

Excerpt from a self-reflective journal entry on ethics application process

May 3, 2022, 4:54 pm

My experience going through the ethics application process for a sensitive research topic has been both humbling and enlightening. One thing that really stood out to me during the ethics application process was how my supervisors and the ethics committee emphasised the importance of protecting myself as the researcher. The thing is, I did not consider myself as being vulnerable at any point at the beginning of my application. They stressed the need to think about potential risks and vulnerabilities associated with the research topic for me and take steps to minimise them. It was an eye opener as my initial thoughts were focused solely on ensuring the safety and well-being of mostly my participants.

Figure 18. Excerpt from a self-reflective journal entry on ethics application process.

4.11 Trustworthiness

Trustworthiness serves as a metric for evaluating the integrity of the qualitative data, analysis methods, and interpretations. The concept of trustworthiness in qualitative research was introduced by Lincoln and Guba and consists of four key components: credibility, dependability, confirmability, and transferability. Credibility ensures the accuracy and authenticity of the findings; dependability ensures their consistency; confirmability ensures objectivity; and transferability allows for applicability in various contexts findings (Connelly 2016; Houghton et al. 2013; Shenton 2004; Lincoln and Guba 1986). Trustworthiness is determined by the level of confidence in the data, interpretation, and approaches employed to ensure the study's quality (Polit and Beck 2020). Shinebourne (2011) and Larkin, Flowers and Smith (2021) endorse Yardley's framework for assessing quality and validity in IPA studies. Yardley's four criteria for trustworthiness overlap with Guba and Lincoln's framework, emphasising sensitivity to context, commitment, rigour, and impact (Yardley 2000). Despite different terminology, both frameworks align in their core objectives and principles.

While Yardley's and Guba and Lincoln's frameworks provide established guidelines for ensuring trustworthiness, some authors advocate for customised tools to better suit their

unique study contexts (Alase 2017). Therefore, a comprehensive tool was developed using Yardley's framework, incorporating elements of Guba and Lincoln's model to ensure the study's trustworthiness. While Guba and Lincoln's approach is widely recognised in qualitative research, Yardley's provides a perspective more closely aligned with this study's goals.

4.11.1 Credibility, transferability, dependability, and confirmability through contextual sensitivity

Yardley (2000) emphasises the importance of balancing theoretical knowledge with empirical sensitivity to actual data for in-depth analysis, a principle echoed by Smith, Larkin, and Flowers (2009) who advise IPA researchers to ground their interpretations in the authentic experiences of participants. This equilibrium was meticulously maintained by accounting for unexpected findings that challenged initial preconceptions of the topic. The quality assessment tool discussed below was used to enhance contextual sensitivity in the study, aiding in evaluating the appropriateness of the research design and methodology. Sensitivity ensures credibility, transferability, dependability, and confirmability, contributing to the overall trustworthiness of the qualitative research process (Creswell and Creswell 2017; Denzin and Lincoln 2011; Morse et al. 2002; Guba and Lincoln 1989).

4.11.1.1 Contextual inquiry and peer debriefing

The researcher enhanced the study's credibility and confirmability through conducting a scoping review, expert consultations, and discussions with knowledgeable supervisors. Peer debriefing and contextual inquiry added layers of validation, ensuring externally verified and empirically supported interpretations. These processes provided some level of objectivity in the research, enhancing its confirmability.

4.11.2 Credibility, dependability, and transferability through commitment, rigour, transparency, and coherence

Yardley identifies commitment and rigour as key elements for ensuring research quality. Commitment involves in-depth engagement with the topic and methodological competence, while rigour focuses on comprehensive data collection and analysis (Yardley 2000). Smith (2004) stresses the significance of immersing oneself in the data for a more thorough understanding. Methodological competence ensures researchers employ suitable data collection and analysis methods (Denzin and Lincoln 2011; Merriam and Tisdell 2009). Yardley

further notes that a suitable sample, not determined by size but by its capacity to yield sufficient data, also contributes to a study's rigour (Yardley 2000).

Transparency in research involves fully disclosing all key components of the research process, enabling replication and verification of findings (Aguinis, Ramani and Alabduljader 2018; Yardley 2000). A study's coherence is judged by the clarity, consistency, and logical, non-conflicting connections within its interpretations and findings (Braun and Clarke 2019; Denzin and Lincoln 2011; Yardley 2000). Both transparency and coherence are vital for establishing a study's trustworthiness and rigour of IPA studies (Smith 2004). To ensure coherence, researchers are encouraged to include verbatim quotes from participants to illustrate and support their interpretations (Smith 2011). The interconnectedness of coherence and contextual sensitivity is noteworthy, both aiming to accurately represent participants' experiences. Quality assessment tools used to uphold coherence in this study are detailed below.

4.11.2.1 Iterative questioning

Iterative questioning in qualitative research involves revisiting topics with rephrased questions to collect comprehensive data and deepen understanding (Silverman 2020; Patton 2014; Wadembere 2012). This technique, used in interviews for this study (see section 4.6.3), enabled the researcher to seek clarification and explore different dimensions of the topic (Robinson and Schulz 2016). This ultimately enhanced the rigor of data collection and ensured accurate representation of participants' experiences.

4.11.2.2 Data immersion

The researcher deeply immersed themselves in the data, repeatedly reviewing transcripts and field notes (see section 4.8.2.1), adhering to Yardley's framework for commitment. This thorough engagement facilitated deep familiarity leading to a comprehensive understanding of participants' experiences with tramadol use and ensured interpretations were not superficially interpreted, were accurate, and credible.

4.11.2.3 Data saturation

Data saturation refers to the point in qualitative data collection where no new information or themes emerge (Guest, Bunce and Johnson 2006), indicating that sufficient data has been collected to adequately address the research objectives. Data saturation ensures a thorough exploration of the subject and representativeness of diverse experiences, producing more

credible and dependable outcomes (Saunders et al. 2018; Guest, Bunce and Johnson 2006; Morse 1995). In this study, the researcher ensured that that no new information was being revealed before ending the recruitment of participants (see section 4.6.3), fulfilling Yardley's criteria for rigour.

4.11.2.4 Audit trail

To address validity concerns in qualitative research, an independent audit is recommended, consisting of a detailed audit trail that records all research decisions and actions (Braun and Clarke 2019; Smith 2010). This practice enhances the study's credibility and authenticity by allowing for an independent review (Shinebourne 2011). In this study, the researcher meticulously documents the methodology, data collection and analysis, offering justifications for their choices and highlighting any adjustments. This thorough record-keeping not only facilitates potential replication but also fulfils the imperative for clear and coherent reporting, as advocated by experts in the field (Alase 2017; Yardley 2000).

Furthermore, the researcher kept a detailed journal throughout the study to document initial noting decisions, analytical memos, reflections on personal thoughts, beliefs and values and challenges encountered, and how they were navigated. Excerpts from this journal as previously introduced are integrated into the thesis to form an audit trail (see example). This practice allows for transparency and accountability by providing insight into the researcher's thought process, methods, and decisions (Johnson, Adkins and Chauvin 2020). It also allows for external critiquing, evaluation and potential replication, meeting criteria for dependability and rigour (Johnson, Adkins and Chauvin 2020; Nowell et al. 2017). Furthermore, it promotes transferability, as researchers can assess the applicability of the methods to different contexts (Johnson, Adkins and Chauvin 2020). Overall, this comprehensive documentation enhances the study's coherence, consistency, and credibility.

4.11.3 Reflexivity as an integral component in ensuring trustworthiness

Reflexivity, a fundamental aspect of qualitative research, involves the researcher's self-awareness and introspection throughout the study (D'cruz, Gillingham and Melendez 2007). By maintaining a self-reflective journal, the researcher acknowledged their influence on the process, thereby enhancing the study's trustworthiness. This practice fulfils all criteria outlined in Yardley and Guba and Lincoln's frameworks for ensuring trustworthy research.

Contextual Sensitivity: The researcher developed a deeper awareness and sensitivity to the contextual factors that shaped participants' experiences of tramadol use by engaging in reflective practises. The ability to navigate one's positionality within the context of research contributes to a more transparent and honest representation of the data (Finlay and Gough 2008; Guba and Lincoln 2005).

Commitment, rigour, transparency and coherence: Actively engaging in self-reflection and admitting biases demonstrates the researcher's commitment to the research process (Berger 2015; Finlay 2002). This commitment ensured that the research was carried out with integrity and a genuine dedication to understanding the participants' experiences. This practice improves the rigour and reliability of the study through self-evaluation to address any methodological gaps (Guillemin and Gillam 2004). By being transparent about the reflexive process, researchers increase the study's confirmability and transferability, as others can assess and replicate the findings. Reflexivity prevents undue influence on interpretations (Berger 2015; Finlay and Gough 2008), contributing to a coherent and consistent narrative that aligns with the study's aims and objectives. Table 5 summarises the tools used and how they were used in the study to ensure trustworthiness.

Table 5. Summary of tools and how they were used to ensure trustworthiness

Guideline	Approach	Outcome of approach	Where was it applied	Corresponding chapter/ section
Credibility, transferability, dependability, and confirmability through contextual sensitivity.	Contextual inquiry and peer debriefing	Confirmability	Theoretical concepts, scoping review	2
			Pilot testing of the interview guide	4.6.2
			Data analysis process	4.8
	Iterative questioning	Credibility	Data collection	4.6.3
	Reflexivity	Credibility, confirmability, dependability and transferability	Throughout the thesis	

Guideline	Approach	Outcome of approach	Where was it applied	Corresponding chapter/ section
Credibility, dependability, and transferability through commitment, rigour, transparency, and coherence.	Data Immersion	Credibility and dependability	Data analysis process	4.8.2.1
	Data Saturation	Transferability	Data collection	4.6.3
	Audit trail	Dependability	Methodology Data collection Data Analysis	3 4.6 4.8
	Reflexivity	Credibility, confirmability, dependability and transferability	Throughout the thesis	

4.12 Chapter conclusion

The methods employed in this study laid the groundwork for a comprehensive data analysis and understanding of the complex dynamics of tramadol use. In the next chapter, the findings from the collected data utilising these methods will be presented.

5 CHAPTER 5: FINDINGS

5.1 Chapter overview

The chapter comprehensively summarises the findings from one-on-one face-to-face semi-structured interviews with study participants. A summary of participants' demographics is provided in this chapter. The demographic information proved invaluable in identifying patterns or trends across the cases examined in the study. In this chapter, participants' unique ID codes assigned to conceal their identities are used to uphold the ethical considerations, as mentioned in the previous chapter. Through the lens of IPA, the chapter highlights the subjective lived experiences of participants with a history of tramadol use. It details their emotions, observations, interactions and perceptions, providing a deeper understanding of the factors that contribute to the phenomenon and the different aspects of their lives affected. The chapter also illuminates the complexity of the rehabilitation process for tramadol use, including the facilitators and barriers encountered and the critical aspects of recovery.

5.2 Introduction

This section presents insights into the experiences and interpretations of three groups of participants:

- Eight individuals currently engaged in the non-medical use of tramadol and had never accessed rehabilitation and support services.
- Four individuals currently engaged in the non-medical use of tramadol and were enrolled in a rehabilitation programme in a rehabilitation facility.
- Four individuals who had completed a rehabilitation programme and were in recovery from the non-medical use of tramadol.

The emerging themes and patterns that highlight the nuanced and complex participant experiences and interpretations are detailed in this section. The themes are substantiated by quotes or extracts from the interviews to personify the distinct experiences of the participants and to demonstrate how these experiences were influenced by their personal backgrounds, circumstances, and identities. Participant quotes provide an authentic and reliable illustration of research findings, accurately portraying the participants' experiences, viewpoints, and feelings in their own words (Lingard 2019; Sandelowski 1994). Using the participants' words

also demonstrates respect for their experiences and viewpoints and recognises that they are the foremost authorities or experts in their own lives (Braun and Clarke 2012; Hunt 2011). Furthermore, quotes can help readers relate to and engage with the research because reading participants' words can help make the study's findings more tangible and memorable (Lingard 2019; Patton 1990).

It is important to note that the majority of the quotes in this study are translated and not presented verbatim. The researcher took the necessary steps to ensure they were a close representation of the participant's words, as detailed in the previous chapter. The translations sought to reliably convey the intended meaning while preserving the essence of the participants' original expressions. These translated quotes are used in reporting the study's findings, highlighting the participants' unique points of view, which gives the study a valuable sense of authenticity. The translated quotes provide context that would otherwise be lost in a summary or paraphrase. All quotes are *italicised* with ***bold text*** used to indicate instances where participants strongly emphasised a point. Additionally, complementary comments are provided to clarify why certain quotes are considered to be strongly emphasised by the participants. Some quotes are presented as dialogue exchanges between participants and the researcher to provide context. The researcher's initials (MOA) are introduced to distinguish the speakers in such instances.

The findings described in the chapter include post-recording interactions and observations documented in field notes. The unfiltered nature of post-recording interactions enabled a more nuanced exploration of their experiences and perspectives. This provided the researcher with additional layers of understanding and enhanced the depth of their analysis, echoing Kvale and Brinkmann's assertion on the value of such interactions for deepening research insights (Kvale and Brinkmann 2009). This section also emphasises the commonalities and variations among the various themes. The researcher's role in shaping and interpreting the data is acknowledged in this chapter by highlighting how their subjectivities and perspectives influenced the data analysis and interpretation.

5.3 Demographic characteristics of study participants

The 16 participants, aged 18-54, included ten males and six females. Most participants (12) resided in urban settings, three in urban-rural areas, and only one in a rural locale. The educational backgrounds of participants varied, with six having completed senior high school, four having finished junior high school, three having only primary school education, two having attained university degrees, and one having undergone vocational training. Religious

affiliations were predominantly Christian (13), with one person identifying as Muslim, one as a Traditionalist, and one not affiliating with any religion. Regarding employment status, 11 were employed, three were unemployed, one was seasonally employed, and one was a student. Occupationally, six participants were engaged in manual labour, whereas five were employed in positions involving non-manual labour. Among the employed participants, all except one reported a monthly income level below ₵3000 (approx. £197), with one participant choosing not to disclose their monthly income. In terms of marital status, 14 were single, and two were divorced. Additionally, seven of the participants indicated having financial dependents. The mean age of onset of tramadol use was 22.3 years. The socio-economic and demographic characteristics of the participants are shown in Table 6.

Table 6. Demographic and socio-economic characteristics

Variable	Frequency
Age (years)	
18-24	4
25-34	7
35-44	3
45-54	2
Gender	
Male	10
Female	6
Suburb of residence	
Urban	12
Urban-Rural	3
Rural	1
Educational level	
Primary	3
Junior High	4
Senior High	6
Vocational	1
Graduate	2
Religion	
Christian	13
Muslim	1
Traditionalist	1
Other	1
Employment status	
Employed	11
Unemployed	3
Seasonally employed.	1
Student	1
Occupation	
Manual labour (physical work involving hands-on activities, such as construction, manufacturing, retail stocking).	6
Non-manual labour (work primarily involving mental or clerical task).	5

Variable	Frequency
Income level (monthly)	
Below ₵3000	9
₵3000-₵4999	1
Prefer not to say	1
Marital status	
Single	14
Divorced	2
Dependents	
With dependents	7
Without dependents	9

5.4 Overview of thematic findings

The analysis of the 16 interviews resulted in four superordinate themes, each having various subordinate themes. Some subordinate themes are further divided into distinct subcategories. The superordinate themes capture the broad, overarching concepts that reflect the essence of the participants' experiences, while the subordinate themes offer a more detailed understanding of the superordinate themes by breaking them down into more specific elements. The subcategories expand on some of the subordinate themes, allowing for a more in-depth exploration and understanding of the unique aspects within them. An overview of superordinate and subordinate themes is shown in Figure 19. Appendix 18 offers a detailed overview of each participant's experience, mapped to their corresponding superordinate themes, subordinate themes, and subcategories. This appendix was developed through an exhaustive examination of each participant's transcript, summarising content within the transcript that had been coded into themes in the NVivo software.

Trigger Warning: Sensitive topics such as physical violence, sexual assault, and traumatic experiences are depicted and discussed in the subsequent sections of the chapter. It is important to note that the content of these discussions may elicit distress or trigger emotional responses in some readers. Please proceed with caution and prioritise your well-being. If you find the content overwhelming, it is advised that you seek help or take needed breaks while reading.

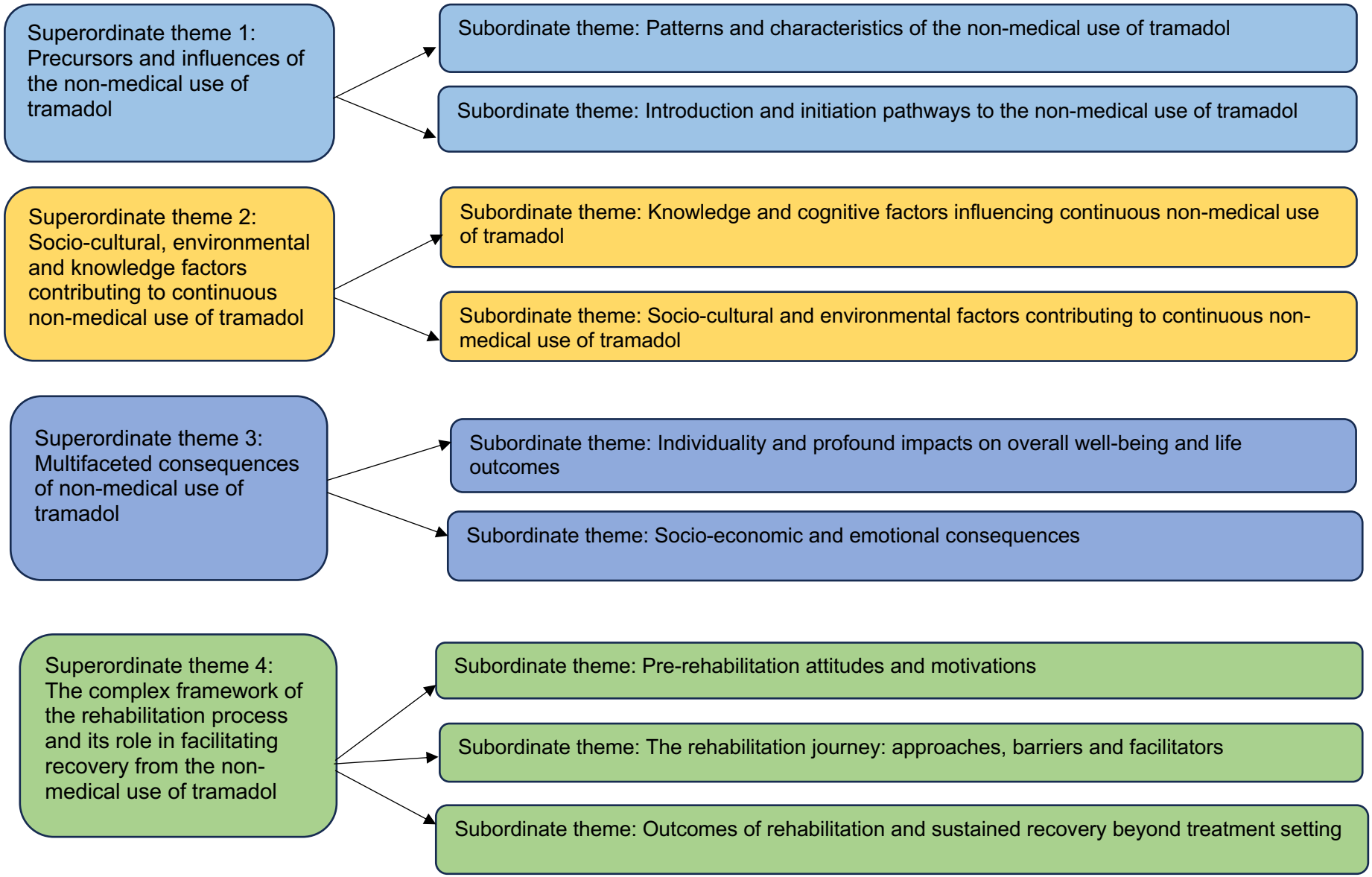

Figure 19. Overview of superordinate and subordinate themes.

5.5 Superordinate theme 1: Precursors and influences of the non-medical use of tramadol

Figure 20 is a diagrammatic representation of superordinate theme 1 and the interconnections and hierarchical relationships among its subordinate themes and subcategories.

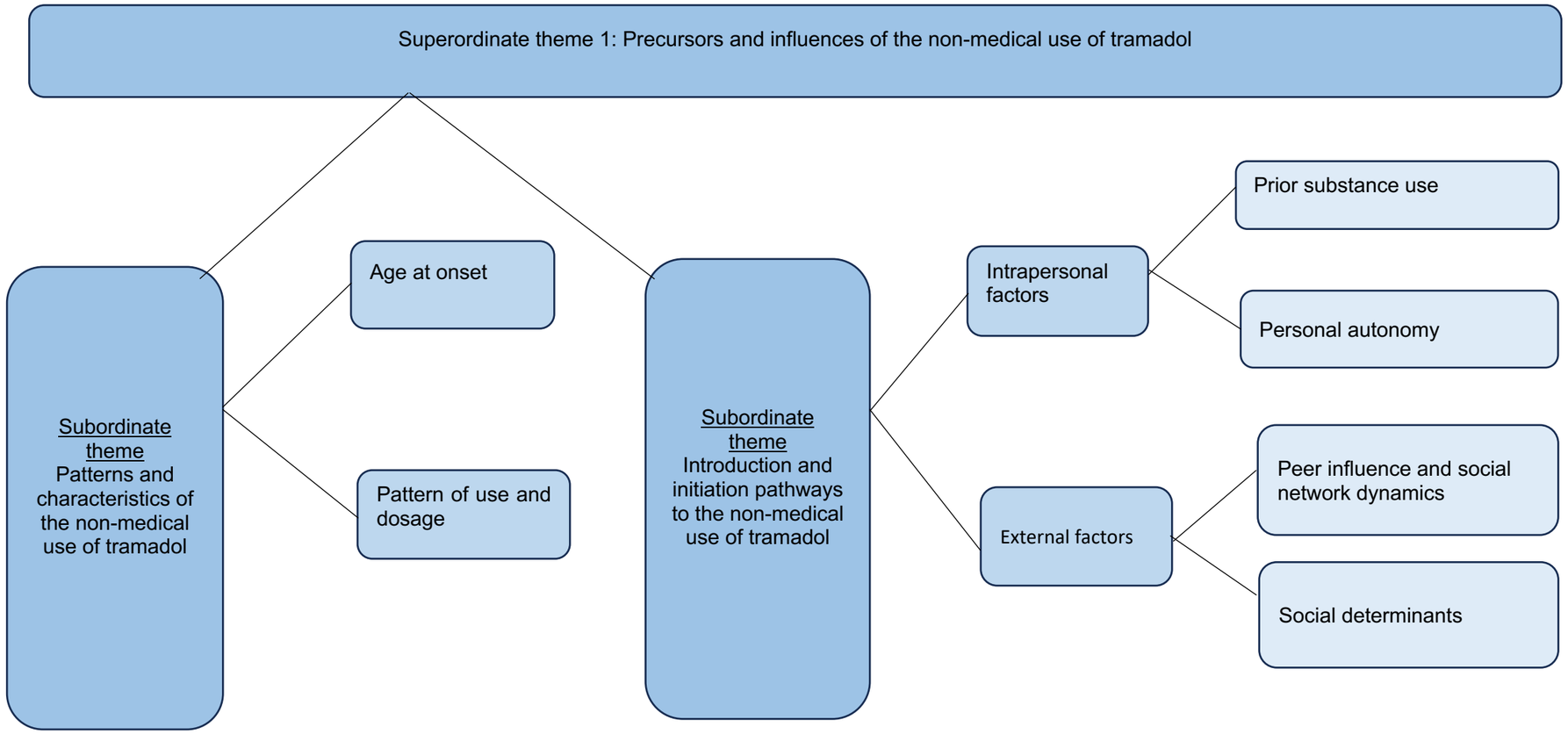

Figure 20. Superordinate theme 1 and the interconnections and hierarchical relationships among themes and subcategories.

5.5.1 Subordinate theme: Patterns and characteristics of the non-medical use of tramadol

Patterns and characteristics of the non-medical use of tramadol encompassed various elements such as age of onset, patterns of use, and dosage strengths. Understanding these patterns and characteristics facilitated the contextualisation and interpretation of the findings in other areas of tramadol use within the study. A table summarising these patterns and characteristics is provided in Appendix 19. Figure 21 depicts the subordinate theme and its corresponding subcategories.

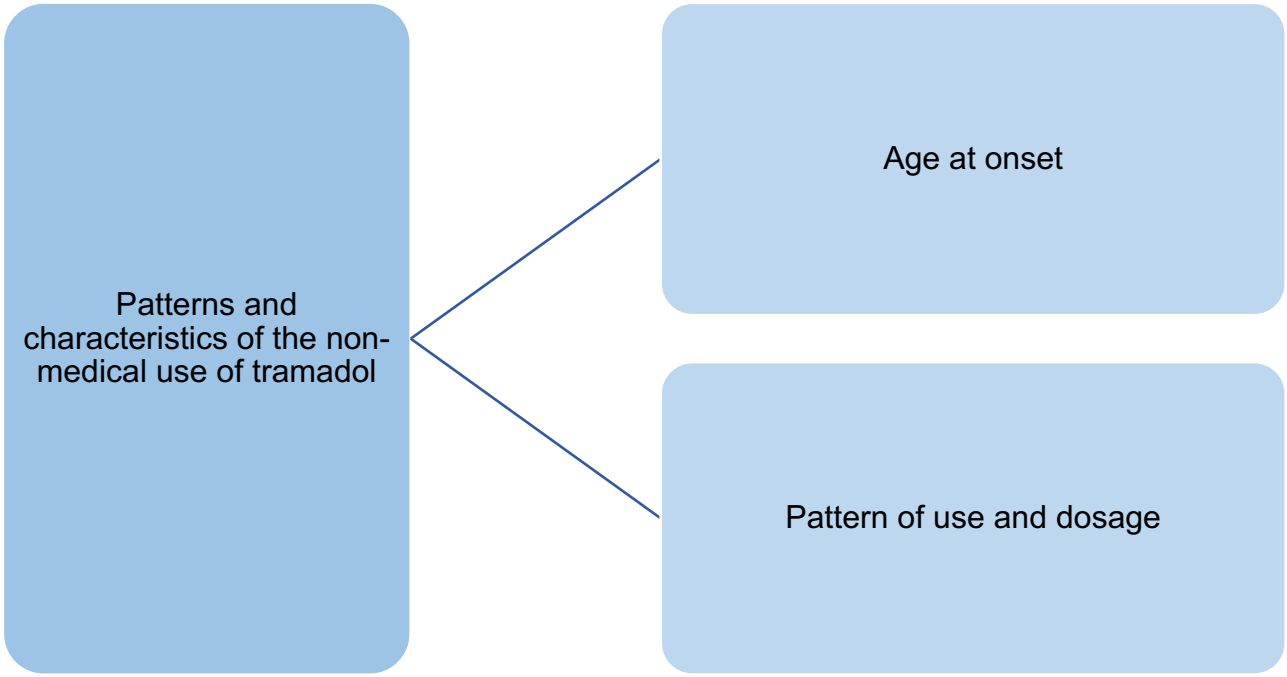

Figure 21. Subordinate theme 5.5.1 and its corresponding subcategories.

Age at onset

The onset of tramadol use ranged from 12 to 48 years, with many participants initiating use in their late teens or early twenties. A few participants mentioned they began using tramadol in their late twenties. There was an account of starting tramadol use as early as the age of 12.

Pattern of use and dosage

Participants exhibited a range of tramadol use patterns, from regular to sporadic, with many reporting daily use consuming between 2 and 30 tablets. Reported dosage strengths varied between 50 mg and 500mg. Some were unaware of their dosage strengths, using whatever strengths were available to them. Several individuals progressively increased their dosage intake over time. On average, the initial dosage for these individuals was around 161mg. This dosage increased to an average of around 1014mg daily for their current use. Other participants were unable to specify their initial tramadol dosage as they were unaware of the exact amounts. Participants commonly reported orally consuming tramadol tablets or capsules, often preferring to mix them with energy drinks or sugary beverages. The methods of oral consumption among participants varied, with descriptions ranging from chewing the drug with a small amount of water for desired effects to the more common practice of swallowing it with water. Most participants sourced tramadol from illicit channels like `ghettos', while others bought it from legitimate establishments like licensed chemical stores and pharmacies.

> *If you take five, latest by a week, you will take six; the next week, you will take seven, and then it will go on and on and on.* (005 Male, 25-34 years).

> *It got to a time that when I even used as many, I was not getting the desired effects. So, I started chewing it and drinking just a small amount of water to get the effects that I wanted.* (015, Female, 35-44 years, in recovery).

5.5.2 Subordinate theme: Introduction and initiation pathways to the non-medical use of tramadol

The analysis revealed intrapersonal and external factors influencing the introduction and initiation pathways of tramadol use. Intrapersonal factors included individual elements like prior substance use and making decisions to use autonomously. External factors encompassed societal, cultural, and environmental aspects, impacting worldviews and individual decisions regarding drug use. Peer influence, social network dynamics, and social determinants such as area of residence, economic circumstances and social and religious acceptance of tramadol were notable external contributors to initial tramadol use. The

subordinate theme and its corresponding two levels of subcategories are shown in Figure 22.

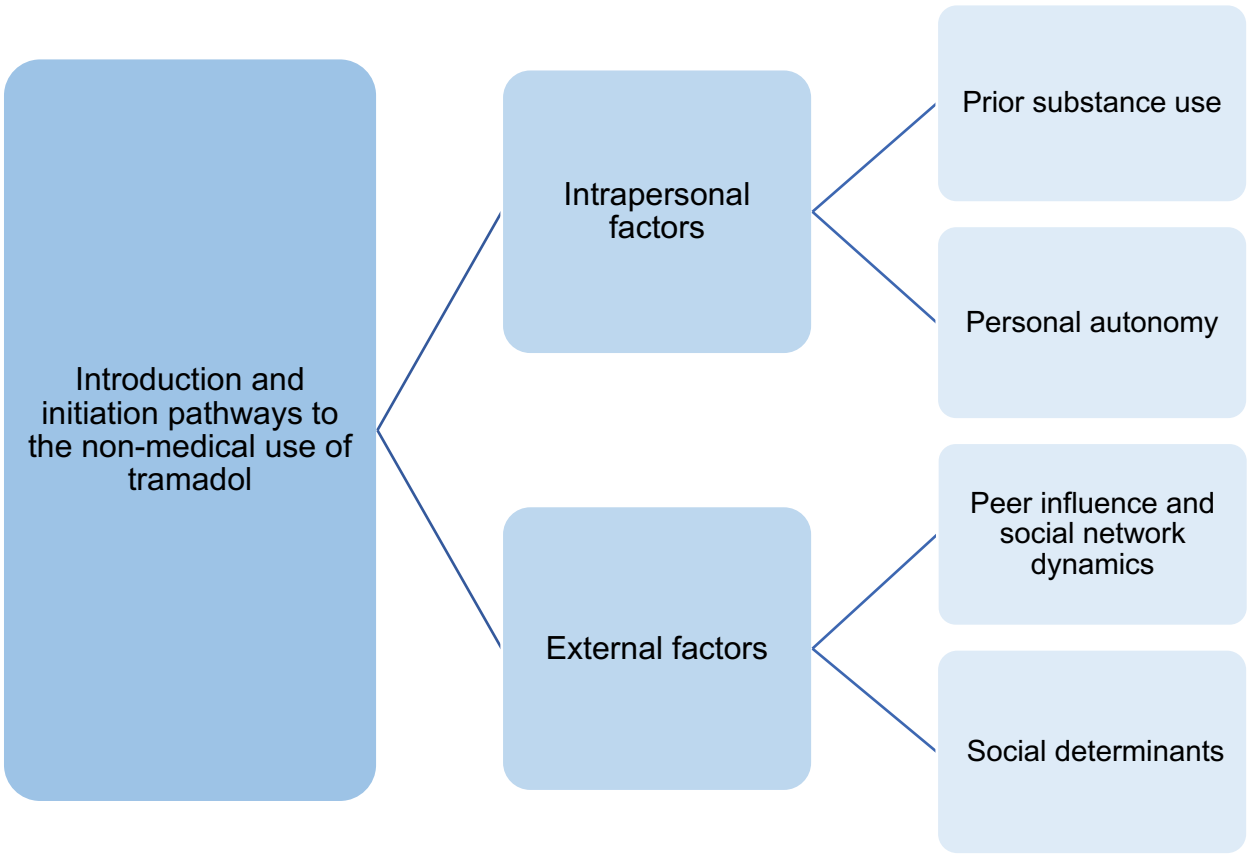

Figure 22. Subordinate theme 5.5.2 and its corresponding two levels of subcategories.

Intrapersonal factors

Prior substance use

A common finding was the reporting of histories of using substances such as cocaine, marijuana, cigarettes, alcohol, and diazepam before initiating use of tramadol, indicating prior substance use as a predisposing factor in initiating tramadol use.

> *I started drinking alcohol……. it was around that time that a friend introduced tramadol to me.* (015 Female, 35-44 years, in recovery).

Most participants continued using previous substances when they started using tramadol. A notable combination frequently mentioned was the use of tramadol and marijuana. Participants frequently reported feeling a strong urge to smoke marijuana after taking tramadol.

After I use tramadol, I need the smoke. Even if it's a lot, I can smoke all of it. ……but the tramadol likes smoke. If you use it and don't even smoke weed [marijuana] *and cigarette, you will smoke it.* (001, Male, 25-34 years).

Personal autonomy

The idea of personal autonomy recognises that initial tramadol use was a voluntary choice, although it was typically mediated by factors such as curiosity, self-exploration and the social context of being amongst friends. Several participants expressed strong feelings about not being introduced to, or taught how to use tramadol, highlighting a sense of voluntarism associated with their initial drug use. They used phrases like "eager to try" and "curious to know what it could do", indicating a level of autonomy and willingness in their initial decision to use tramadol. It is worth noting that even when potential negative outcomes were explicitly communicated by friends, some participants chose to proceed anyway.

I got involved with using tramadol myself. ***Nobody taught or introduced me*** [Shakes head] *to how to use it. …… I was curious to know what exactly it was.* (009, Male, 35-44 years, in rehabilitation).

He [his friend] *said it wouldn't help me, but I insisted I had seen him putting that stuff in drinks several times and wanted to know what it does.* (002, Male, 25-34 years)

External factors

Peer influence and social network dynamics

Peer influence and social network dynamics were significant factors in initiating tramadol use, with most participants being introduced to tramadol by friends, demonstrating the role of peer relationships in first-time use. In the Ghanaian cultural context, where community and belonging are deeply valued, this peer influence reflects how collectivist norms can sometimes pressure individuals to adopt behaviours that align with group expectations.

I was in school the first time I took tramadol. I went out with my friends, and they told me it could make me feel good. (004, Male, 25-34 years).

Social gatherings such as pubs and parties were identified as prime settings for tramadol use, as some participants reported their first-time use occurred in such places.

We had a hostel party, and my roommate introduced tramadol to me. (005, Male, 25-34 years).

Although less frequently reported, an important insight was that participants' initial use of tramadol was influenced by family members (older siblings) who used the drug. Within Ghana's cultural framework, where respecting authority and age is highly valued, the influence of older siblings exemplifies how familial hierarchies can significantly shape individual behaviours and decision-making processes, often leading younger family members to emulate behavioural patterns of their elder siblings.

But I wish for my senior brother also to quit when I do. We buy it together. In fact, I saw him do it first, and it made me feel like, oh, it's okay. (001, Male, 25-34 years).

Some participants were unaware that substances given by friends contained tramadol, only realising it post-consumption, highlighting the possibility of unintentional exposure and use. This uncommon yet important finding, illustrates how external circumstances can significantly influence individual substance use.

I thought it was just a regular drink then they told me it was mixed with tramadol. So, it was actually after that I learned there was something in that drink. (004, Male, 25-34 years).

Social determinants

Social determinants, as a contributing factor to initial use of tramadol, comprised the diverse facets of the individuals' environments and circumstances that contributed to their engagement in their first-time use. These determinants included the area of residence, economic circumstances, and the social and religious influences relating to the acceptance of tramadol.

Residing in a neighbourhood where tramadol is readily available was a recurring theme among participants. Some disclosed living in proximity to where tramadol was sold in their area of residence facilitated their initial use. They described their neighbourhoods as `rough' and where unapproved tramadol was largely sold.

As for me, where I lived was where it was being sold. So, wherever I go, whether to school or anywhere else, I see it……. You know my neighbourhood is a rough one, and we like to fight a lot. Sometimes we have fights with people from other neighbourhoods. When we use it, we can walk there [other neighbourhood] *just to fight and return.* (009, Male, 35-44 years, in rehabilitation).

Several participants mentioned financial difficulties and limited opportunities as factors for their initial use. They also emphasised the emotional stress brought on by their economic situations, leading to mental health difficulties such as anxiety and depression, which further contributed to their decision to start using the drug.

> *I am particularly somebody who didn't have anyone to help him in life…….. So basically, I started tramadol through somebody I met on my journey to seek greener pastures.* (013, Male, 35-44 years, in recovery).

> *Because all that while, I was depressed. I thought I would find a job. After graduation, I was unemployed for some years. I also had a child after graduation, and there was a lot of pressure on me. So, I had trouble sleeping sometimes.* (003, Male, 25-34 years).

A notable, though not widely reported factor, for the initial use of tramadol was the drug's perceived social and religious acceptability, compared to substances like cocaine and alcohol. Some participants expressed that the illegal status of cocaine deterred them from using it in social settings, leading them to opt for tramadol instead. Others noted that while their religion prohibited alcohol, tramadol was a reasonable and discreet alternative due to its lack of a distinct smell, making it a socially acceptable substitute. In Ghana, where religion profoundly influences societal norms and personal ethics, tramadol's acceptability highlights how deeply religious beliefs and practices are woven into the fabric of everyday decisions, allowing individuals to choose substances that align more closely with their spiritual and communal values.

> *But then I was using other drugs* [cocaine] *then, but I couldn't use that in a social setting, so we decided to use tramadol*. (012, Male, 35-44 years, in rehabilitation).

> *……., but because I come from a very religious background, my breath stunk from the drinking of alcohol, and that created problems for me with my family. That was why I chose tramadol.* (015, Female, 35-44 years, in recovery).

5.6 Superordinate theme 2: Socio-cultural, environmental and knowledge factors contributing to continuous non-medical use of tramadol

Figure 23 visually depicts superordinate theme 2, illustrating the interconnections and the hierarchical structure among its subordinate themes and subcategories.

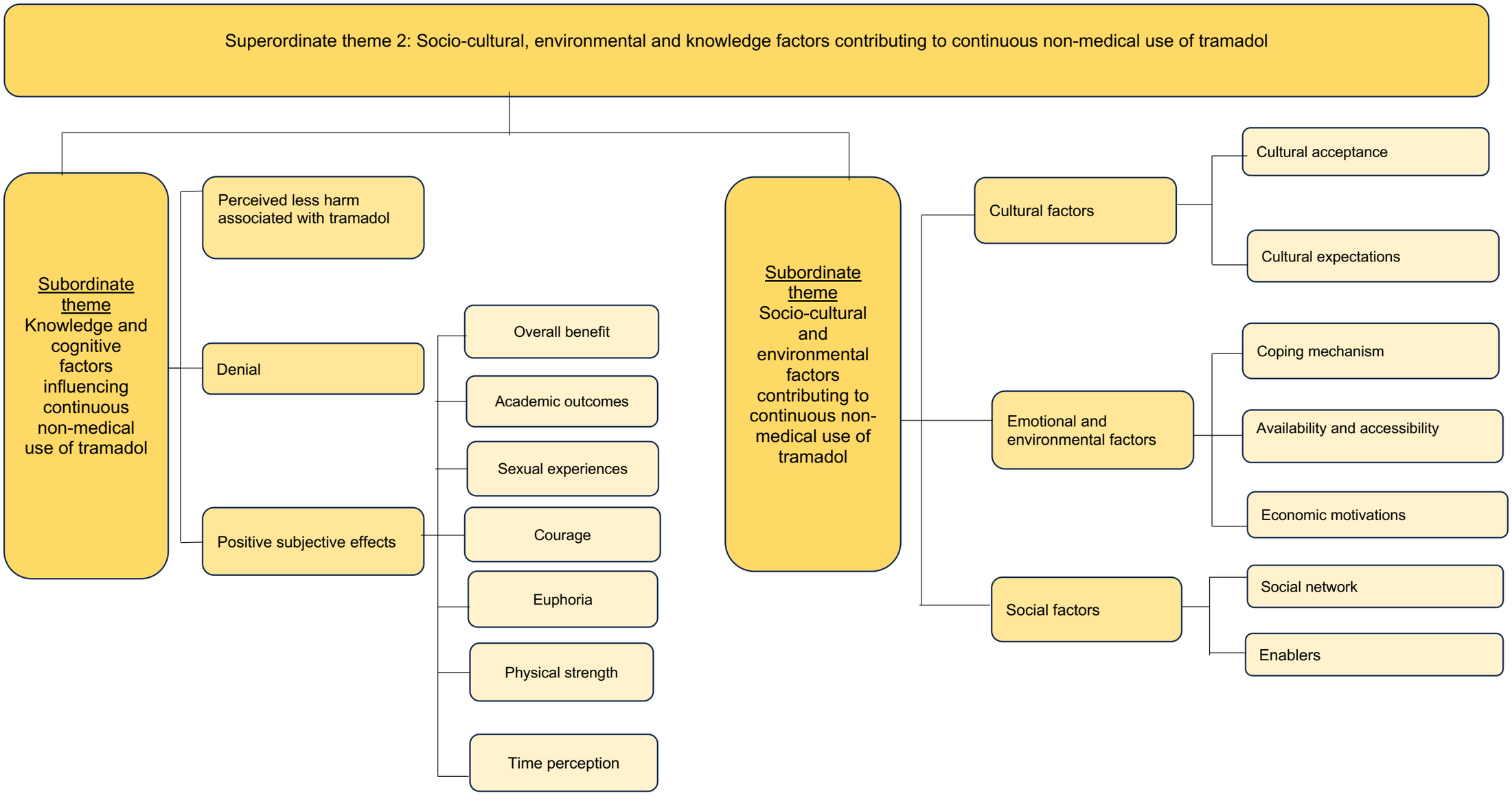

Figure 23. Superordinate theme 2 and the interconnections and hierarchical structure of subordinate themes and subcategories.

5.6.1 Subordinate theme: Knowledge and cognitive factors influencing continuous non-medical use of tramadol

Knowledge and cognitive factors significantly influenced the continuous non-medical use of tramadol. Perceptions of less harm or risks compared to other drugs, minimising or dismissing effects of tramadol use, and perceptions of positive effects of the drug emerged as significant factors contributing to their continued use. Figure 24 illustrates the subordinate theme and two levels of subcategories.

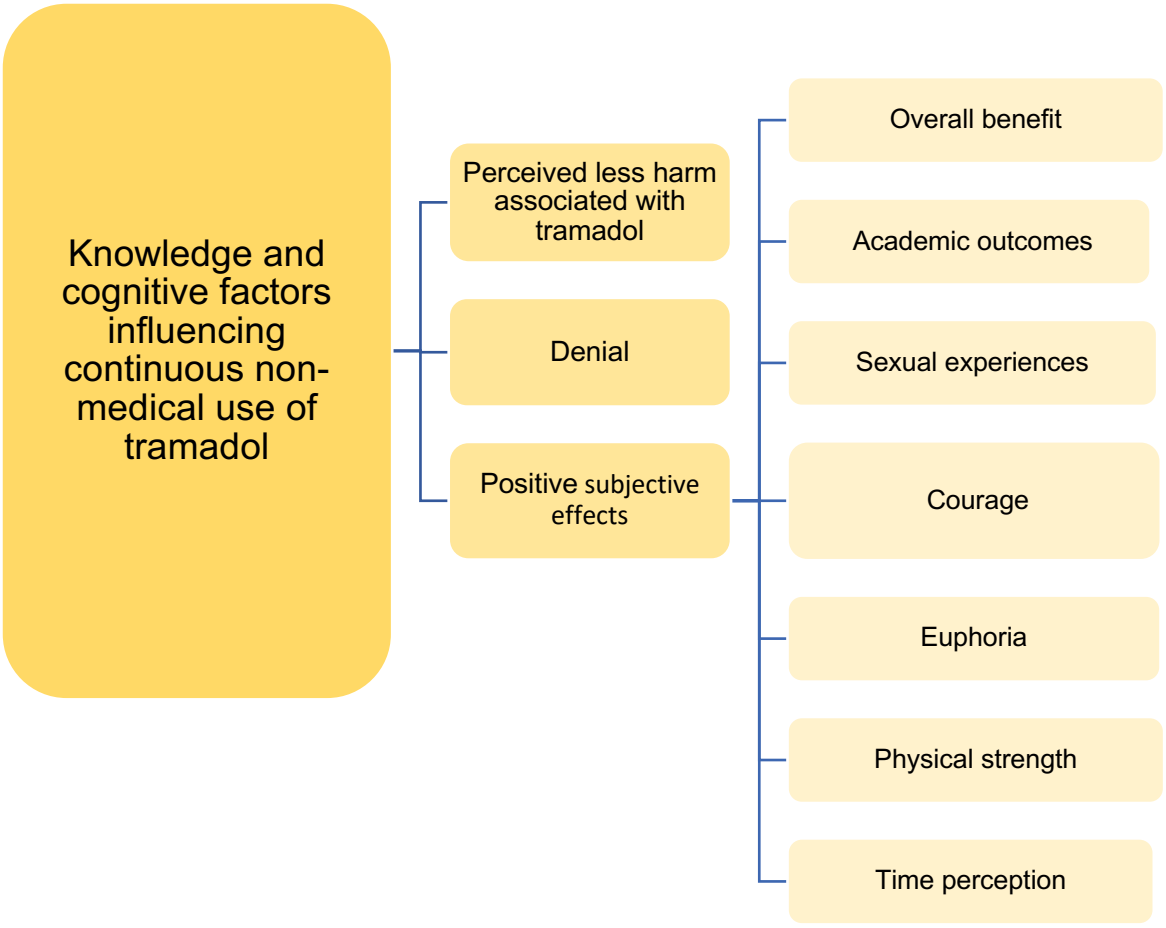

Figure 24. Subordinate theme 5.6.1 and its corresponding two levels of subcategories.

Perceived less harm associated with tramadol

Some participants deemed tramadol less harmful than substances like cocaine due to its prescription status, reflecting the belief that legally prescribed drugs are less dangerous than

illegal drugs. Other participants compared tramadol favourably to cocaine, citing the absence of physical side effects that would cause them to appear unkempt. These perceptions of tramadol as a less harmful drug contributed to its continued use, as individuals perceived fewer negative consequences compared to other substances.

> *Somehow, my mind convinced me that it was a prescribed drug, so whatever damage the crack cocaine was doing, tramadol would be minimal*. (012, Male, 35-44 years, in rehabilitation).

> *It was because it was better than the drug* [cocaine]. *The drug* [cocaine] *makes me look dirty, but with the tramadol, I am able to sleep. I am also able to bathe and look tidy. With the drug* [cocaine]*, you cannot bathe, but with tramadol, you can eat and sleep. I am able to sleep 24 hours when I use tramadol.* (014, Female, 45-54 years, in recovery).

Some participants mentioned being aware of the potential risks or harms associated with the use of tramadol, despite the divergent opinions held by the participants represented above. This perspective, although not widely shared, highlights an important consideration regarding individual risk perception.

> *I feel very scared, but I do it with caution because I know what can happen to you when you overdo it.* (001, Male, 25-34 years).

The data analysis also revealed the awareness of the appropriate use of tramadol, as some participants emphasised their knowledge of the legitimate use of tramadol for therapeutic purposes. It is worth mentioning that despite being aware of tramadol's medical purpose and the risks of non-medical use, they continued its use, implying that other influential factors or challenges impeded their ability to discontinue its use.

> *I think tramadol is usually used for people who do surgeries, but we have taken it as though it is suitable for normal consumption, but it really isn't*. (010, Female, 18-24 years).

Denial

While not commonly reported, denial contributed to the continuous use of tramadol as some participants dismissed any effects of their tramadol use by engaging in this cognitive process, which involved their refusal to acknowledge or accept the negative effects of using the drug. This enabled them to maintain control and avoid facing the reality of their situation by

persuading themselves that using tramadol was safe or manageable despite contrary evidence.

> *After the first time, my friends told me things I did when I was under the influence the next morning, but I did not believe them. I told them they were lying. For example, they said I removed my shoes and was holding and doing other things out of character. I insisted they were lying and continued to use it.* (007, Female, 18-24 years).

Positive subjective effects

The continuous use of tramadol was significantly attributed to the drug's positive subjective effects. Participants reported a variety of positive effects from tramadol use. These subjective experiences served as motivating factors for continued drug use. The positive subjective effects include the following:

Overall benefit

The perception that tramadol provided overall help or benefit emerged as a salient positive effect. Several participants expressed a general belief that tramadol had a positive impact on their well-being or overall functioning without providing specific details or examples. This perception suggests that tramadol gave them a sense of improvement or enhancement in various aspects of their lives.

> *When I started using tramadol, I had the impression that it was going to help me, …….. I could see that it was helping me……..* (013, Male, 35-44 years, in recovery).

Academic outcomes

Some participants stated that they were told that using tramadol would improve their academic performance. Their belief that tramadol improved their cognitive abilities created a cycle in which they used the drug repeatedly to achieve the desired academic results. Although not a prevalent perspective among participants, this viewpoint stands out as a noteworthy insight, underscoring the varied reasons behind tramadol use.

> *……..my roommate told me that using it* [tramadol] *could help me commit things into memory and easily recollect what I had studied. I thought it would help me stay awake, memorise things and concentrate better.* (005, Male, 25-34 years).

Sexual experiences

The use of tramadol, according to most male participants, led to prolonged sexual activity, enhancing their sexual experiences. They believed that tramadol had a favourable effect on their sexual interactions. Participants who said tramadol improved their sexual experiences often stressed that this was not the primary motivation for their use of the drug.

> *He told me that we use it* [tramadol] *to have sex with a woman. He said it* [tramadol] *would help you last longer during sex. But that was not the reason I wanted to use it.* (002, Male, 25-34 years).

> MOA: Do you ever take it to enhance your sexual performance like your friend suggested?

> *Oh, it's true. I don't care for that, but I can 100% testify that it can delay your ejaculation.* (002, Male, 25-34 years).

While the majority of male participants spoke of improved sexual experiences, some provided a contradictory account, reporting they had difficulty in getting a strong enough erection when they used tramadol.

> *And even if you try to do anything with her, something about it, same with crack cocaine too, you will never get a strong enough erection, or you don't get an erection at all, no matter what she does.* (012, Male, 35-44 years, in recovery).

Courage

A commonly reported positive effect among participants was the sense of boldness and confidence gained from tramadol use. This courage allowed them to partake in activities that they would otherwise have felt unable to do because they might be dangerous. Moreover, in economically chaotic environments characterised by a prevalent `hustle' culture, some stated that courage was necessary to navigate daily challenges. Additionally, others reported using tramadol to have the boldness needed to engage in sexual activities with people they were not familiar with.

> *The galamsey* [illegal mining] *job is very dangerous, and it requires courage. If you are not courageous, you can't do it. Before I had used it, I said I was not going to go, but after I used it, I was able to go under the earth to mine. …….. and I saw that it was because of the tramadol that I had taken that I had the courage to go.* (008, Male, 25-34 years, in rehabilitation).

Euphoria

Many participants cited feelings of euphoria and increased happiness as the reason they continued to use tramadol. They described the pleasurable feelings and emotional elation associated with tramadol use. Some participants reported a calming effect after taking tramadol, which they thought was beneficial, while others reported feelings of comfort and being able to sleep. Tramadol's euphoric appeal created a reinforcing pattern in which individuals sought to replicate these positive feelings through continuous use.

> *I felt so good and on top of the world. As though I had no worry in this world. I did not know what to do with myself* [basically didn't know how to act]. *I felt very happy, and so I felt like using it again.* (011, Female, 18-24 years).

Physical strength

A recurring theme among participants was the perception that tramadol increased their physical strength, with many expressing experiencing a boost in energy levels, enhanced ability to perform physically demanding tasks such as strenuous work, reduced fatigue and increased stamina. This perception of increased physical strength created a reinforcing cycle in which people continued to use tramadol to push their physical limits and complete tasks that would have otherwise been perceived as challenging.

> *Sometimes, I do mason work because when you take tramadol, you don't feel tired when you work. I take it to go and work. Other times too, I use it to go and look for masonry work, so when I find some, I would have already used the tramadol for the energy to work.* (004, Male, 25-34 years).

Time perception

Time perception as a positive subjective effect pertained to the unique alteration in the perception of time. Though not commonly reported, some participants described the relative nature of time as they explained how rapidly time passed for them when they were under the influence of tramadol. When under the influence of tramadol, the altered perception of time made the periods of worry and stress feel shorter, thereby providing a temporary escape or relief from their difficulties.

> *When I get some to use, I feel like everything* [stress and worry] *becomes short short short for me.* (001, Male, 25-34 years).

5.6.2 Subordinate theme: Socio-cultural and environmental factors contributing to continuous non-medical use of tramadol

The continuous non-medical use of tramadol was primarily attributable to larger social, cultural, and environmental factors influencing participants' behaviours and choices. This included societal norms, cultural beliefs and physical and social environments that encouraged tramadol use. Figure 25 presents the subordinate theme and its correlating two levels of subcategories.

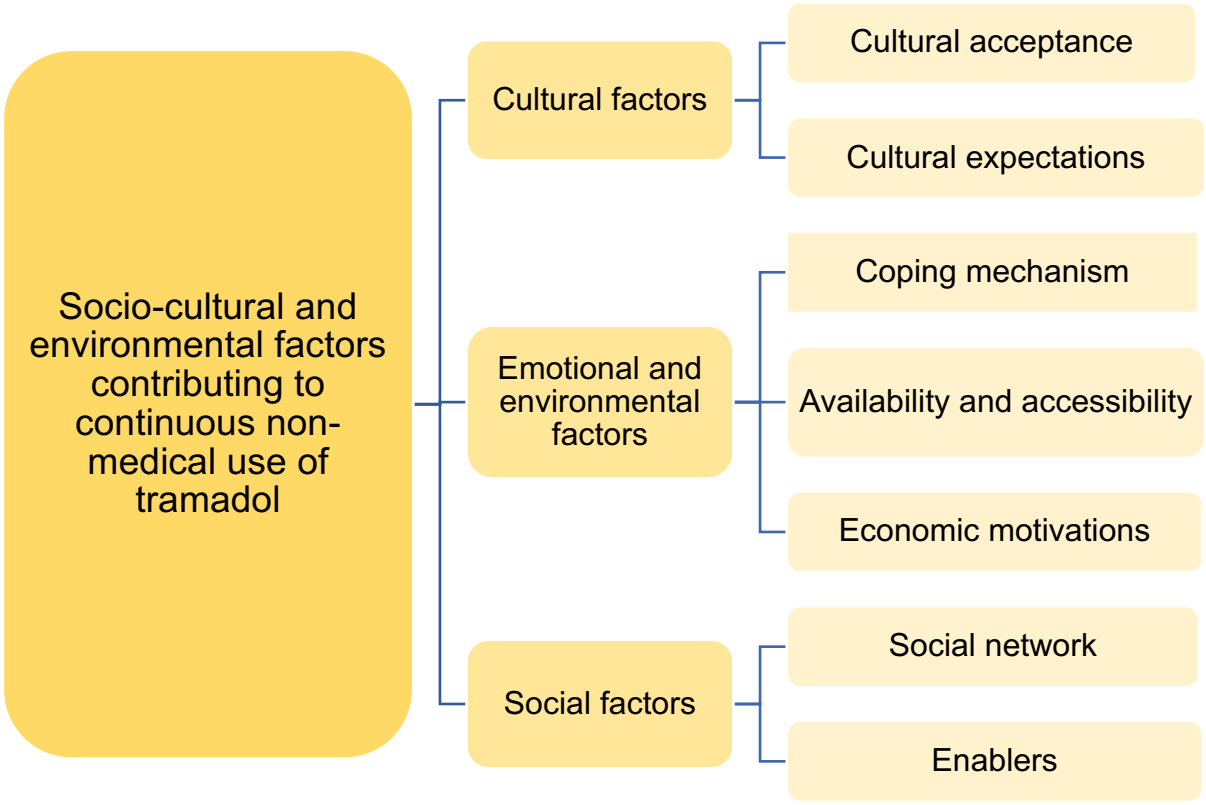

Figure 25. Subordinate theme 5.6.2 and its corresponding two levels of subcategories.

Cultural factors

Cultural acceptance

In this context, cultural acceptance refers to the societal norms and attitudes that shape the perception and acceptance of certain behaviours within a community. It involves the collective endorsement or tolerance of practices. Cultural acceptance had a significant influence on the

continuous use of tramadol, specifically in relation to notions of ‘coolness’ and masculinity. Some participants highlighted the cultural stereotypical image of men being ‘cool’ and masculine when they used drugs, including tramadol. They associated tramadol with an increased self-perception of social acceptance. This was an uncommon but insightful perspective, highlighting a nuanced understanding of the drug's role in societal and personal identity constructs.

> *You know, one thing about us men is that we have this perception that when you do drugs, you are cool and manly.* (006, Male, 18-24 years, in rehabilitation).

Cultural expectations

Cultural expectations, specifically normative gender roles, contributed to the continued use of tramadol, as evidenced by a participant's remark regarding the pressure to find something to do or to find work to fulfil their role as a man. He emphasised that traditional gender roles in his cultural contexts required men to be the primary providers for their families. According to the participant, this cultural expectation put pressure on him to find employment or take part in activities that generate income. He went on to say that he turned to tramadol use as a means of coping with the stress resulting from the pressure to meet these expectations. The participant's comment emphasised the role of cultural expectations in shaping his choices and behaviours, with continuous tramadol use being the result of the pressure of conforming to prescribed gender roles.

> *It was after my dad passed that things started becoming very difficult. I’m a man and could not just sit and watch, so I had to find something to do. In fact, that is what is expected of me as a man, so I decided to start selling slippers…… and because of that, I was very stressed. It [tramadol] made me forget about my worries. It felt like something had been lifted off my shoulders.* (002, Male,25-34 years).

Emotional and environmental factors

Coping mechanism

Coping with difficult emotions and challenges emerged as a significant contributor to the continuous use of tramadol, as evidenced by many participants’ descriptions of using tramadol to `numb themselves’ from the harsh realities of their lives. This included grief following a tragic loss, challenging economic circumstances such as unemployment and low socio-economic backgrounds, difficult family relationships, and the consequences arising from their drug use. These aspects of their lives were described as causing immense stress, resulting in

overthinking and feeling overwhelmed with mental and emotional pressures. The participants' reliance on tramadol as a coping strategy emphasises their effort to obtain temporary relief from the difficult emotions and challenges they were experiencing.

> *It's not my destiny to sell shoes by the roadside, but it's like my parents died suddenly, and later my brother also died. So, it was left with me, and because of that, I was very stressed.* (002, Male, 25-34 years).

Availability and accessibility

Various sources from which participants could easily obtain tramadol were reported. These include 'ghettos', convenience stores, and markets, as previously stated, indicating that the availability and accessibility of tramadol may have significantly contributed to the continuous use of tramadol. Participants reported they could also get tramadol without a prescription from drug stores or pharmacies. Furthermore, some participants mentioned unusual sources, such as buying tramadol from people's homes. Tramadol availability and accessibility were not limited to local markets, as some participants reported others bringing tramadol from neighbouring countries, such as Benin and Burkina Faso, to sell, while other participants described engaging in wholesale purchases from Nigeria.

> *Provision store* [convenience store]*. That is what they have used to cover up the tramadol business. But if you know and use tramadol, you are aware that that is where it is sold.* (001, Male, 25-34 years).

Participants also cited tramadol's affordability as one of the reasons for its continuous use. Some participants noted that tramadol was relatively less expensive than their first drug of choice, typically cocaine, leading them to use it temporarily until they could afford their preferred substance.

> *I think they will be much cheaper than others*. (012, Male, 35-44 years, In Rehabilitation).
>
> MOA: Did it being a cheaper option mean anything for you?
>
> *Yes, and the buzz is stronger, so I use that one to calm down and hustle for some money to get the drug of my choice which is much more expensive. (*012, Male, 35-44 years, in rehabilitation)*.*

It is important to note that participants had differing views on tramadol affordability. Some participants mentioned tramadol's increasing cost over time, implying that it may not be affordable for everyone.

> *To me, it's expensive now. Because it used to cost less when I started using it, we could buy about four sachets for two cedis. But now just a sachet costs 20 cedis Eii!* (009, Male, 35-44 years, in rehabilitation).

Overall, the continuous use of tramadol among participants was attributed to the confluence of factors such as convenient availability, varied procurement channels, reasonable pricing, and a comparative cost advantage.

Economic motivations

Participants involved in the sale of tramadol highlighted economic or financial motivations as a major factor contributing to their continuous use of tramadol. They mentioned that selling tramadol gave them the distinct advantage of not having to purchase tramadol to use it. Since they sold tramadol, they had ready access to the drug without incurring the associated purchase costs. This economic aspect created a self-sustaining cycle in which their involvement in the illegal market provided them with a steady supply of tramadol, fuelling their drug use.

> *What also motivated me to continue to use it was that I didn't have to buy it because we had the bulk of it in our possession for selling. So, I could use any amount that I wanted.* (013, Male, 35-44 years, in recovery).

Social factors

Social network

The social network or social group within which individuals are integrated was identified as a major factor contributing to the continuous use of tramadol. Some participants described feeling encouraged to use tramadol because they were part of a circle of friends who also used it for non-medical purposes. They expressed a feeling of acceptance and inclusion in this social group, which acted as a motivating factor for their continued use. Having peers who shared similar behaviours and attitudes towards tramadol created an environment where tramadol was normalised and less stigmatising. This social influence contributed to the perpetuation of tramadol use as individuals sought to maintain their social connections and identity within this specific group. Within the context of Ghana, where community and belonging exert significant influence on individual behaviour, this peer-driven normalisation of

tramadol use illustrates how deeply collective values can impact personal health choices, sometimes leading individuals to prioritise social cohesion over individual health benefits.

> *So, I stopped hanging out with old friends who weren't using tramadol. Because I was not going to get some from them, and they will complain about everything that I do, so why don't I go to where there are others who also use it, and my use of tramadol will appear normal to them. They rather encourage you to keep using it. Someone might even offer to buy you some and ask questions like oh, are you just taking one tablet?* (005, Male, 25-34 years).

Individuals who cited the impact of their social circle on their continuous use frequently emphasised the existence of peer pressure within the group. This highlights peer pressure as a common denominator for both initial use and continuous use of tramadol.

> *Oh, why would I want to hang with people who don't use tramadol? I have to be around people who use it, so I get the company to do what I am doing.* (009, Male, 35-44 years, in rehabilitation).

Enablers

Some participants described instances where others enabled their continuous use of tramadol by supplying them with the drug or encouraging them to use it; without these individuals, their access to tramadol would have been limited. They named their employers as the enablers who facilitated their continuous use of tramadol, attributing this behaviour to the employers' motives of increasing their productivity. In Ghana, where there is a deep-rooted societal value of respecting authority, such behaviour from employers can be particularly influential, as these employees may have felt compelled to comply with their requests to maintain favour and job security, reinforcing the role of authority in perpetuating drug use.

> *….. the people I provided laundry services to, could give me 20 cedis to buy tramadol because they knew I would have a lot of energy to wash their clothes when I used it. Because if you haven't used it, you can't do the work.* (014, Female, 45-54 years, in recovery).

5.7 Superordinate theme 3: Multifaceted consequences of non-medical use of tramadol

Figure 26 is a diagrammatic representation of superordinate theme 3, showing the interconnections and hierarchical relationships among its subordinate themes and subcategories.

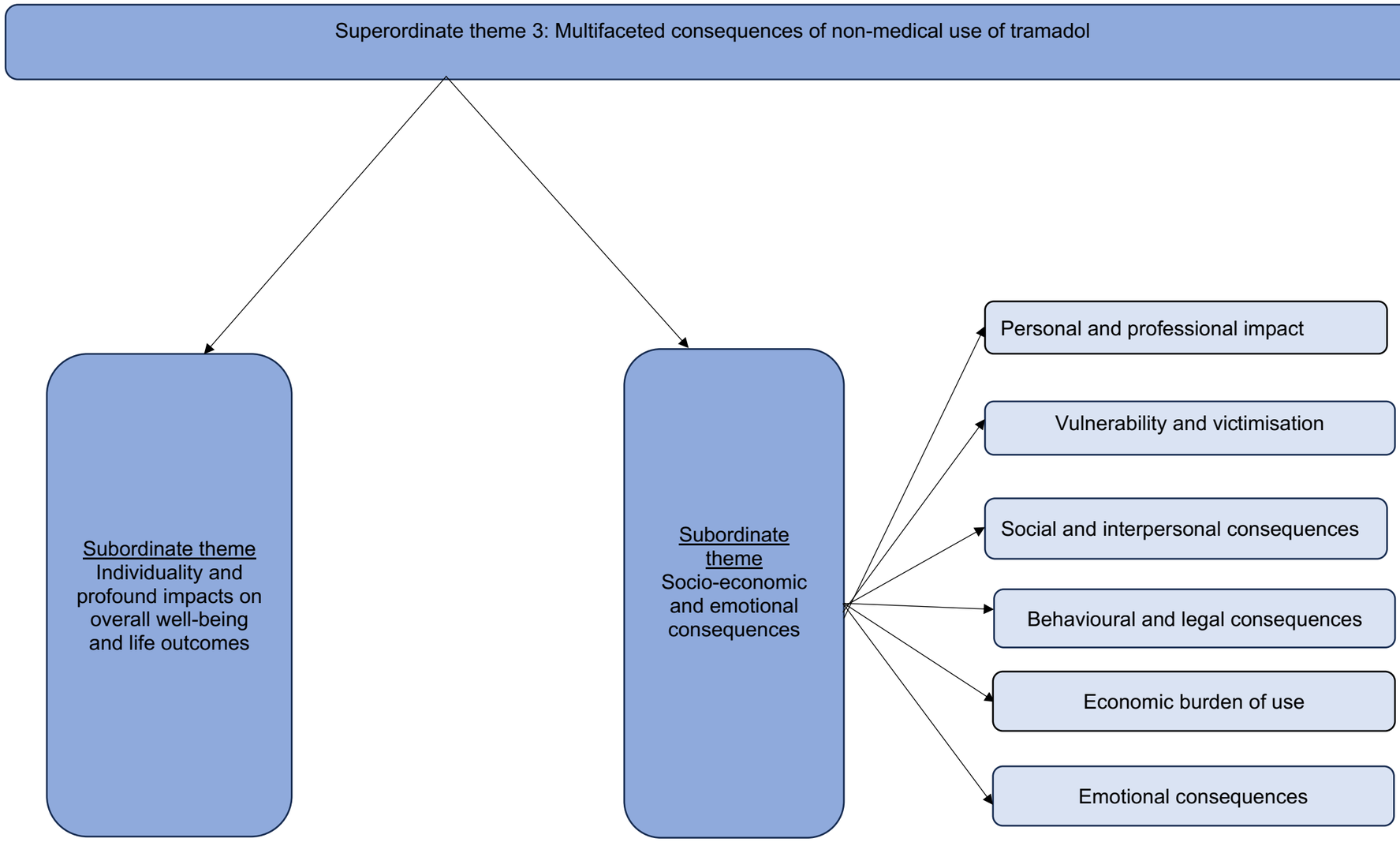

Figure 26. Superordinate 3 and the interconnections and hierarchical structure of subordinate themes and subcategories.

5.7.1 Subordinate theme: Individuality and profound impacts on overall well-being and life outcomes

Individuality highlights the subjective nature of tramadol's effects and the uniqueness of experiences reported by various individuals. A recurring theme among participants was the belief that the consequences of using tramadol varied from person to person. Indeed, each participant's responses on the use of tramadol exhibited some degree of variability, as the drug's effects on individual behaviour were not consistent, despite certain similarities.

> *If I sat down to use drugs with others, the type of substances and combinations I would use, if they try the same thing, they would collapse and probably die. But I was still standing. So, it is individuality. It depends on what each person can handle.* (009, Male, 35-44 years, in rehabilitation).

Furthermore, the non-medical use of tramadol was reported to have profound negative effects on the well-being and life outcomes of individuals. This was expressed by several participants who conveyed strong feelings about how their drug use had affected their lives. They used expressions that translated as "tramadol ruined my life" and "tramadol destroyed my life" to articulate the adverse consequences they experienced.

> *It destroyed my life. It ruined my everything.* (014, Female, 45-54 years, in recovery).

5.7.2 Subordinate theme: Socio-economic and emotional consequences

Participants discussed several social, economic, and emotional consequences related to their use of tramadol. These consequences manifested in various ways and impacted different facets of society, including individuals, communities, and institutions. Figure 27 illustrates the subordinate theme and its correlating subcategories.

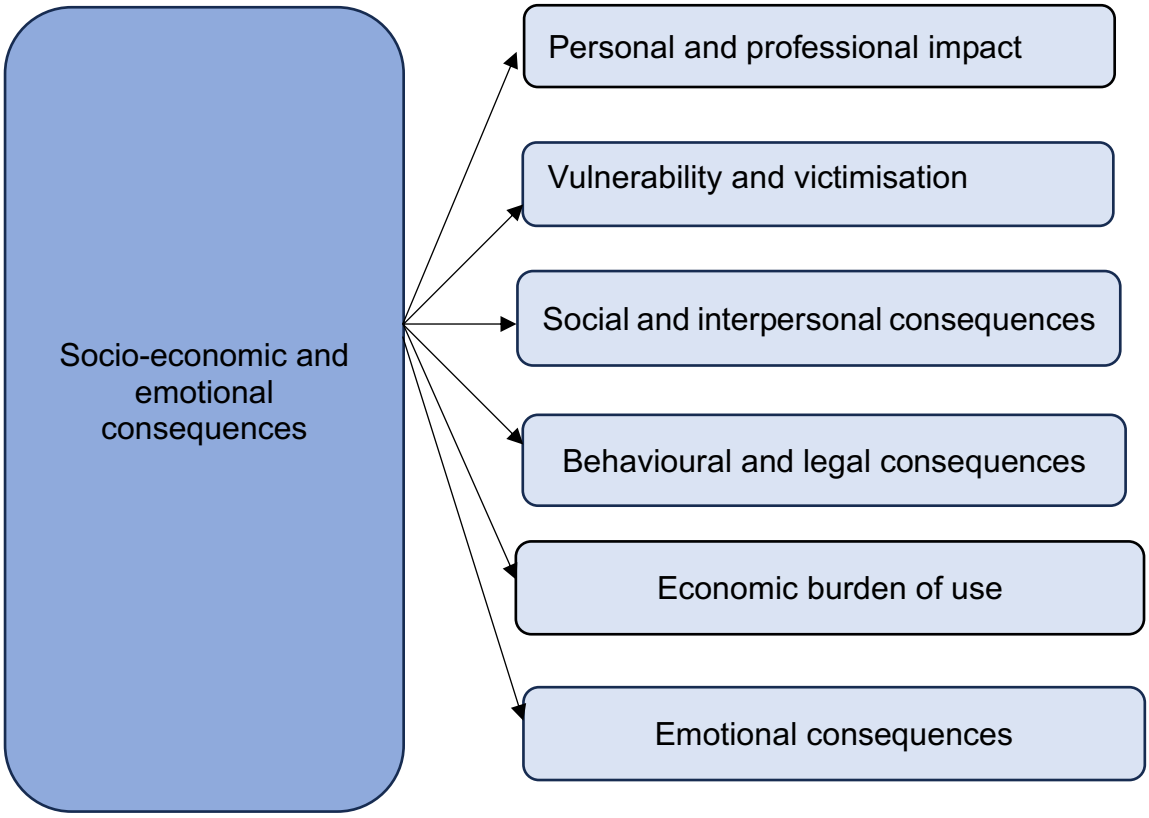

Figure 28. Subordinate theme 5.7.2 and its corresponding subcategories.

Personal and professional impact

Personal and professional impact explores the profound ways in which tramadol use hindered individuals' academic achievements, career progression, and overall developmental milestones. Several participants narrated encountering difficulties in maintaining their academic performance and attaining their educational goals. Some participants reported that tramadol did not improve their memory or recall abilities, contrary to their expectations. Rather than enhancing their cognitive function, they experienced confusion and concentration issues during an important exam. Others disclosed that their involvement with tramadol diminished their motivation and desire to attend school. They described how the drug altered their behaviour, causing them to be truant and lose interest in their studies. Consequently, they missed out on valuable learning opportunities, lagged behind in their studies, and jeopardised their overall academic performance.

> *When I used it and sat behind the paper, I stared at it and was confused. I was stuck reading one line for hours. So, the invigilator noticed that I was not okay because I kept wiping my face while sweating profusely. So, the invigilator*

approached me, and I told him I was not feeling well. And so, he made me stop writing the paper, and I left for my room. (005, Male, 25-34 years).

Furthermore, as participants shared their experiences, it became clear that their involvement with tramadol had a negative impact on their employment and career prospects. Many participants frequently mentioned having a general lack of desire or drive, feeling lethargic and too 'lazy' to go to work. Others commented on how their involvement with tramadol altered their interests and priorities, resulting in disengagement from activities they once enjoyed and that were prospective avenues for careers and personal development.

In the beginning, I was able to work just fine, but it got to a time I would not even go to work when I used it. I became lazy. (009, Male, 35-44, in rehabilitation).

I used to really like playing football, but because of the tramadol that I am using, I have stopped pursuing all of these endeavours. …… I could have played up to the professional level. (007, Female, 18-24 years).

Certain participants expressed concerns about potential employers' reluctance to hire or continue their employment, citing apprehensions related to their behaviour, physical appearance, and reliability due to their tramadol use. These participants recognised that their use of tramadol might create negative impressions that could harm their career prospects, especially if potential employers became aware of their drug use. Other participants admitted that using tramadol made it difficult for them to communicate effectively with potential employers, which resulted in them losing out on good job opportunities.

When someone employs you, how you might react because you have used tramadol can let them sack you. This is because you might not be able to do the things that they might expect of you. (004, Male,25-34 years).

Some participants also described how the lure of monetary benefits from selling tramadol superseded their interest in other employment opportunities and led to a decline in their motivation to pursue other jobs.

When I was in Togo, I went to do work and pay as a welder. But when I started using tramadol, when I calculated the amount of money that I got from selling tramadol and compared it with the welding job, I saw that it was peanuts. I felt that I was wasting my time with other jobs. I eventually took my mind off every other job. So, my work life became non-existent. (013, Male, 35-44 years, in recovery).

Participants who indicated these personal and professional setbacks and several others generally felt a sense of delay in achieving life's milestones. They expressed lagging behind their peers in terms of success, career advancement, and reaching significant personal and professional milestones.

> *It* [tramadol] *has drawn me back in life so much. My education, my children. I am behind in so many things. People I started life with who were not even as intelligent in school have passed me. I was very smart in school but am behind in my education because of tramadol.* (015, Female, 35-44 years, in recovery).

Vulnerability and victimisation

Several participants recounted distressing incidents of violence, including physical and sexual assault, related to their tramadol use. They described incidents in which their vulnerability was exploited, often by individuals who took advantage of their impaired judgement and diminished capacity while under the influence of tramadol, and times when it caused them to engage in negative behaviour such as theft, which resulted in physical assault.

> *Sometimes even the way you will hustle to get the money to buy it; because it is difficult, and so you will have to take money from men. And they will all want to sleep with you. Sometimes they will buy the drug for you just so you will use it and fall asleep, and they will sleep with you. Sometimes by the time you wake up, 5 or 6 of them would have raped you. When you ask, too, you will not know who and who did it.* (016, Female, 45-54 years, in recovery).

Social and interpersonal consequences

Social and interpersonal consequences highlight the significant impact tramadol use had on individuals' relationships, their place within the social fabric and the broader impact on community dynamics. Additionally negative perceptions of tramadol are revealed, potentially resulting in numerous adverse social implications.

The negative impact on social relationships was a recurring theme among participants. Some participants shared instances of engaging in physical and verbal altercations with their family and friends due to their use of tramadol. These confrontations resulted in strained relationships and heightened tensions within their social circles. Other participants added that the conflicts frequently escalated because of their altered behaviours and impaired judgment due to their tramadol use, which included becoming needlessly argumentative. In the context of Ghana, where family relationships are crucial and deeply intertwined with individual identity and

societal approval, the strain on these relationships due to tramadol use can have especially severe repercussions, as family disapproval can lead to profound social and psychological consequences for individuals.

> *It is the reason my marriage did not work. I am divorced now. It has affected my relationship with my children. ……...because when I use tramadol and get intoxicated, I don't have time for even myself, let alone my children. A girl child especially needs the guidance of her mother. When I started leaving home, she was in class 4. I used tramadol and left them. Nobody knew where I was.* (015, Female, 35-44 years, in recovery).

Furthermore, the financial burdens associated with tramadol use put a significant strain on family members, who had to bear the costs of medical treatments, legal fees, and other related expenses, negatively impacting family relationships. Families bearing the financial burdens associated with a member's tramadol use reflects the deeply ingrained principle of collective responsibility in Ghanaian culture. In this context, the strong familial bonds that are highly cherished often translate into a communal obligation, where family members collectively support one another during crises.

> *The medical bills were very expensive, and my parents had to pay. This made my stepdad very angry. He did not speak to me for a long time.* (006, Male, 18-24, in rehabilitation).

As participants felt compelled to conceal their tramadol use and engage in dishonest behaviour, the secrecy and deception surrounding their drug use eroded trust and led to broken relationships.

> *Yes, it has affected my relationship with my family because it got to a time when you go home, you have to be frequenting the ghetto. People are going to see you go there and in a different light, and they will tell your parents about it, and then you become unbothered or nonchalant when they confront you about it. After all, they have found out, and so what? But I lied about it initially. So, it was like my family had lost trust in me.* (005, Male, 25-34 years).

Loved ones were perceived to be disappointed and resentful as a result of the emotional and financial toll of supporting their tramadol use. These complex dynamics resulted in a mix of stern affection, in which family members concurrently cared for but were also frustrated by the actions, contributing to the overall strain on interpersonal relationships.

Then all my loved ones now became people who despised me because when I got close to them, I always hurt them. Then it was like you have nobody. Not friends, not family. You are all alone. (016, Female, 45-54 years, in recovery).

In several accounts, participants expressed a desire of not wanting to hear people speak and a general lack of interest in engaging in social interactions. They described a sense of laziness and feeling unmotivated to participate in conversations with others. While their peers may not outright reject them, some participants reported feeling uncomfortable around others out of concern that their drug use would be obvious. Others expressed apprehension about interacting with people who did not use tramadol, citing the possibility of conflicts and misunderstandings arising from their altered behaviour. As a result, these participants resorted to hiding or distancing themselves from social circles in which they once participated, thereby exacerbating their feelings of isolation and disconnection. Moreover, some of them stated that tramadol use contributed to forgetfulness and absent-mindedness, making it difficult for them to hold a proper conversation or maintain meaningful social connections. This social isolation and awkwardness caused a sense of alienation from others and negatively impacted the development of healthy social relationships.

You don't feel like hearing anybody speak. I was not okay, always disturbed, easily irritated and uninterested in interaction. …….. Because you will feel lazy to engage in the conversation…….it also makes you forget things. Like I would not be able to have this conversation we are having now because I would start talking about things that have nothing to do with it. …….. And this is why at the ghettos, people sit down with their heads bowed for hours from morning till evening without talking to anybody. (005, Male, 25-34 years).

Moving on to other social consequences that extend beyond immediate interpersonal context, social stigma and misconceptions about individuals involved in tramadol use were frequently reported. Some participants described how friends who did not use tramadol distanced themselves from them. This social avoidance created feelings of isolation and contributed to the stigma associated with tramadol use. They also reported encountering preconceived notions and stereotypes, with others labelling them as "bad men" or "bad boys" solely based on their use of tramadol.

It has affected me because I had people I used to associate myself with, but when they learned that I take that drug, they distanced themselves from me. Because everyone has a perception that if you use tramadol, you are a bad man or a bad

boy or you are a violent kind of person. So, it has created distance between me and some of my friends…….. (003, Male, 25-34 years).

Many participants also disclosed hiding their tramadol use from others out of shame and fear of being judged. They expressed concern about the stigma associated with drug use and the preconceived notions they expected from family, friends, and society. This fear of judgement and the desire to avoid social scrutiny often motivated them to keep their tramadol use a closely guarded secret. Moreover, some participants emphasised that the only way to avoid interpersonal problems with family was to conceal their tramadol use, as they believed that revealing their use would lead to strained relationships and additional conflicts and disappointments. The need for secrecy exacerbated the already present feelings of social isolation they experienced.

Because my mum has said or accused me several times, and I had denied it so I couldn't call home to inform them of my arrest as the police would describe what I looked like when I was arrested to them, and so I had to sort it out myself. (005, Male, 25-34 years).

MOA: Why did you want to shield your mum from that sort of information?

Because the relationship between my parents and me, especially my mum, is very close. My mum really likes me, …… so I don't want to do anything to upset her. (005, Male, 25-34 years).

In the Ghanaian context, where community and religious norms heavily influence personal ethics and social behaviour, the stigma associated with tramadol use can be particularly severe. The internalisation of these religious and societal values further complicates individuals' willingness to seek help, as doing so could contradict the ethical standards they are expected to uphold, deepening their sense of isolation and the challenges they face. Furthermore, the cultural framework, where family approval profoundly impacts individual actions and societal standing, the fear of losing familial support and facing community ostracism offers an explains the secretive behaviours that further isolated individuals from their support networks.

Within the narrative of wider social impacts, some participants described how their use of tramadol had influenced their social circles, including friends and acquaintances, also to start using tramadol. They shared instances where they introduced tramadol to others, either giving the drug for free, actively encouraging or teaching its use.

> *Even in school, I had people that I used to teach how to use drugs, and so I had several warnings from my headmistress….. The parents of other students I introduced the drug to and all. Because they use and misbehave, and when asked why they did that at home, they will mention that I gave it to them. I was not selling it. I used to give it to them for free.* (009, Male, 35-44 years, in rehabilitation).

Lastly, negative perceptions or attitudes towards tramadol emerged as a social consequence of its use, with several participants conveying negative feelings about the drug. Expressions that translated as “harmful”, "not a good thing," "a bad thing," and "dangerous" were used to describe tramadol. Participants' language and expressions suggest disapproval of the drug, possibly due to the harm they had experienced while using it for non-medical purposes.

> *There was a time when I even questioned why such a harmful substance is approved by the Government to be sold like that. Those are my thoughts sometimes.* (016, Female, 45-54 years, in recovery).

Behavioural and legal consequences

Behavioural and legal consequences explore negative and risky behaviours associated with tramadol use and the direct repercussions of tramadol use on legal standing. It also includes the legal problems arising indirectly from negative and risky behaviours linked to its use.

The study's participants reported a range of negative behavioural outcomes, including interpersonal conflicts, aggressive tendencies, acts of violence, theft, unintentional self-harm self-inflicted harm, involvement in illicit activities, and engagement in risky behaviours. In each case, quick-temperedness, irritability, a sense of invincibility or hyperactive behaviour was found to contribute to the negative and risky behavioural outcomes. Participants also described losing control of their actions and decision-making processes while under the influence of tramadol.

> *When I started using and smoking, I got this mindset that I had to buy a gun to protect myself. So, I ended up buying the gun. I paid a bribe to a policeman to get it licensed.* (006, Male, 18-24 years, in rehabilitation).

Most participants reported arrests, encounters with law enforcement, and legal prosecution due to their tramadol use. They were caught up in the criminal justice system and charged with drug use, possession, and other drug-related offences. Some participants recounted their experiences of being arrested during police raids conducted in the ‘ghettos’ while others were arrested for criminal behaviours exhibited when under the influence of the drug.

Sometimes they come and arrest you at the ghetto. If you are not fast enough to get away. The day that you run out of luck, they will arrest you. (002, Male, 25-34 years).

I have also been to prison because of tramadol. I have been in prison for three months. Aside from the fights, I also pickpocketed somebody. (004, Male, 25-34).

Economic burden of use

The non-medical use of tramadol had substantial financial implications, affecting individuals on multiple fronts. Some participants spent a substantial amount of money to sustain their drug use, putting a strain on their financial resources and significantly impacting their future prospects, ability to meet basic needs, and ultimately resulting in economic instability. There were direct financial costs from tramadol procurement. To sustain their tramadol use, these individuals resorted to selling personal possessions, using funds intended for essential household expenses, such as feeding their children, buying proper meals and clothing, and funds for other important purposes, such as running a business, to purchase the drug.

Hmmm. Money! A lot of money goes into these drugs. All you need money for is to use. You don't buy clothes, not even one or two. You don't eat. Probably some sweets. Nothing! Everything. You even end up selling your personal items and stuff like that just to use. (012, Male, 35-44 years, in rehabilitation).

Several participants recounted experiencing adverse physical health effects, resulting in hospitalisations and the need for medical treatments. In addition to placing a strain on their financial resources, these healthcare expenses also burdened their families, contributing to the financial consequences of their drug use.

I was in the hospital for almost three days, and I also had complications with a hernia, and I believe my drug use triggered it. It was a private hospital, so you can imagine the bill. My family, at this point, had used all their money and resources on me. (006, Male, 18-24 years, in rehabilitation).

There were also costs incurred by participants who faced legal consequences due to their tramadol use. These expenses included legal representation fees, court fees, fines, and other related costs.

I used to go for court hearings and back to the cell. But in all, the judge empathised with me. My lawyer, too, used to brief me on what to say and do. (013, Male, 35-44 years, in recovery).

MOA: Who paid for your legal fees?

At the time, I paid. I had money. (013, Male, 35-44 years, in recovery).

Emotional consequences

Participants described feeling a variety of emotions, including both immediate and long-term effects. Participants had brief moments of silence as these topics were discussed, visibly expressing the weight of their emotions as they either bowed their heads and let out a heavy sigh or shed a tear.

A notable, though less frequent, emotional consequence that emerged was feelings of hopelessness. Some participants described feeling hopeless and despair as they experienced the cumulative adverse effects of their tramadol use. They conveyed the emotional burden of their inability to provide for their family as they had done so prior to using tramadol, resulting in feeling overwhelmed and lacking hope for the future. In the Ghanaian cultural context, where the family unit is integral to an individual's identity and support system, the inability to fulfil family roles due to tramadol use intensifies feelings of despair, as failing to meet community and familial expectations can significantly impact one's sense of self-worth and social standing.

> *When I look back on my life years ago, I had become hopeless. The reason why I had become hopeless was that my family, my siblings and all looked up to me and depended on me financially. But as time went on, I could no longer do those things*. (013, Male, 35-44 years, in recovery)**.**

Furthermore, several participants reported experiencing severe emotional pain due to their use of tramadol. Some expressed their inner struggle through tearful recollections of the tremendous difficulty and pain they experienced while attempting to discontinue using tramadol. Others expressed profound emotional pain as they shared their experience of giving birth to a baby with congenital deformities, attributing it to going against a doctor's advice and using tramadol while pregnant. They described becoming trapped in a cycle in which the drug became a means of escaping or numbing emotional pain caused by their experience. Additionally, some participants spoke about the emotional pain they felt after being sexually assaulted in connection with their tramadol use and the events that unfolded after these incidents. They also described their emotional distress upon learning that their health had deteriorated as a result of their drug use.

I was raped, and it resulted in pregnancy. Up till now, I do not know where my child is. Because when I went back to inquire, they tossed me between nurses. Now that I have recovered and want my child back, I am unable to. There are so many traumatic things that have happened to me. I remember I got pregnant again and had to stop using the drugs. The doctor said my tubes were blocked and it had become an ectopic pregnancy and advised that I stop using drugs, but still, I didn't stop. One of my tubes had to be removed. All of these happened because I was on drugs. (016, Female, 45- 54 years, in recovery).

Another emotional consequence reported by participants was dealing with persistent feelings of sadness because of events that occurred because of their tramadol use. This finding, while not widespread among the study group, highlights a critical area of concern that underscores the varied impact of tramadol on individuals' emotional well-being.

So, I had been here for 90 days, and I have not seen him [his son], *so right now I'm sort of like an absentee father or something and dealing with that alone is hmm.* (012, Male, 35-44 years, in rehabilitation).

MOA: Okay, but do you get to speak to them on the phone?

Yes, but I can't see them in person. Anytime I hear he has a cold or something, it makes me feel like sad. (012, Male, 35-44 years, in rehabilitation).

Another poignant emotional consequence that emerged was the profound sense of regret felt as a result of tramadol use. Several participants described experiencing deep remorse and regret for their choices or decisions. Regret stemmed from a variety of factors, including negative effects on their physical and mental health, strained relationships with loved ones, missed opportunities, and the recognition of the potential harm they may have caused to themselves and others. As the consequences of tramadol use became more evident, individuals struggled with a sense of guilt and wished that they could go back in time to make different choices.

I have really regretted learning how to use that [Tramadol]. *Even the pain of losing my parents has subsided. I am pained by tramadol use even more than their death. I don't like it. It does not suit me.* (002, Male, 25-34 years).

5.8 Superordinate theme 4: The complex framework of the rehabilitation process and its role in facilitating recovery from the non-medical use of tramadol

Figure 2 8 graphically represents superordinate theme 4, demonstrating the interconnectedness and hierarchical organisation of its associated subordinate themes and subcategories.

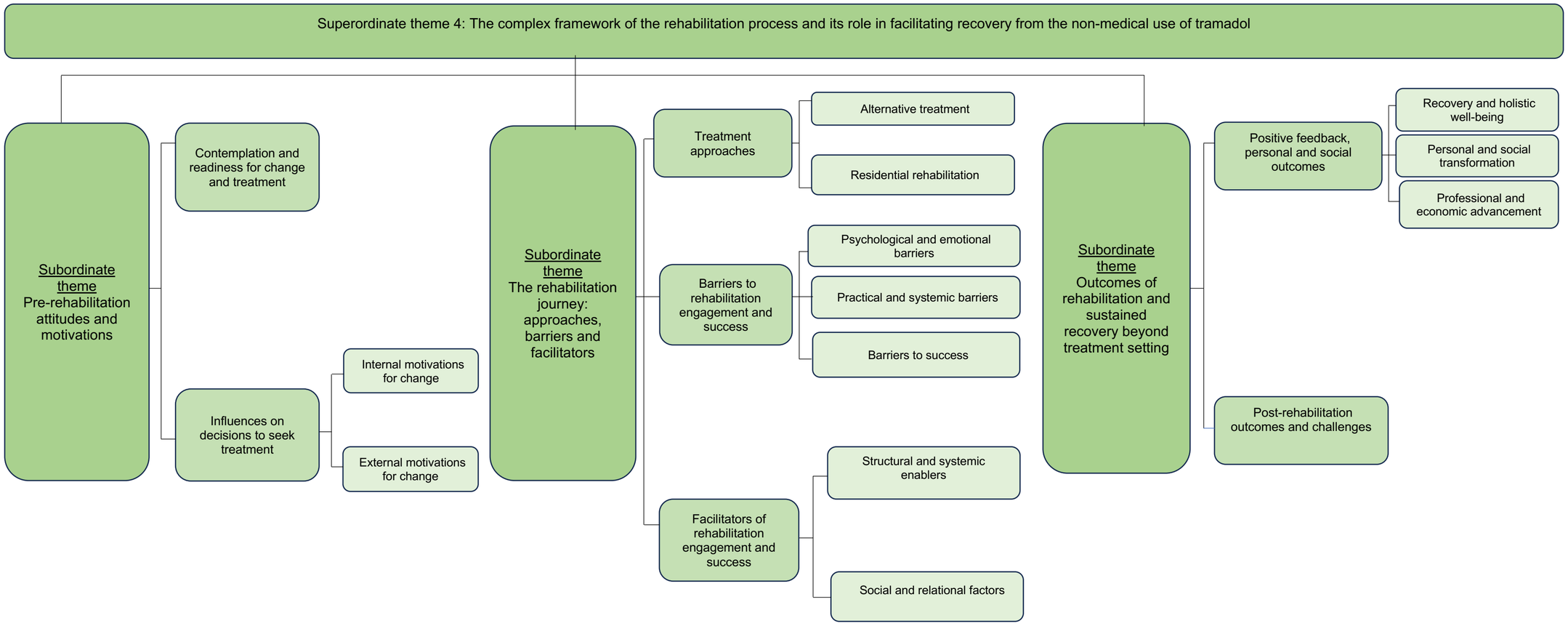

Figure 29. Superordinate theme 4 and the interconnections and hierarchical structure of subordinate themes and subcategories.

5.8.1 Subordinate theme: Pre-rehabilitation attitudes and motivations

Pre-rehabilitation attitudes and motivations serve as a foundational theme in understanding the journey towards recovery. This theme delves into the intricate psychological landscape preceding the initiation of treatment. It also explores the various influences on the decision to seek treatment, highlighting that the path to rehabilitation is often paved with a complex interplay of personal, social, and environmental factors. Figure 29 presents the subordinate theme and its corresponding two levels of subcategories.

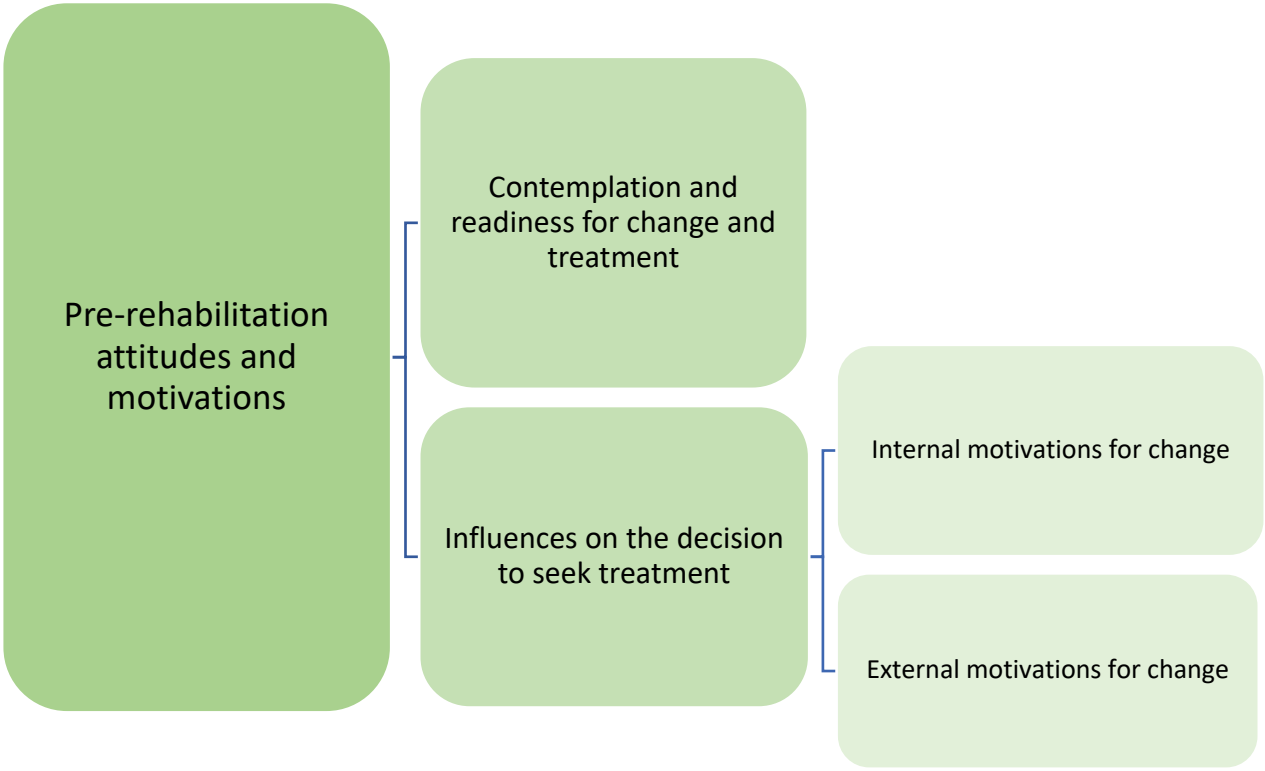

Figure 30 Subordinate theme 5.8.1 and its corresponding two levels of subcategories.

Contemplation and readiness for change and treatment

Most of the participants who were not engaged in any form of treatment disclosed that they had reached the point where accessing rehabilitation and support services occupied their minds constantly. Although participants had not yet committed to a specific course of action, they mentioned considering the possibility of seeking treatment for their tramadol use.

> MOA: Have you ever thought about accessing or using rehabilitation and support services?
>
> *I think about it every day.* (003, Male, 25-34 years).

Many of these participants appeared to sincerely acknowledge their need for assistance and desire to end the continuous cycle of using tramadol. Some expressed a strong willingness to seek help and identify an appropriate treatment facility to aid in their recovery process and restore normalcy in their lives.

> *The most significant thing is that right now,* ***I really want to stop and find a rehabilitation centre to get help, get some stuff out of my system, and get me back to normal life*** [long silence and shed a tear]. (003, Male, 25-34 years).

Furthermore, some individuals' recognition of the detrimental effects of tramadol use on their well-being and aspirations for a healthier, more fulfilling life prompted their desire for help and change.

> *I wanted them to help me overcome this problem because I was really suffering. I used to be bigger than this but have lost so much weight.* (006, Male, 18-24 years, in rehabilitation).

Moreover, some participants in recovery emphasised the importance of being ready for change, affirming that readiness was a crucial aspect taught and fostered throughout their rehabilitation experience.

> *Because the programme teaches that there is a difference with regard to recovery between the person who is ready and one who isn't, the person who is ready will receive the help you are offering them. On the other hand, the one who isn't does not even know why you are giving them that help or advice, so it becomes difficult for them to stop.* (016, Female, 45- 54 years, in recovery).

Significantly, other participants expressed such a strong desire to overcome their tramadol use that they were willing to compromise their confidentiality to obtain the necessary help. For these participants, privacy and secrecy concerns were secondary to the pressing need for intervention and support. While not a widespread sentiment among all participants, this uncommon yet pivotal finding highlights the acute urgency felt by some individuals in their pursuit of help.

> *Yes, I have thought about using a service like you have described. I have really thought about it, that if I had somebody to help me, I would want to get the help that I require. I don't even care if it meant to appear on television, so I will be offered the help I need.* (011, Female, 18-24 years).

Overall, participants demonstrated internal motivation and a genuine commitment to embracing the necessary steps toward rehabilitation and regaining control of their lives by expressing their readiness for change.

Influences on the decision to seek treatment

Participants articulated a range of influences on their decision-making process. These factors encompassed personal motivations, past experiences, an understanding of the adverse consequences of tramadol use, and a desire for improved life circumstances.

Internal motivations for change

Internal motivations for change reflect the introspective and personal insights that contributed to participants' decision to seek treatment, including a critical self-assessment, a sense of fatigue with their current situation, and aspirations for self-improvement by observing others.

Several individuals recognised the negative impact that their continuous use had on various facets of their well-being through self-reflection and a deep evaluation of their lives. They expressed a growing awareness of how their lives, including physical health, interpersonal relationships, emotional states, and general quality of life, had declined due to tramadol use. Through this self-reflection, they also realised that they had reached a point where seeking help and pursuing treatment had become imperative. This self-reflection process enabled these participants to confront the reality of their situation, admitting the need for change and seeking professional help to address their drug use.

> *So, one day, I sat down to reflect on my life; I thought this was not how I was before. People used to give me compliments for my looks. So, I started crying when my mum walked in on me.* (006, Male, 18-24 years, in rehabilitation).

Some participants reported feeling tired, exhausted, drained, and overwhelmed as a result of their tramadol use, indicating an apparent dissatisfaction with their current situation. They shared a feeling of lack of pleasure when using tramadol. This sense of exhaustion and disillusionment served as a significant motivator for participants to seek assistance and make a positive change in their lives. This finding reflects a recognition that the path of drug use was unsustainable and no longer gratifying.

> *As for this place, I checked in myself. I realised that now I am tired and want to stop using* (009, Male, 35-44 years, in rehabilitation).
>
> MOA: Okay, so you say you were tired. Can you elaborate on that for me?
>
> *When I say that I was tired, I mean that the drugs that I was using had 'overed' me. It was destroying me more day after day.* (009, Male, 35-44 years, in rehabilitation).

Other participants considered the lives of their contemporaries, noting their accomplishments, property ownership, and successful careers. These comparisons prompted them to question the trajectory of their own lives and triggered a profound sense of dissatisfaction. They realised they desired more and were determined to make a change. Even if they could not achieve the same level of success as their peers, they were determined to disprove those who doubted their potential because of their drug use. This desire for personal growth and the need to challenge negative perceptions served as a basis to seek help and pursue treatment for their tramadol use. In Ghana, where achievements and success are frequently evaluated by community and family perceptions, this societal pressure intensifies the desire for self-improvement and recovery, bolstering the motivation to overcome addiction and regain one's standing within the community. These reflections, albeit less common, emerged as a poignant aspect of their experiences, underscoring a critical motivation for seeking change.

> *Because of the people I grew up with and sort of started this life thing with, and the sort of property some of them have and some of the careers they are in, I ask myself, that ah, so is this how I want my life to be? Then I thought, that No, I have to do something with my life. Even if I can't reach where they have reached in life, I also have to do something that would put people who think I will not amount to anything because of my use of tramadol to wrong. That is why I decided to come to here.* (008, Male, 25-34 years, in rehabilitation).

External motivations for change

External motivations for change played a crucial role, highlighting the impact of external factors and relationships on the decision to pursue treatment, such as the desire to improve or restore family relationships, awareness of the health and social consequences of continued substance use, and a determination to challenge and surpass societal expectations.

While not the predominant motivation among participants, family-centric reasons for seeking treatment were notably significant for a distinct group. These reasons encompassed both a sense of responsibility toward family members, particularly children, and an awareness of the emotional and physical toll that tramadol use has on loved ones. Some individuals expressed a deep sense of responsibility towards their family members, particularly their children. They recognised that their drug use could jeopardise their parental responsibilities and negatively affect their children's lives. The fear of being unable to be there for their children when they needed them the most was a powerful motivator for them to seek help for their tramadol use. These participants acknowledged that they could fulfil their family obligations and provide a stable, nurturing environment for their children if they remained sober and actively engaged in rehabilitation. Their decision to seek assistance and commit to the recovery process was motivated by their desire to set a good example for their children and avoid them growing up with a parent with tramadol addiction. In Ghana, where familial obligations are seen as paramount, the motivation to recover from tramadol addiction is strongly reinforced by the cultural emphasis on fulfilling one's role within the family unit, thereby aligning personal recovery goals with the broader expectations and values of the community.

> *So, I realised it would affect my child if I did not stop it. Already, the circumstances surrounding her birth were not ideal, and they coming to meet the situation that led to those circumstances. My love for my siblings and my child motivated me to stop using.* (016, Female, 45- 54 years, in recovery).

Additionally, others shared their thoughts and reflections on how their tramadol use and the associated challenges had taken a toll on their families. Many admitted that their loved ones had become physically and emotionally drained from dealing with the consequences of their drug use. This recognition of the burden placed on their family members motivated participants to seek help and make positive changes in their lives. They expressed a desire to absolve their loved ones of the exhaustion caused by their use of tramadol.

> *When I made that decision, one thing that came to my mind was the fact that my sister must be exhausted. She was tired from looking for help and treatment for my addiction.* (015, Female, 35-44, in recovery).

Another pivotal factor that the influenced decision to seek treatment was experiences with hospitalisation or medical emergencies directly related to their tramadol use. Several participants described medical 'scares', which served as a wake-up call, helping them realise the severity of their situation. The fear of potential long-term health complications and the realisation that continued tramadol use could be fatal created a strong motivation to seek treatment. These participants recognised the need to prioritise their well-being and acknowledged that seeking professional assistance was necessary to address the medical consequences of their use of tramadol. The understanding of the potential harm their actions could cause propelled them to make the decision to pursue treatment and actively engage in the recovery process.

> *I realised that I would die if I didn't stop. I could not breathe properly. Also, I could not eat. Neither could I sleep. I could not do anything.* (014, Female, 45-54 years, in recovery).

A distinct yet meaningful influence on treatment-seeking decisions that emerged was the strong desire to challenge stereotypes and defy the negative expectations placed upon them due to their tramadol use. Some participants felt empowered by demonstrating that they were not inherently `bad people' and that their struggles with using tramadol did not limit their ability to change. By seeking help and undergoing treatment, they hoped to demonstrate that they were capable of transformation and personal development. They spoke proudly of the positive changes in their lives and stressed the importance of challenging preconceptions. As Participant 008, Male, 25-34 years, in rehabilitation, eloquently put it, "*I have made them know that we are not bad people. I have proved them wrong. My life has changed. We have been rehabilitated, and our situation has improved tremendously*." This resolute commitment to defy expectations and embrace a brighter future was further reinforced by the proverbial saying, contextually translated as "*Do not cry over spilt milk*" (008, Male, 25-34 years, in rehabilitation), implying that dwelling on past mistakes is counterproductive to maximising personal growth and progress.

5.8.2 Subordinate theme: The rehabilitation journey: approaches, barriers and facilitators

This theme encapsulates the varied approaches to treatment encountered by participants, the myriad of barriers that impeded their ability to access and engage in treatment, and the key enablers to accessing treatment. Additionally, it highlights the key factors that contributed to achieving successful outcomes. Figure 30 presents the subordinate theme and its corresponding two levels of subcategories.

Treatment approaches

Treatment approaches include unconventional therapeutic interventions, medical and therapeutic interventions that target the immediate medical and psychological aspects of drug use and addiction, and rehabilitation, a type of therapeutic intervention that goes beyond addressing immediate symptoms to help individuals achieve long-term recovery and reintegration into society (Sereta et al. 2016).

Alternative treatment

Alternative treatment approaches are non-conventional therapeutic interventions used to address tramadol use. Several participants mentioned alternative treatment approaches, including spiritual and religious interventions, such as being taken by family to church and prayed for by pastors or religious leaders. Some participants described their conviction that seeking spiritual healing and direction could enable them to overcome their tramadol use. Other participants reported mixed results with alternative treatments for tramadol use, involving visits to native doctors or traditional healers. While some experienced positive impacts on their recovery, others found these methods ineffective. In Ghana, religious and spiritual practices deeply influence community and personal identities, leading to the use of faith and traditional medicine as central methods for healing. These approaches reinforce important social and spiritual support systems for recovery.

> *My mother took me there for one pastor to help me to be able to stop using. So, we went there and were given some anointing oils, which my mother used to use on me. It was very powerful. After she uses it on me, I feel very uncomfortable. But it was good. Because whilst I was using it, anytime I had this feeling to get up and leave the ghetto, and I did, I was told there was a police raid after I left.* (011, Female, 18-24 years).

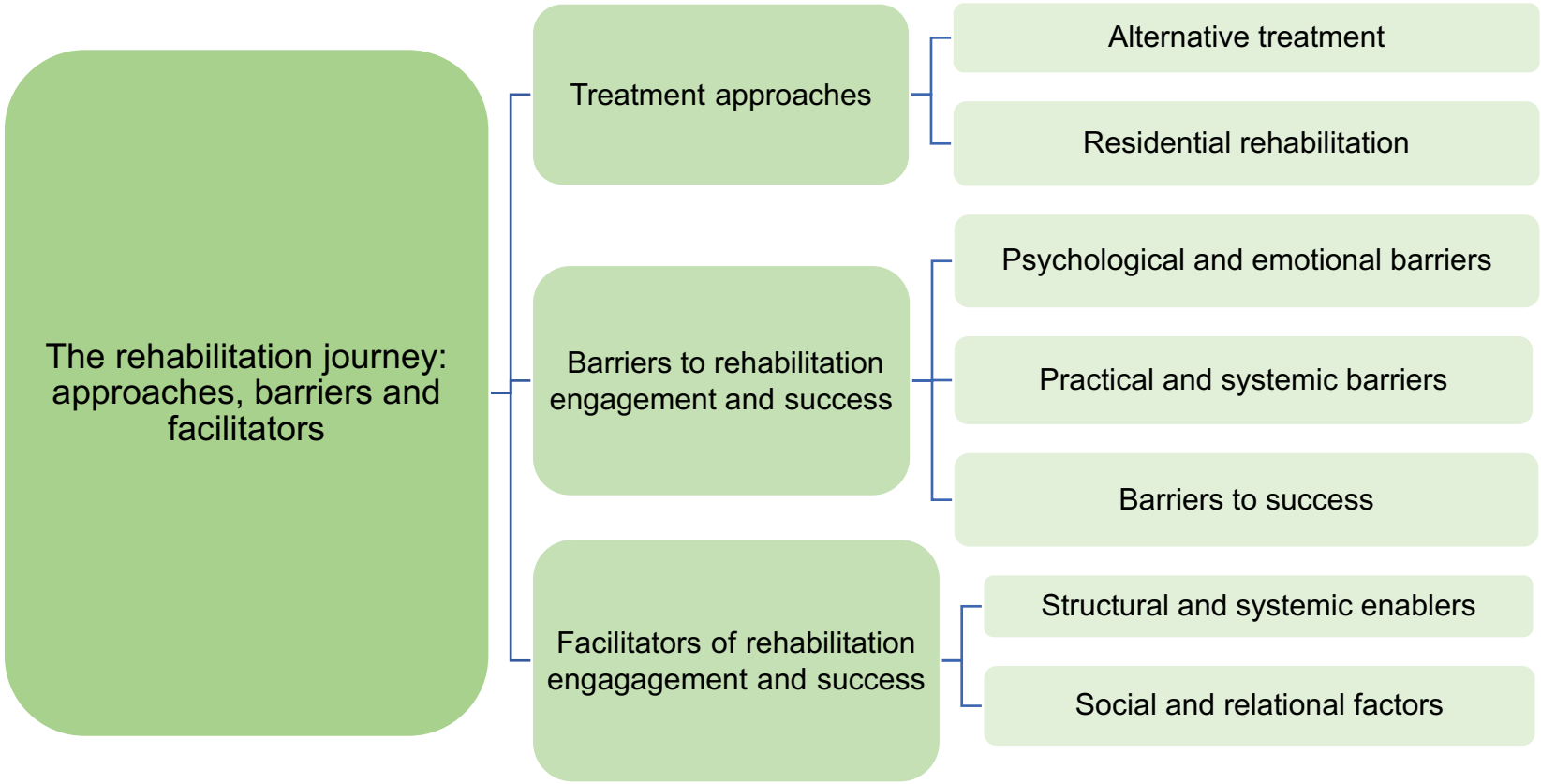

Figure 31. Subordinate theme 5.8.2 and its corresponding two levels of subcategories.

Residential rehabilitation

Some participants underwent residential rehabilitation, a specialised form of treatment delivered in a structured environment for a specified duration, for their tramadol use. In addition to providing a safe and supportive environment, the residential rehabilitation programme incorporated several therapeutic approaches designed to meet the complex needs of participants involved in tramadol use. This included medical detoxification, behavioural therapies, psychotherapy, and peer support groups. It also had elements such as life skills training, vocational support, education, and strategies for social reintegration.

Detoxification was described as an initial and important step in their recovery journey by most of the participants in residential rehabilitation. They described receiving intravenous fluids to help flush substances from their system. Some mentioned being advised by health professionals that detoxification was not a standalone treatment for their tramadol use. Others acknowledged the difficulties and discomfort associated with detoxification, such as withdrawal symptoms and cravings, but recognised its relevance in preparing them for further treatment.

> *To stop using drugs was not easy. Experiencing withdrawals, there is something called detox; they give you drips, water and other stuff to help you with the pain you will be experiencing. After the detox, it is not easy.* (016, Female, 45- 54 years, in recovery).

Several participant accounts highlighted the spiritual and moral dimensions of the rehabilitation process, as well as the individualised ways in which participants incorporated them into their recovery process. Some participants stressed the significance of faith in a power greater than oneself, as emphasised in the 12-step programme, which consists of guiding principles and steps that individuals adhere to achieve and maintain sobriety. They discussed how they would have relapsed if not for their acknowledgement of this greater power, highlighting their strong belief in the role of spirituality in the healing process. They found solace in the book used in the residential facility, which, aside from having relatable addiction stories, centred on God and strengthened their Christian faith. Despite having limited access to traditional places of worship, they formed a prayer group and sought spiritual guidance throughout their recovery journey. Others referenced how the serenity prayer from the 12-step programme empowered them in overcoming emotional setbacks. By accepting the things, they could not change and entrusting them to a higher power, they were able to deal with pain and regulate their emotions without resorting to substance use.

While not a predominant theme across all participants, the incorporation of these elements into the recovery process underscores the importance of acknowledging and supporting the varied pathways individuals may take in seeking wellness and sobriety.

> *We have the 12-steps programme, and step 2 says, "I came to believe that a power greater than myself could restore me to sanity".……. We had this book called Narcotics Anonymous. The authors of the book used their lived experiences to teach how they got out of addiction as recovery addicts. The book also centred on God—the creator of the heavens and the earth. So, the book really helped me in my Christian faith. I think that if it weren't for the fact that I gave myself to God, I would have relapsed by now.* (013, Male, 35-44 years, in recovery).

Interestingly, participants who resonated with the spiritual components of the 12-step programme highlighted that the concept of relying on a `higher power' felt inauthentic or forced, merely a recitation without genuine commitment or belief for other individuals in the programme. The participant appears to view this mere verbal acknowledgement of a `higher power' as a sign that, unlike believers, atheists do not derive the same sense of support or motivation from the spiritual aspects of the treatment.

> *Some people are atheists and don't believe that there is a God that can help them. They say the "higher power" for recital's sake and have not made up their mind to submit.* (013, Male, 35-44 years, in recovery).

It is important to note that several participants who were either currently enrolled or had completed the rehabilitation programme had previously been enrolled in rehabilitation, with some having been through the programme multiple times. Evidently, these individuals had made repeated efforts to address their tramadol use.

> *I went to* [name of rehab]*. I had already been to many other rehabs. I went to all these places but still could not recover.* (016, Female, 45- 54 years, in recovery).

Barriers to rehabilitation engagement and success

Participants encountered multifactorial barriers that hindered their efforts to engage with and achieve successful rehabilitation. These barriers encompassed a confluence of individual, societal, and systemic elements that hindered their path to recovery.

Psychological and emotional barriers

Psychological and emotional barriers represent significant barriers to accessing rehabilitation, characterised by internal struggles stemming from individuals' mental states, attitudes toward recovery, and emotional reactions to the prospect of undergoing rehabilitation.

Perceived lack of autonomy emerged as a psychological and emotional barrier to engaging in rehabilitation, as some participants expressed concerns that rehabilitation would restrict their personal freedom and cause them to lose control over their own decisions and actions. They voiced a preference for maintaining independence and autonomy in managing their drug use. They also expressed the belief that their survival depended on access to tramadol, highlighting a strong perceived dependence on tramadol and the deep-seated fear of facing the challenges of discontinuing its use. Such thoughts acted as strong deterrents by reinforcing the idea that seeking treatment entailed relinquishing control and possibly facing negative outcomes. Although this was not a predominant perspective, this apprehension underscores the complexity of individuals' attitudes towards recovery.

> *I knew that when I went there, I would not get some of the tramadol to use again. But I enjoyed the tramadol even though I knew it would kill me. So, when the time came for me to enrol, I would run away……...I also thought that if I did not get some to use there, I would die….* (014, Female, 45-54 years, in recovery).

Furthermore, deeply ingrained beliefs and thought patterns significantly impacted participants' ability to recognise the need to access rehabilitation for their tramadol use. Several participants highlighted the belief in their own ability to manage and stop their tramadol use, noting that since they started using it voluntarily, they felt confident in their ability to stop its use independently, without needing external intervention. This self-sufficiency belief prevented them from considering accessing formal rehabilitation services or support.

> *I have just tuned my mind that I got into it myself and thus can get out of it myself. It has been four months now, and I haven't used tramadol and am living a normal life. It has not been easy, but I try to control myself.* (005, Male, 25-34 years).

Denial constituted a significant psychological and emotional barrier that impeded engagement in treatment. Though not commonly reported, some participants described themselves as being in denial, refusing to admit the reality and potential consequences of their tramadol use. Despite receiving information about their unusual behaviour from others, one individual dismissed it as false and continued to use tramadol. Their denial of the existence of a problem with tramadol use served as a barrier to accessing and engaging in rehabilitation.

> *I insisted they were lying and continued to use it. I did not want to admit it. To me, nothing was wrong, and if you are not sick, you do not need medicine* [treatment]. (007, Female, 18-24 years).

Another noteworthy psychological and emotional barrier to accessing treatment reported among participants was scepticism or doubt regarding the feasibility of rehabilitation programmes. Some participants shared their perspective on how knowledge and awareness of friends or acquaintances who had previously engaged in rehabilitation, but subsequently relapsed, contributes to doubts about rehabilitation programmes' effectiveness and ability to provide long-term support and solutions. They also expressed concern about rehabilitation being a fee-based service and recovery not being guaranteed. Others were reluctant to pursue rehabilitation because of other people's experiences, which only reinforced their scepticism.

> *So, they want to stop, but they don't know how or perhaps their friend or brother has gone to rehab and has relapsed and has told them about it, plus it requires money to access it, and what if it fails?* (016, Female, 45- 54 years, in recovery).

Fear towards rehabilitation programmes also emerged within the context of psychological and emotional barriers. Some participants expressed concerns and misconceptions about rehabilitation, which led to their fear and reluctance to seek treatment. They associated rehabilitation with stigmatising stereotypes, perceiving it as a facility that primarily catered to individuals who are mentally unstable or have lost their ability to exercise self-control. They expressed apprehension about being subjected to medical interventions such as tranquillizers or sedative injections, which heightened their existing fear and resistance to seeking professional assistance. This perspective, while less commonly reported, emerged as a crucial insight into the psychological and emotional barriers faced by individuals contemplating treatment.

> *I thought this was a place for mad/insane people, and they would be injecting us to calm down, so I hesitated in the beginning. …..I also thought I would be handcuffed and not allowed to move freely here, so when I was coming, I was preparing my mind for that sort of treatment. I also said that if I come and it is like that, I will run away at the slightest chance I get.* (006, Male, 18-24 years, in rehabilitation).

Lastly, several participants shared their observations and experiences, emphasising that many individuals, including themselves, in `ghettos', for instance, despite being aware of

rehabilitation programmes through community initiatives and outreach activities, are resistant and are generally unreceptive to the advocacy. This resistance constituted a significant psychological and emotional barrier to the acceptance and engagement in available rehabilitation options.

> *Yes, I had heard about it, but anytime they tried to enrol me, I ran away. They used to come and talk about it to us at the ghetto. They do outreaches there and tell us to go with them to rehab, but we don't mind them.* (014, Female, 45-54 years, in recovery).

Practical and systemic barriers

This cluster of barriers focuses on external factors, including logistical issues, the structure and availability of treatment programmes, and environmental and societal factors that prevented individuals from seeking and obtaining the necessary treatment for their tramadol use.

Some participants stated that they were aware of rehabilitation but cited a lack of time as a barrier to accessing and utilising it. This indicates the challenge they faced in finding the necessary time to engage in the treatment process despite their awareness of the availability of treatment options. Although this logistical constraint was not a common response across the group, it offers valuable insights into nuanced challenges faced by individuals in seeking treatment.

> *As for rehab, I have heard about it, but I haven't had the time to use it. I am not sure I can do other things when I'm there. And I work too. I have a child to take care of.* (002, Male, 25-34 years).

The inability to afford costs associated with rehabilitation programmes, including assessments, medications, and ongoing care, was commonly cited as a significant barrier to accessing and engaging in rehabilitation. Many participants mentioned that high costs prevented them from pursuing rehabilitation because they had to prioritise meeting their fundamental needs. Others highlighted the striking disparity between themselves and those who could access rehabilitation, perceiving those with financial means as privileged. The systemic nature of this barrier, rooted in socioeconomic inequalities and healthcare disparities, not only hindered individuals from accessing the necessary resources for recovery but also contributed to a sense of frustration, possibly exacerbating the impact of their tramadol use.

> *…….I, for example, have to fend for myself, so if I have to use a rehab facility and am being charged 1000s of cedis, how can I afford that? So, I will still go back to the streets and continue to do what I do.* (003, Male, 25-34 years).

> *Even if I decide to use it, I don't have the money to pay for it. Some come from good and wealthy homes. We had a friend we used to use tramadol with in Ash-town, and his father took him to rehab.* (002, Male, 25-34 years).

Social stigma emerged as a key systemic barrier that prevented many participants from accessing and engaging in rehabilitation. Several participants revealed a pervasive stigma associated with drug addiction, which posed significant barriers to open communication and treatment-seeking. They expressed reluctance to openly discuss their addiction issues for fear of being judged, stigmatised, or subjected to negative societal consequences.

> *…… because it is like you have nobody to speak to about your problems or freely talk about your addiction problems with. Because the person you might want to talk to about your addiction problems might have the idea that you are not serious, or you are a bad person or something of the sort.* (003, Male, 25-34 years).

Moreover, concerns about confidentiality and the possibility that their personal struggles will be publicised or sensationalised by the media further highlighted the social stigma surrounding drug addiction. This fear of public scrutiny and humiliation limited their access to, and engagement in rehabilitation services.

> *And also, the people who come on TV to tell their addiction stories make me feel like they might do a video recording of me when I go to such a place, and I do not want that.* (010, Female, 18-24 years).

Furthermore, information and knowledge gaps represented significant systemic barriers to accessing and engaging in rehabilitation for the non-medical use of tramadol. While some participants demonstrated a reasonable understanding of rehabilitation services, the vast majority indicated a lack of knowledge and awareness about available rehabilitation and support services or how to access them. A few participants mentioned hearing about rehabilitation services through news reports and televised interviews with people from similar backgrounds; however, they remained uncertain about the specific details and procedures involved in accessing these services. This collective lack of information served as a barrier to accessing treatment for their tramadol use.

> *It's also the lack of awareness on where to find the services. Unlike hospitals, that you know where you can find the nearest ones, you don't know where to find these types of services.* (004, Male, 25-34 years).

Lastly, the concerns raised by some female participants regarding gender-specific systemic barriers to accessing and participating in rehabilitation for tramadol use were particularly notable. They highlighted the need for interventions specifically targeting women battling drug use and addiction who cannot afford rehabilitation services. To address the reluctance of some women to seek help in mixed-gender environments, the participants emphasised the necessity of creating all-female facilities. They also highlighted the social and cultural barriers that women face in admitting their drug addiction and accessing treatment. Women's access to treatment was described as particularly challenging, with a lack of support and societal disapproval and discrimination impeding their ability to seek help.

> *Also, having an all-female facility will be good because some women are shy to be in the same facility as men. Only one out thousand women wouldn't mind. Because in Ghana or Africa, addiction among women is heavily stigmatised. It is not socially and culturally acceptable for us to do tramadol, cocaine, alcohol etc., but we do it. Therefore, it is very difficult for women to access help.* ***We normalise it for men, but it has also become very common in women*** [Expressive hand gestures]. (015, Female, 35-44, in recovery).

Barriers to success

Barriers to successful rehabilitation for tramadol use consist of a broad range of factors that precluded individuals from achieving sustained recovery and overcoming their tramadol use. These barriers include issues relating to the design and implementation of rehabilitation programmes and their inherent shortcomings. It also covers external factors that have universally impacted many aspects of healthcare, and barriers relating to individuals' engagement and motivation in rehabilitation.

While not the most frequently reported issue, difficulties in adapting to a structured environment in rehabilitation acted as a noteworthy barrier to successful rehabilitation or recovery. Some participants expressed difficulty adjusting to the rehabilitative setting's rules and regulations. They emphasised that the initial phase of rehabilitation was especially difficult because it required a substantial lifestyle and behavioural change. They also mentioned finding it challenging to adjust to the restrictions on their personal freedoms, such as the inability to use their cell phones, the requirement to wake up at specific times, and the abstinence from drug use. The structured environment was unfamiliar and elicited feelings of discomfort initially.

Overall, it seemed challenging to settle into a new routine, adhere to prescribed schedules, and engage in therapeutic activities. It is worth noting that despite acknowledging the initial difficulties, participants viewed the experience as an opportunity to step outside their comfort zone. They understood that leaving their familiar environment and managing these challenges were necessary for long-term recovery.

> *In the beginning, it was not easy. I was not allowed to use my phone, I could not wake up at the time I wanted, I could not have afternoon siestas, and obviously, there were no drugs, so I was finding it difficult. It makes you realise that if you have left your comfort zone to an uncomfortable place and are able to cope, that means when you go out and the voice tells you to use drugs, you can say to it that you will not. I can control my mind and not do what you want me to do.* (016, Female, 45- 54 years, in recovery).

Additionally, under-resourced rehabilitation facilities were identified as a barrier to successful rehabilitation, albeit not commonly reported among participants. Some participants shared their experiences of rehabilitation centres operated as charitable organisations and lacked sufficient resources to facilitate their recovery adequately. These individuals, who described requiring proper nutrition during their rehabilitation journey, faced a significant challenge due to a lack of funding, which translated into insufficient food at these facilities, compelling them to leave. The limited availability of resources in these facilities impacted the general standard of care and jeopardised the ability of participants to engage in their recovery process fully.

> *Those places were free, so you were not adequately cared for. It's free, so they rely on food donations, so there were times when there was no food at home. They came for an outreach in the ghetto, and I joined the car twice to go the rehab, but it was inadequately resourced, so I could not stay. There was no food, and when you stop the tramadol, you have to eat properly, and your appetite for food increases, so you would want to leave.* (016, Female, 45- 54 years, in recovery).

The absence of comprehensive and integrated treatment models that address the physical, psychological, and social dimensions of recovery emerged as a barrier to successful rehabilitation. Several participants raised concerns about various aspects of the rehabilitation process. They mentioned, for example, a lack of detox clinics or inadequate addiction education in some facilities, which may have limited their understanding and ability to cope with their substance use issues. Furthermore, the lack of regular psychiatric evaluations and limited access to mental health support were identified as gaps in addressing the psychological well-being of individuals seeking recovery in other facilities. The absence of a holistic approach

hindered the rehabilitation programme's ability to address the multifaceted needs of individuals struggling with tramadol use.

> *But they don't have a clinic. They don't do detox*. (012, Male, 35-44 years, in rehabilitation).

Language and literacy barriers, although not commonly reported, represent a programme limitation, emphasising the importance of providing language support and literacy resources to facilitate effective communication and engagement with people from different linguistic backgrounds. Some individuals enrolled in the rehabilitation programme discussed their difficulties with reading and writing in English, which was the predominant language of instruction at the facility. They emphasised their struggles in accessing and understanding written materials, such as books and educational resources, due to their limited literacy skills. They did, however, mention overcoming this barrier by cultivating close relationships with colleagues who were proficient readers and relying on them to read and interpret the materials on their behalf. While these interpersonal supports helped to mitigate the language and literacy barriers to some extent, the lack of language-specific resources and tailored interventions within the rehabilitation programme remained a significant challenge to effective communication and participation.

> *……I do not know how to read or write. But when you speak English, I understand and can interpret it. But speaking is what I find difficult. We have some books here that we read, so when I realise that you know how to read and write, especially the students who come here. …… I try to get closer to you so you can read the books to me so I can listen and take what can help me in my rehab journey.* (008, Male, 25-34 years, in rehabilitation).

A significant but less frequently mentioned rehabilitation programme limitation was the monotonous nature of the programme. Some participants voiced dissatisfaction with the repetitive structure of the programme and the standard of the available gym facilities. Aside from lacking variety, they asserted that the rehabilitation programme did not provide engaging and diverse activities to sustain their interest and motivation throughout the recovery process. While enhancements were desired, participants, upon reflecting on their drug use situation, understood that the programme's objective was to facilitate recovery and not to provide luxuries. This indicates that they valued the overall purpose and impact of the programme, prioritising their recovery over what they perceived as material comforts. Concluding his statement, one participant still advocated for the amenities, highlighting the positive role they could play in their healing process. He acknowledged that these facilities could provide a much-

needed distraction and outlet for stress and negative emotions, allowing them to focus on things other than the triggers and difficulties associated with their drug use.

> *Yeah, sometimes it gets like it's one way. Monotonous. So, like some form of recreation. We wanted to build a basketball court, but the nature of the land is someway, so I was like, we should get table tennis. And the gym is not up to standard. …… but it's okay. You think through your situation; it's not like we are here to be pampered; it's just nice that you have some kind of activity to take your mind off certain things*. (012, Male, 35-44 years, in rehabilitation).

Participants reported limited access to aftercare support as a significant programme limitation that impedes recovery success, highlighting challenges in accessing ongoing support and follow-up care after completing a rehabilitation programme. Several participants emphasised the scarcity and inaccessibility of aftercare services, particularly support group meetings. Some participants expressed their frustration regarding the dearth of support meetings in close proximity to their geographical location, impeding their ability to continue accessing the necessary support. Other participants stressed that the primary issue was not the absence of support groups in and of itself but rather the lack of awareness of their existence.

> *…… the other thing is outside meetings. If you don't go to rehab, you can't have a meeting. That is not good. If I need to rent somewhere, I need a meeting close to me. Topmost like 30 minutes drive cos I need to go to the meeting. ……So, if we could get people to start meetings not in the facilities but outside, it would help.* (012, Male, 35-44 years, in rehabilitation).

Moving beyond rehabilitation programme limitations, the onset of the global COVID-19 pandemic posed unprecedented challenges and created a barrier to successful participation in rehabilitation for tramadol use. The pandemic, according to some participants, compelled them to go back home and be with their families, especially to support and look after their elderly parents or other vulnerable family members who were left alone at the time. The needs and well-being of their loved ones took precedence, leaving them with limited time to continue engaging in rehabilitation services for their drug use. The physical and emotional demands of the pandemic, coupled with the need for familial support, created challenges in the uninterrupted progress of their rehabilitation. This barrier, while not widely reported among participants, highlights the interplay between public health crises and personal and familial obligations that can impact the recovery process.

> *So, the first time, I spent three months at the rehab and three more months at the halfway home. That's an Oxford house. The second time I was supposed to spend it a year, but then after 9 months, COVID hit, and my mum was alone at home, …… So, I had to go home*. (012, Male, 35-44 years, in rehabilitation).

Internal dynamics, such as the disruption of the rehabilitation process by some residents, significantly impeded the success of rehabilitation. Some participants described the occurrence of individuals leaving the rehabilitation centres and returning to their previous environments, usually the 'ghetto'. While not commonly reported, this pattern of relapse may jeopardise the progress made during the rehabilitation process and impede the individual's path to recovery. Additionally, these participants mentioned that they were occasionally assigned the task of finding and bringing back people who had fled the rehabilitation facilities. The consequences of this disruption can extend beyond the individuals who leave and those responsible for returning them and impact the overall environment and support system within the rehabilitation setting.

> *Sometimes, people run away from the rehab centres back to the ghetto, and we are tasked to go bring them. We have to go there and investigate where they have gone and get them back.* (013, Male, 35-44 years, in recovery).

It is worth noting that other participants emphasised that this type of occurrence is less likely to occur in rehabilitation facilities with stricter policies and better resources. According to them, having a well-structured and well-resourced rehabilitation centre contributes to a more secure and supportive environment, potentially decreasing the likelihood of individuals leaving prematurely and resulting in a more successful rehabilitation or recovery journey.

> *But in rehabs that aren't free and well-resourced, you cannot tell them you want to go, and they will just open the gates for you to go. You have to pass through the same procedure of coming in because you did not just walk in by yourself, somebody brought you, and they will have to inform the person. So, before they do all of that, you probably would have changed your mind and want to stay, except for people who have purposed in their hearts that they will not stay. They will find any ways and means to be discharged, so they discharge them, so you don't disturb the rest of the residents.* (016, Female, 45- 54 years, in recovery).

Furthermore, involuntary participation in rehabilitation programmes, despite being less commonly reported, was identified as a significant barrier to successful rehabilitation. Some

participants recounted their experiences of being forced into rehabilitation programmes by their parents or family members, despite not feeling ready to discontinue their drug use. Their unwilling involvement in a rehabilitation programme created a sense of reluctance and resistance as they hinted that enrolling in rehabilitation was not a personal decision and contributed to relapsing immediately after being discharged from the programme.

> *Oh, my parents used to force me to go to rehab. I was not ready to stop using the drugs, but they would force me to go. It was not a personal decision. So, when I'm there, I don't use it, but once I get out and go home, I go and use it.* (009, Male, 35-44 years, in rehabilitation).

Facilitators of rehabilitation engagement and success

Several factors were identified as crucial in facilitating engagement in rehabilitation programmes and participants' journey towards recovery from tramadol use, playing a key role in overcoming the barriers previously mentioned and promoting positive outcomes.

Structural and systemic enablers

Structural and systemic enablers focus on the crucial role that ethical, educational, and institutional factors play in facilitating access and engagement in rehabilitation. It underscores the dynamic interplay among these elements, illustrating how they collectively support and enhance the accessibility of rehabilitation programmes.

Participants who were not engaged in rehabilitation highlighted that assurances around privacy and confidentiality would significantly facilitate accessing rehabilitation. This perceived facilitator, while not frequently cited, reflects the critical role of ethically grounded healthcare practices in promoting treatment access. These participants were concerned about the stigma and judgement they might encounter if their rehabilitation participation became public knowledge. They mentioned that assurances of confidentiality would encourage them to seek treatment without fear of social consequences.

> Oh, *if I am assured that my being there will be confidential, I would want to go. Because I don't want anyone to ridicule me because of my situation. I am human, just like anybody else.* (010, Female, 18-24 years).

Empathy was perceived to have the potential to play a crucial role in facilitating engagement in rehabilitation. Several participants emphasised the importance of empathetic communication, suggesting that outreach efforts must be conducted in a manner that conveys understanding and relatability to the individual's experience. This perspective highlights the

anticipated benefits of incorporating empathy into awareness efforts for rehabilitation to increase accessibility.

> MOA: So, like outreaches to let people know what the consequences are?
>
> *Yes, but they have to know how to approach it. Because if you go and don't let the person know that you understand them and know how it feels like to be in their shoes, whatever you say will appear to them as "bullshit", So you have to structure the conversation in a way that will make them listen to you.* (005, Male, 25-34 years).

Financial accessibility, awareness, and education emerged as systemic factors perceived to potentially facilitate access to rehabilitation. Most participants advocated for increased education and campaigns to raise public awareness and improve the understanding and knowledge of rehabilitation options. Many others emphasised the value of educating people about addiction, the advantages of rehabilitation and the support services. Furthermore, concerns about the affordability of rehabilitation programmes were commonly shared, emphasising the need for subsidies to make them accessible to those who may be financially disadvantaged.

> *I don't even know where to find some of that rehabilitation and support service. If it is subsidised, I can afford to pay or do it.* (003, Male, 25-34 years).

Additionally, referral to rehabilitation services by the legal system and healthcare professionals emerged as a salient facilitator, highlighting not only systemic efforts but also the role of holistic and interdisciplinary efforts. A participant recalled an instance where a judge referred her to a psychiatric hospital which offered rehabilitation due to their erratic conduct. As per the participant's account, she acted erratically during court proceedings, following advice from fellow inmates she encountered during her incarceration in a correctional facility preceding her trial for an offence related to her tramadol use. Healthcare professionals also played an important role in referring patients to rehabilitation programmes. These referral pathways enabled participants to access the necessary resources and support systems, promoting their participation in rehabilitation.

> *But what really happened was whiles I was in remand, others advised me in there that if I pretended I was insane, they would let me go, so during my second appearance, I acted as though I was insane, so he asked that I be taken to Pantang Psychiatric Hospital.* (016, Female, 45- 54 years, in recovery).

Social and relational factors

Social and relational factors encompass a broad range of influences stemming from participants' interactions with others and their position within social structures and networks that impacted rehabilitation access and success. These elements encompassed sharing personal stories as deterrence to others, the support and influence from family, friends, and broader social networks, which significantly enhanced participants' motivation and ability to engage with rehabilitation programmes.

A notable social and relational factor that emerged was the perceived benefit of sharing personal stories, recognised as a valuable tool in facilitating rehabilitation access. Many participants expressed a strong belief that their own experiences and stories could serve as a powerful deterrent to family, friends, and others who might be using tramadol. They believed that by sharing their experiences, they could highlight the negative consequences of tramadol use and the significance of receiving treatment to facilitate recovery. These participants hoped that sharing their personal struggles and recovery journeys could raise awareness, reduce stigma, and inspire others to seek treatment. They recognised the power of storytelling in fostering empathy and understanding among people facing similar challenges.

> *For example, if I recover and I go back home, and they see me and how my life has transformed, they will ask me to introduce the service to them and take those willing to go.* (006, Male, 18-24 years, in rehabilitation).

Additionally, most participants who had engaged in residential rehabilitation programmes expressed a strong sense of responsibility to recommend it and support others in similar circumstances. Apart from acknowledging the impact of their own experiences and the transformative nature of rehabilitation in the above-discussed theme, they felt obligated to share their stories, raise awareness about the benefits of rehabilitation, and encourage others to seek help.

The advocacy endeavours of some participants in recovery extended beyond their immediate social circles, as they expressed a willingness to participate in wider community outreach and education initiatives, with the aim of ensuring that others have equitable access to relevant information and resources pertaining to recovery. This sense of social responsibility and advocacy potentially facilitates access to rehabilitation, empowering individuals to take positive steps toward recovery.

> *As for the rehab, if I had the gong gong beater or a siren, I would use it to announce and spread the information because of people who are in a similar situation and*

addicted to substances like tramadol and others that take years away from life. Especially tramadol. If there's anybody in that situation, I am recommending rehabilitation for the person…….. (013, Male, 35-44 years, in recovery).

Moreover, social and peer influence, frequently reported as elements that facilitated rehabilitation access, further accentuates the conviction that lived experience has the potential to empower others in their journey towards rehabilitation. Many participants stated that witnessing the experiences of their friends who had undergone rehabilitation played a significant role in their decision to seek treatment. Seeing their friends make positive changes in their lives and recognising the transformative power of rehabilitation, influenced them to pursue recovery themselves. The ability to relate to others who had gone through similar struggles and successfully overcome them created a sense of community and shared optimism.

We had a friend we used to use tramadol with in Ash-town, and his father took him to rehab, so we recognised the importance of rehab through him. (002, Male, 25-34 years).

Another recurring theme within the context of social relational factors promoting rehabilitation was the significant role played by their families and friends. Many participants mentioned that their loved ones showed genuine concern for their well-being and consistently supported them throughout their tramadol addiction. In addition to actively recommending rehabilitation as a viable solution and encouraging participants to seek professional assistance, they also assumed financial responsibility for the payment of rehabilitation services. Other participants revealed that, despite their family being exhausted and frustrated by their drug use, they remained persistent and eventually led them to seek rehabilitation, demonstrating the depth of their support and commitment. This social support network was essential in enabling individuals to engage in and benefit from rehabilitation services, as it fostered feelings of compassion, empathy, and solidarity. This aligns with the strong collective sense of duty towards helping family members in the Ghanaian culture.

The whole world stops just to get you to be something better, and then you throw it all away. Just to use drugs again, and then they come to your rescue again, and then you rather disappoint them. But then they never give up on me. Though there is anger and resentment and all of that. At the end of the day, I think my family is different because I know friends who are even richer than we are. (012, Male, 35-44 years, in rehabilitation).

A strong support system not only facilitated their entry into rehabilitation but also played an integral role in their recovery journey. Some participants stressed the importance of completing the rehabilitation programme to maintain the acceptance and support of their families. The desire to preserve these important relationships became a major driver in maintaining dedication to the recovery process. Even though this insight was not commonly reported, it underscores the nuanced ways in which familial expectations and support dynamics can influence rehabilitation outcomes. The pervasive cultural emphasis on family and community in Ghana offers an explanative framework for how deeply family approval and the drive to meet communal expectations shaped personal recovery journeys.

> *Cos if I go home and I relapse or something, then that means he* [his brother] *will just wash his hands off me, so I just need to stay*. (012, Male, 35-44 years, in rehabilitation).

5.8.3Subordinate theme: Outcomes of rehabilitation and sustained recovery beyond treatment setting

Outcomes of rehabilitation and sustained recovery explore the comprehensive impacts of rehabilitation on individuals, highlighting their progress from the structured rehabilitation environment to life post-treatment. This theme highlights feedback on rehabilitation experiences, positive program aspects of the programme, and personal and social outcomes as individuals reintegrate into society. It also covers the diverse challenges post-rehabilitation, underscoring that sustained recovery necessitates continued effort and support. Figure 31 presents the subordinate theme and its corresponding two levels of subcategories.

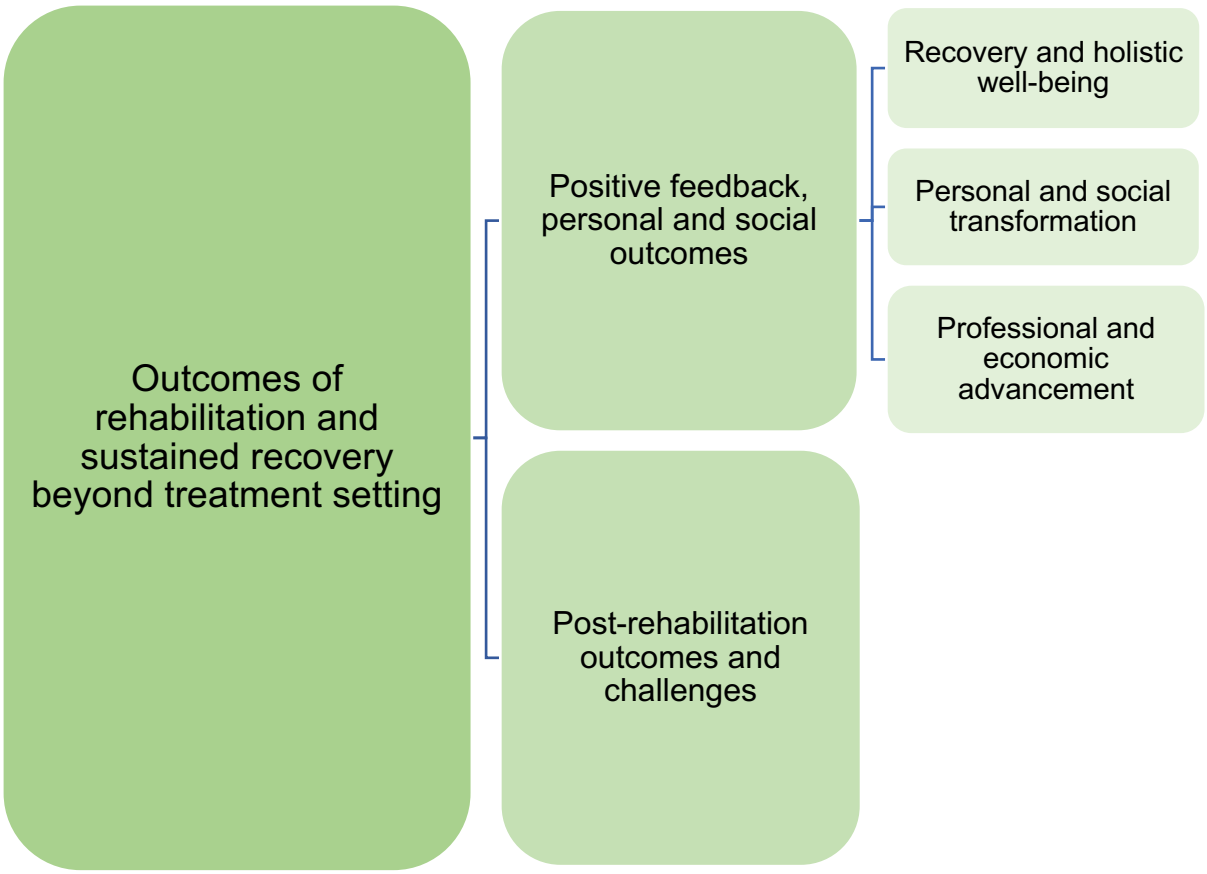

Figure 32. Subordinate theme 5.8.3 and its corresponding two levels of subcategories.

Positive feedback, personal and social outcomes

This finding highlights the beneficial impacts of rehabilitation, characterised by the overall feedback on the rehabilitation experience, positive aspects of the programme, and a range of personal and social outcomes.

Positive feedback regarding the rehabilitation experience was consistently expressed by participants who were seeking or had sought treatment for tramadol use. Several depicted a sense of belonging and comfort, with some describing the rehabilitation facility as a place that provided a homely atmosphere. Words used verbatim or translated as "okay," "good," and "transformed" were frequently used by participants to describe their overall rehabilitation experience. According to some participants, they were generally happy with the service provided to them, citing that they had everything that they required. They also mentioned that

the routinised itinerary in rehabilitation was effective for them.

> *I immediately felt at home.* (006, Male, 18-24 years, in rehabilitation).

> *When they took me there* [rehab]*, my life transformed.* (014, Female, 45-54 years, in recovery).

There was also the perception of service adequacy expressed by some participants. They affirmed their satisfaction with the rehabilitation facility's services, indicating that their needs were adequately met. Some stated that the facility had diligently taken care of everything necessary for their recovery journey since their enrolment, suggesting confidence in the treatment process. Others also outlined the availability of electricity, comfortable beds, and three-course meals. They also mentioned the provision of upkeep money, which allowed them to purchase food outside the facility if they were dissatisfied with the provided meals and clothing that was offered to address any wear-and-tear issues. They echoed this viewpoint, emphasising that all that was required of them, was a genuine commitment to stopping drugs, highlighting their optimism about the effectiveness of the services provided.

> *As for this place, since I have been here, they have done everything that I think they needed to do for me. Everything is being done as they should.* (008, Male, 25-34 years, in rehabilitation).

Furthermore, participants highlighted the positive aspects of the rehabilitation programme. Although not commonly reported, communication with family during rehabilitation emerged as a positive aspect of the programme. Some participants stated that maintaining contact and communicating with their family during their time in rehabilitation was important and beneficial. They mentioned they were permitted to make phone calls and communicate with their family, with the facility manager facilitating the process. This open channel of communication gave them a sense of belonging, support, and reassurance from their loved ones. It allowed them to share their progress, express their feelings, and receive encouragement and understanding from their family members. This communication channel was essential as it allowed them to feel connected to their support system outside the rehabilitation environment. In Ghana, where the family is central to personal and communal life, open communication with family during rehabilitation leverages deeply ingrained cultural values of support and involvement, crucial for shaping recovery and anchoring individuals to their key support networks during challenging times.

> *I am allowed to call and speak to my family. I just have to talk to* [name of facility manager]*. And that really helps. I tell them how I am managing here and the even*

the smallest of progress. It makes my mother happy, and she tells me to keep on because I am doing great. It also makes me know that they have not just thrown me into rehab and left me. (006, Male, 18-24 years, in rehabilitation).

Several participants described peer support as a positive aspect of the rehabilitation experience. One notable example of peer support was the assistance peers gave in reading books to those with reading difficulties. Others recognised the importance of being surrounded by people who had shared similar experiences, as it fostered a sense of belonging and alleviated feelings of isolation. Moreover, some participants highlighted their role as peer mentors who helped others through the rehabilitation process. They had completed their rehabilitation programme and served as a valuable resource for their peers, offering encouragement and practical advice for sustained sobriety. In general, the availability of peer support in rehabilitation not only helped individuals better understand and empathise with one another's experiences, but it also contributed to the overall success and positive outcomes of the rehabilitation experience. It facilitated mutual understanding and empathy and contributed to the overall success of the rehabilitation experience.

So as a peer mentor, I always tell them in class that it is as though we have dug a hole and filled it with the valuable stuff that God gave you. You can see a hole, but your dignity, marriage, money and children are in it. This hole is, however, surrounded by faeces. Are you going to care about the faeces, or will you step into it to go for your valuables? So, I focused on the goal and not the surroundings. (016, Female, 45- 54 years, in recovery).

Volunteering was introduced as a positive aspect of the rehabilitation programme, offering participants an opportunity to engage in meaningful activities outside of their regular treatment routines. Several participants talked about contributing to the rehabilitation community through their involvement in volunteer work at the rehabilitation facility. For some participants, this brought them fulfilment and immense satisfaction, fostering a sense of purpose, giving back and supporting others who were going through similar challenges. Other participants noted that their volunteer work had become an integral part of their recovery journey and significantly influenced their reluctance to leave the rehabilitation centre.

Even now, I am like an assistant to the facility manager here. (009, Male, 35-44 years, in rehabilitation).

MOA: Is this paid work?

Oh no, I am just volunteering. (009, Male, 35-44 years, in rehabilitation).

MOA: How does volunteering make you feel?

I feel very good. It is also part of the reasons I am not eager to leave. (009, Male, 35-44 years, in rehabilitation).

Education and inspiration emerged as positive aspects of the rehabilitation experience, offering individuals the essential knowledge about addiction recovery and the motivational uplift needed to navigate the recovery journey. Participants appreciated the educational content on addiction and recovery, which offered insights and understanding previously inaccessible in their usual environments. This knowledge played a crucial role in enabling them to understand the complexities of addiction, such as the factors that contribute to relapse and the understanding of addiction as a chronic medical condition requiring ongoing treatment.

The educational materials provided in rehabilitation emphasised the tangible possibility of recovery and healing and equipped participants with the knowledge to redefine their priorities and resist cravings, leading to substantial changes in their attitudes and behaviours towards addictive substances. Moreover, the lived experience of the authors, whose books were read, provided concrete examples of recovery and cultivated hope in those seeking a similar path.

Beyond the provision of educational materials, the rehabilitation programme focused on teaching coping strategies and techniques for preventing relapse. These teachings, according to some participants, were instrumental in developing a strategic plan for reaching the goal of recovery.

Okay, well, just learning about why I keep relapsing. I have like literature that I would not have if I were home. Reading stuff because I'm around the program. So that has helped a lot. (012, Male, 35-44 years, in rehabilitation).

Although not frequently cited, physical health support and recreational activities were identified as positive aspects of the rehabilitation experience, with each contributing uniquely to the overall physical health and wellness of individuals. Some participants explained how tramadol addiction had significantly affected their appetite, making it challenging for them to eat and maintain proper nutrition. However, as part of the rehabilitation programme, they were given vitamins (B-complex) to help stimulate their appetite. They were also given fruits, which helped to improve their overall health and well-being. They also appreciated the opportunity to play games such as Ludo, oware, and chess at the rehabilitation facility. These recreational activities provided a much-needed break from the intensity of the recovery process, allowing participants to unwind, have fun, and socialise in a supportive setting. In addition to relieving stress, boredom, and tramadol cravings, they provided a welcome distraction. Friendly

competition, strategic thinking, and social interaction were all aspects of these games that participants enjoyed.

Post recording notes for Participant 014, Female, 45-54 years, in recovery

Participant 014 mentioned some of the activities that they did in rehab, which included games like volleyball, ludo, oware, and chess. She also said that they listened to a lot of music in rehab. She expressed that, personally, the games helped them to take their minds off the classroom learning and just relax. It was also a time they used to have girl talk with other female residents and laugh. She also spoke about having friendly banters around which group had won a ludo game and those who were struggling at the bottom, ‘laughing out loud’.

Recovery and holistic well-being

Recovery and holistic well-being stood out as paramount personal and social outcomes of rehabilitation, with most participants who had engaged in rehabilitation generally attesting to overcoming of tramadol addiction. The transformative impact of rehabilitation was frequently highlighted, with individuals noting an empowerment to discontinue tramadol use and regain control over their lives. Participant accounts were characterised by improved health and an enhanced ability to manage daily tasks drug-free, showcasing the profound positive changes experienced through the rehabilitation process. Participants used terms such as "improved," "feeling better," "changed," "healed," “feeling good”, “okay” and "recovered" either verbatim or in translation to describe their recovery.

> *So, I recovered through the treatment at the rehab. I have fully recovered and have noticed that I have become part of humans.* (016, Female, 45- 54 years, in recovery).

Furthermore, many individuals who had engaged with a rehabilitation programme described experiencing positive changes in their physical and mental well-being. Some reported significant improvements in their overall appearance and body condition since being in rehabilitation. They expressed satisfaction with their transformed physical appearance and feeling more confident. Others reported regaining their appetite and eating well, resulting in noticeable improvements in their overall health.

> *I have improved physically since I have been here. It has really helped me. My physical/ body appearance has really improved. My body looks nice now. Before I came, my body looked so wrinkled.* (006, Male, 18-24 years, in rehabilitation).

Other participant narratives highlight significant improvements in their mental well-being due to participation in the rehabilitation programme. Some people reported relief from distressing symptoms like hearing strange voices, potentially indicating a decrease in hallucinations and improved mental clarity. Significantly, others reported becoming emotionally resilient, allowing them to cope better with hurt and emotional challenges. The 12-step programme played an essential role in their emotional and mental growth, teaching them to accept things beyond their control and find peace in surrendering those aspects to a higher power. This newly discovered ability to navigate their emotions and seek support by adhering to teachings in rehab enabled them to break free from the cycle of self-destructive behaviour triggered by emotional turmoil.

> *It has really helped me emotionally and mentally because I was someone who could not handle hurt. If you did something small to hurt me emotionally, I would be pushed to either go and drink alcohol or use tramadol. I am very soft. I cry easily. But when I went to rehab and went through the 12-step programme, I was able to handle hurt better…… So, just that prayer* [serenity prayer] *helped me handle my emotions well.* (015, Female, 35-44, in recovery).

Personal and social transformation

Personal and social transformation as an outcome of rehabilitation is marked by a shift in mindset, personality development, and an increased motivation to embrace responsibility.

Positive change in mindset and increased self-control through rehabilitation emerged as powerful personal and social outcomes of rehabilitation that significantly impacted individuals' lives. Participants who had experienced rehabilitation often expressed a profound shift in their mindset and thought patterns. Some mentioned recognising that their previous way of thinking, centred around obtaining and using drugs, was detrimental to their well-being. Others emphasised that they now make it a habit to think about the long-term effects of their choices and actions. They find themselves thinking about the big picture and how their decisions will affect their future and the well-being of others in every aspect of their lives. This new mindset significantly contrasts with their previous perspective, in which such considerations were not a priority. Overall, the rehabilitation process provided these participants with the tools and support to reframe their thoughts and beliefs, empowering them to exercise greater self-control over their cravings and impulses and to adopt a future-focused perspective.

> *But when I came to rehab, I realised that they wanted to change the way I thought. They make you know that you can control your mind because if not for them, I*

> *didn't know if I was craving cocaine; for example, I had the right to tell the voice I am hearing that I won't take it.* (016, Female, 45- 54 years, in recovery).

Rehabilitation proved to be a powerful precursor for profound personality change. Several participants emphasised how rehabilitation had a profoundly positive impact on their self-care and hygiene practises. They described how their tramadol use had resulted in a neglect of basic self-care, including bathing, brushing teeth, and washing clothes. However, their rehabilitation experience caused a complete shift in their routines and priorities. Through rehabilitation's highly structured setting, they learned the value of self-care and formed healthy new habits. Their daily routine consisted of rising early, cleaning their living spaces, washing their dishes and clothing, and dressing appropriately. The participants acknowledged that the scope of rehabilitation extended beyond solely addressing drug use. Rather, it entailed a transformative process that cultivated a sense of responsibility and a new perspective on personal hygiene and self-care.

> *What I have seen now is that rehabilitation is not just for the drugs; I went in thinking I was going there to help me stop using tramadol, but I realised that rehab is actually a personality change because when I was using tramadol I was not bathing, I was not brushing my teeth or washing my clothes, I did not even have time to eat, but when I started the treatment in rehab, I was supposed to be up by 4:30-5 am. You will sweep and clean your dishes and wash your close. You will dress up nicely. When I was using tramadol, I did not have time for all of that. I have learnt all of these in rehab.* (015, Female, 35-44, in recovery).

Furthermore, motivation to be responsible was identified as a significant personal and social outcome of rehabilitation, as several participants communicated a heightened sense of purpose and determination to prioritise and take responsibility for their commitments. Some participants stated that their desire to be present for their children and actively involved in their lives motivated them to become sober and make positive changes. They acknowledged that their addiction had impeded their capacity to fulfil their parental duties effectively, and the process of rehabilitation acted as a catalyst for change. Others who had completed the rehabilitation programme shared how they had been able to focus on their children's well-being and give them the care, guidance, and support they required by overcoming their addiction and embracing sobriety.

> *Well, now it's not about me anymore. I need to be there for my son, and I pray that my sense of responsibility is strong enough to keep me sober.* (012, Male, 35-44 years, in rehabilitation).

There was a widespread agreement between participants who had engaged in rehabilitation about the positive changes in their relationships and social interactions. Several participants highlighted the positive impact their recovery has had on their relationship with their children, expressing appreciation for the increased closeness and happiness they now share. Others described the excitement of reuniting with their children after an extensive separation, emphasising that their decision to seek help through rehabilitation allowed them to reconnect with their loved ones. These accounts signify notable improvements in their family relationships. Some talked about how their improved appearance and transformation from addiction to recovery positively impacted how their family, friends and society perceived them, indicating social acceptance and reduced stigma. They described and reflected on how their previous drug use had isolated them from their family and peers. Moreover, social acceptance extended beyond the sphere of family and friends, with some participants expressing the ability to interact with influential members of society, providing a sense of respectability.

> ……. *because my children are so happy about my progress and have enhanced our relationship. We are closer now, and I am so thankful that I am okay now, and it makes me very happy.* (014, Female, 45-54 years, in recovery).

Professional and economic advancement

Professional and economic advancement emerged as salient personal and social outcomes of rehabilitation. Participants' employment opportunities and long-term career trajectories increased after they completed rehabilitation. Some participants said they could concentrate on their personal and professional development after overcoming their tramadol use. This newfound stability and commitment to personal development prompted them to pursue additional educational opportunities and advance in their chosen field.

> *After I went to the rehabilitation centre is when I got a teaching job. I have realised that education has no end, so I still have the ability to achieve my dream of furthering my education. I want to go back to school and plan to resit the paper that I did not pass……..* (015, Female, 35-44, in recovery).

Post-rehabilitation outcomes and challenges

Post-rehabilitation outcomes and challenges included a variety of experiences among some participants as they navigated life after completing the rehabilitation programme. Several participants shared their experiences with relapse, attributing it to temptations from drug-using friends. Despite these challenges, others demonstrated remarkable resilience by maintaining

their resolve and resisting the urge to use tramadol in the face of repeated temptations. Disappointment and frustration were common emotional reactions to relapse, both for the individuals and their loved ones.

> *I went home after the seven months. When I went home, friends influenced me to use it again. So, I went back to use it.* (014, Female, 45-54 years, in recovery).
>
> MOA: When you went back to it, how did your children feel?
>
> *Ahhh. They were really upset. So, after my second time in rehab, my child rented a place for me around the facility. They did not want me to go back home. They wanted to be close to the rehab because they felt I would relapse again when I returned home.* (014, Female, 45-54 years, in recovery).

It is encouraging to note that all participants who relapsed recognised the importance of seeking treatment again and re-enrolled in the programme. By persevering and re-engaging with the rehabilitation programme, these individuals reported being able to achieve positive results, demonstrating their capacity for growth and transformation.

> *A lot of things have happened to me since I finished the programme. I have had a lot of temptations, but when they come, I stand my ground and don't go back to them.* (013, Male, 35-44 years, in recovery).

The experiences shared by participants highlight the complex nature of recovery, in which individuals may face challenges but eventually find the strength and determination to regain control of their lives and achieve long-term positive change.

See Figure 32 for reflective excerpts highlighting the potential impact of personal experiences and biases on the emergent themes from the analysed data.

Excerpt from a self-reflective journal entry on emergent themes and collected data.

May 18, 2023, 7:55 am

When I started delving into the qualitative data, I couldn't help but approach the analysis with empathy for the participants. I felt a sense of responsibility to give their perspectives a voice and advocate for their well-being. I recognised early on that this empathetic stance could introduce bias into the findings, and going through the themes with my supervisory team has been extremely helpful in addressing where my empathy has stood in the way of my objectivity and impartiality.

June 23, 2023, 9:56 pm

Today marks a significant milestone in my research journey as I have completed analysing and writing the findings on the lived experience of the non-medical use of tramadol in Ghana. This process has been both challenging and enlightening, providing me with invaluable insights into the complex dynamics surrounding the issue. There were undoubtedly moments of frustration and uncertainty when faced with complex and contradictory accounts given by participants. However, these difficulties challenged me to delve deeper into the data, questioning assumptions and seeking alternative explanations.

Figure 33. Excerpts from self-reflective journal entries reflecting on the potential impact of personal experiences and biases on emergent themes from analysed data.

5.9 Chapter conclusion

This chapter thoroughly detailed the study's findings, highlighting key trends, patterns and unexpected observations. These findings are presented to address the posed research questions and reveal deep insights for further investigation. Serving as foundation, these findings prepare the ground for a subsequent, detailed exploration of the emergent themes in the following chapter.

6 Chapter 6: DISCUSSION

6.1 Chapter overview

The study's findings are discussed and interpreted in this chapter. The chapter begins by summarising the primary findings of the data analysis. Each finding is linked to its corresponding research objective, as presented in Chapter 1. The findings are critically evaluated, drawing on prominent theoretical concepts and proposing broader implications. The findings are then contextualised within the larger academic dialogue by comparing with existing research in the field. This comparison is essential for identifying patterns, variations, and potential areas for further research. Finally, a transparent discussion regarding the strengths and limitations of the study is presented, focusing on elements that might have affected the credibility, transferability, confirmability and dependability of the findings.

6.2 Overview of key findings

The primary aim of this IPA study was to understand the complexities and lived realities of the non-medical use of tramadol in Ghana. The analysis of sixteen interviews generated four superordinate themes that closely correspond with the research objectives and collectively provide a comprehensive understanding of the non-medical use of tramadol in Ghana. These were:

- Superordinate theme 1: Precursors and influences of the non-medical use of tramadol.
- Superordinate theme 2: Socio-cultural, environmental and knowledge factors contributing to continuous non-medical use of tramadol.
- Superordinate theme 3: Multifaceted consequences of non-medical use of tramadol.
- Superordinate theme 4: The complex framework of the rehabilitation process and its role in facilitating recovery from non-medical use of tramadol.

These findings describe the diverse patterns and characteristics of tramadol use, a range of intrapersonal factors such as prior substance use and personal autonomy and external factors, including peer influence and social determinants contributing to an individual's initial exposure and subsequent use of tramadol. They intricately unfold the layered nature of these factors, analysing the interplay of specific predisposing and situational factors that lead individuals to use tramadol. Additionally, the findings highlight how informational disparities and cognitive

and perceptual factors, including perceived ‘less harm’ associated with tramadol, denial regarding a drug use problem and positive effects experienced using the drug, interact and contribute to the continuous use of tramadol. The study’s findings also underscore the role of cultural beliefs, societal attitudes and emotional and environmental determinants in shaping the continued use of tramadol.

Furthermore, the analysis reveals varied and complex consequences, encompassing profound negative impacts on overall well-being and life outcomes and socio-economic and emotional consequences, including effects on personal and professional outcomes, vulnerability and victimisation, social and interpersonal issues, behavioural and legal consequences and economic burden of tramadol use.

The findings demonstrate the complexity of the rehabilitation process, revealing the attitudes towards treatment-seeking and the internal and external influences on treatment-seeking decisions. They reveal various approaches to treatment, such as alternative treatment methods and residential rehabilitation programmes, highlighting psychological and emotional barriers impacting decision-making, practical challenges in seeking treatment, and broader systemic barriers to accessing treatment. Additionally, challenges to successful rehabilitation included difficulties adapting to structured environments, disruptions to treatment resulting from COVID-19, involuntary participation in programmes, and various limitations of rehabilitation programme design. The findings unveil structural and systemic elements that facilitate access to rehabilitation. Additionally, they highlight the impact of social and relational factors on access and success of rehabilitation. Finally, it uncovers outcomes of rehabilitation efforts encompassing recovery, improvements in physical and mental well-being, professional and economic advancement and personal and social transformation, including enhanced relationship outcomes, social life and overcoming stigma. They also highlight challenges encountered post-rehabilitation.

6.3 Precursors and influences of the non-medical use of tramadol

6.3.1 Intrapersonal, peer Influence and social network dynamics

First-time drug use, influenced by a complex interplay of biological, psychological, and social factors, is a precursor action which is foundational for the progression of addiction (Nawi et al. 2021; Adinoff 2004; Gorsuch and Butler 1976). Furthermore, it seems reasonable to ascertain why a person first uses a specific drug to understand their non-medical use (Gorsuch and Butler 1976). This study reveals a complex mix of internal and external factors that led to the introduction and initial use of tramadol. These include prior substance use, personal autonomy, peer influence, societal norms, and environmental conditions.

Prior substance use emerging as a factor influencing the initial use of tramadol in this study, provides important insights into the personal dynamics that may increase vulnerability to drug use. According to Newcomb, Maddahian and Bentler (1986), prior drug use significantly powerful predicts later use. Examining this connection further, the interplay of biopsychosocial factors, along with familiarity with substance use, shapes the transition from initial experimentation to potential tramadol use. Participants with a history of using cocaine, diazepam, marijuana, and alcohol may have been more open to experimenting with tramadol, possibly due to their developed tolerance and existing connections in drug culture (Preuss, Kalava and King 2022; Sznitman and Taubman 2016; Center for Substance Abuse Treatment 2014; Strickland and Smith 2014; Siegel 2005; Perkins 2002; Suwaki et al. 2001). Familiarity with other substances may have lowered potential barriers to trying new substances (Lipari and Jean-Francois 2016). Existing research confirms that pre-existing ties to drug culture elevate the likelihood of further drug use. Neurobiology mechanisms suggest that exposure to one addictive substance can increase sensitivity to others (Volkow 2010; Koob 2009), elevating the potential or risk of using tramadol.

This study adds to the existing body of knowledge on polysubstance use, particularly the frequent combination of tramadol with marijuana and tobacco (Dumbili et al. 2021; Omar and Ahmed 2021; Bio-Sya et al. 2021; Chikezie and Ebuenyi 2019; Ibrahim et al. 2017; Bassiony et al. 2015). Polysubstance use involves complex patterns and interdependencies among various drugs (Cicero, Ellis and Kasper 2020). Understanding how the use of one substance can lead to another is crucial for effective prevention and treatment strategies. The dynamic between prior substance use and the initiation of tramadol use aligns with existing research (Saapiire et al. 2021; Danso and Anto 2021; Bassiony et al. 2015). However, it is essential to

acknowledge the findings of Zhang and Liu, which indicate that individuals with no prior history of substance abuse could still be at high risk for tramadol use under specific conditions (Zhang and Liu 2013). Their comparative analysis involved 23 men known to use tramadol and control groups consisting of 87 people who used heroin, 60 who used methamphetamine, and 50 healthy men. Their study used standardised metrics (Diagnostic and Statistical Manual of Mental Disorders-IV) to capture quantitative findings that showed that all 23 men in the tramadol group developed a dependence on the drug despite having no history of substance use prior to their initial use. This observation does not undermine the overall evidence indicating prior substance use as a critical facilitator of tramadol use but instead underscores the complexity of factors influencing drug use behaviours.

This study revealed that personal autonomy played a crucial role in the initial use of tramadol, with some participants emphasising strongly that their first-time use was voluntary. External factors like peer influence were secondary, while agency, curiosity, and self-exploration were key, particularly among risk-taking adolescents aged 12-16, consistent with research showing that tramadol use is common among adolescents (Bassiony et al. 2015). Participants aged 12-16 in this study generally cited curiosity as one of their reasons for initial use, a finding commonly reported in existing studies (Alhassan 2022a; Ngwa 2022; Saapiire et al. 2021; Fuseini et al. 2019; Abood, Scott and Wazaify 2018; Ibrahim et al. 2017; Mohamed et al. 2015).

The autonomous decision to use tramadol, particularly during adolescence, perhaps stems from a limited perception of risk and a natural attraction to novelty (Agberotimi 2018; Castellanos-Ryan, O'Leary-Barrett and Conrod 2013; Swanson, Edwards and Spencer 2010), broadly supporting existing research linking novelty-seeking behaviour with tramadol abuse (El Wasify et al. 2018). The level of willingness and autonomy found in this study highlights the complexity of personal decision-making processes within broader societal influences. People willingly using tramadol despite knowing the risks, as reported in this study, aligns with existing literature indicating that people often understand the dangers of substance use but voluntarily engage in the behaviour (NIDA 2018a). Furthermore, this study bears a resemblance to Tam et al.'s (2018) research linking individualism to tramadol use as a manifestation of independence. Both studies emphasise the role of personal agency and autonomy in influencing drug-related decisions, particularly among young adults. The finding of personal autonomy also broadly aligns with insights from Carmel and colleagues, who reported that some people started tramadol use on their own initiative (Carmel et al. 2019). Essentially, personal autonomy may universally influence choices, including drug use, as

people aim to align decisions with their self-interest and values (Griffiths, Thomas and Dyer 2021; Carpenter, Bedi and Vadhan 2015).

The observed personal autonomy highlights the importance of strategies that respect autonomy while addressing underlying contributing factors of tramadol use. Existing strategies, such as Prescription Monitoring Programmes, aim to balance respecting individual autonomy by tracking prescriptions and dispensing patterns of controlled substances (CDC 2021). However, the effectiveness of these programmes can be limited by inconsistent participation across healthcare providers and a lack of integration between different countries, potentially allowing individuals at risk of misuse to circumvent detection (Manasco et al. 2016).

The impact of peer influence and social network dynamics in shaping some individuals' decisions to start using tramadol was prominent, aligning with prior research (Ibrahim et al. 2017; Mohamed et al. 2015). According to Social Learning Theory, people adopt behaviours through observation and imitation within their social networks (McLeod 2011). This study shows that friends and family (older siblings) already using tramadol influenced some participants' initial decision to use tramadol, affirming social learning's role in drug initiation. This corroborates research showing that students often abusing tramadol have social circles with a history of drug misuse (Pourmohammadi and Jalilvand 2019). As the family unit is foundational to identity and societal norms in Ghana, when family members display permissive attitudes toward tramadol use, they may inadvertently serve as role models, thereby encouraging similar behaviours among other relatives. This idea aligns with research indicating that perceived permissiveness within family environments can influence drug use among young individuals (Becoña et al. 2013).

Social Network Theory also highlights the impact of relationships within social circles on individual behaviour (Nimmon, Artino and Varpio 2019; Liu et al. 2017). This study found that the dynamics of participants' social networks, especially in settings such as pubs and parties, created environments conducive to initiating tramadol use. These gatherings serve as physical representations of one's social network where interactions occur (Liu et al. 2017). The normalisation of tramadol use in these settings encouraged first-time use, particularly among younger participants, indicating these factors may be especially influential during adolescence and early adulthood (Ciranka and Van den Bos 2019). During these developmental stages, the strong desire for social belonging and peer influence significantly shapes behaviours (Forman-Alberti 2015). Some participants unknowingly consumed tramadol when socialising with their peers, offering complex insights into peer influence and social network dynamics. This situation mirrors findings reported by Peprah et al (2020), where friends coerced individuals into misuse, highlighting the need for awareness of substance adulteration and

strategies promoting informed decisions within social networks. The use of tramadol in these contexts, though essentially illegal, appeared to be perceived as acceptable or even normalised within certain social circles. This acceptance within peer circles suggests a broader cultural shift where the boundaries of legal and acceptable use are blurred, potentially masking the risks and legal implications associated with tramadol use.

The influence of peer behaviour and social networks on the initial use of tramadol is consistent across research in multiple African countries (Nwafor et al. 2023; Alhassan 2022a; Saapiire et al. 2021; Danso and Anto 2021; Dumbili et al. 2021; Bio-Sya et al. 2021; Omar and Ahmed 2021; Madukwe and Klein 2020; Carmel et al. 2019; Chikezie and Ebuenyi 2019; Fuseini et al. 2019; Abood, Scott and Wazaify 2018; Jonathan and Samuel 2018; Elliason et al. 2018; El Wasify et al. 2018; Ibrahim et al. 2017; Mohammed et al. 2015). This may be attributed to shared cultural norms, economic challenges, and accessibility of the drug. Unemployment and lack of opportunities often lead to idle time (Jumpah, Owusu-Arthur and Ampadu-Ameyaw 2022), which may be spent in social settings where drug use is common (Gahlinger 2004; Smith, Larive and Romanelli 2002). Collectivism, a defining characteristic of the Ghanaian culture that emphasises group cohesion (Ganotice et al. 2022), might also facilitate peer pressure, thereby contributing to recreational tramadol use. It is important to note that while studies conducted in African countries constitute the majority, the significant impact of peer influence and social networks on initial use is not unique to the region. Studies conducted in India and Yemen reinforce that peer influence and social networks are critical factors in initial tramadol use (Abood, Scott and Wazaif 2018; Sarkar et al. 2012), suggesting a global trend where social dynamics significantly influence drug acceptance. However, context-specific variations may influence the extent and nature of this impact (Heath 2001). For instance, cultural, legal, and social differences between these regions may affect how peer influence functions and is perceived in the context of tramadol use.

6.3.2 Social determinants influencing initial use

Broader social, economic, cultural, and environmental factors also significantly influenced initial use. These determinants impact individual and community well-being, often leading to health disparities and inequities (Marmot and Allen 2014). Participant accounts revealed how variables like socioeconomic status, community norms, and religious influences affected their susceptibility to initiating tramadol use.

6.3.2.1 Area of residence and tramadol use

Residing in challenging neighbourhoods, including Tinka-Alabar, especially when close to places where tramadol is sold within the area, appeared to play a role in initial tramadol use in this study, highlighting the influence of local environments in facilitating drug use. This broadly aligns with existing literature linking neighbourhood disadvantage to greater drug availability and use (Bernhardt and King 2022; Boardman et al. 2001). The Social Disorganisation Theory provides an explanatory framework for the observed pattern. This theory proposes that areas with high social disorganisation, evidenced by low socio-economic status and residential instability, lack community structure and control systems (Bellair 2017). Tinka-Alabar, characterised by poor housing, inadequate sanitation, and high crime rates, epitomises the socio-economic challenges often associated with prevalent drug use (Aning, Kwarkye and Pokoo 2013).

Contrary to prevalent assumptions that areas such as Tinka-Alabar are predominantly associated with socioeconomically disadvantaged backgrounds, some participants who reported living in challenging neighbourhoods where tramadol is sold were from non-disadvantaged backgrounds, challenging this assumption. These cases suggest that factors such as strong social or familial ties can draw individuals to such areas (Switzer and Taylor 1983). The interplay between area of residence and tramadol use revealed contrasts with Bassiony et al. (2015), who found no link between residence and tramadol abuse in Egyptian adolescents. The divergence may arise from differing methods, samples, and cultures between the two studies. Bassiony and colleagues studied 13-18-year-olds in Egypt using a cross-sectional design better suited to examine associations. In contrast, this study qualitatively explored 18-54-year-olds in Ghana. Moreover, the difference may also be due to the unique environmental contexts of tramadol availability in Egypt, suggesting that tramadol sales might not be confined to disadvantaged neighbourhoods. These insights suggest a need for further research to investigate the association between area of residence and tramadol use in Ghana to inform targeted interventions. The role of area of residence highlights the need for community engagement in addressing tramadol use. Collaborating with community leaders and local organisations can help develop culturally sensitive and context specific interventions in Ghana, where the societal value of respecting traditional figures of authority profoundly influences individual decision-making (Edwards et al. 2000).

6.3.2.2 Economic circumstances and tramadol use

In this study, economic difficulties resulting in emotional stress and mental health issues, including anxiety and depression, were reportedly linked to tramadol use, suggesting economic stability may have a protective role. Many participants reported financial pressures due to unemployment. This relationship parallels existing knowledge within the Social Determinants of Health (SDOH) framework, where economic stability is associated with overall mental and physical health (CDC 2022; Weida et al. 2020). Some participants reportedly used tramadol to cope with emotional challenges arising from economic hardships and limited opportunities. Others were introduced to tramadol amidst their pursuit of a better life due to their economic vulnerability stemming from the absence of social systems. These reports reflect Strain Theory, which links societal pressures and the inability to accomplish socially acceptable goals with non-conforming behaviours (Nickerson 2023; Grothoff, Kempf-Leonard and Mullins 2014). Success and well-being are closely related to economic stability in many societies (Helliwell 2001). People confronting financial difficulties may experience feelings of inadequacy or perceived incapability to fulfil societal standards (Nagelhout et al. 2017), driving them to adopt alternative means to meet these expectations.

Economic circumstance as a factor influencing initial tramadol use was notably observed among participants with education up to senior high school, suggesting that lower educational attainment can increase vulnerability to initiate use of tramadol. This observation aligns with findings in existing prescription drug use literature that highlight that individuals with limited education are at a higher risk of engaging in non-medical prescription drug use (Ford et al. 2020). People with lower education levels may experience emotional strain because of limited opportunities and financial stress, potentially leading to mental health issues such as anxiety and depression (Guan et al. 2022). Consistent with present findings, previous research has demonstrated a positive association between unemployment and tramadol abuse and misuse, with poverty also playing a role (Ngwa 2022; Saapiire et al. 2021). The similarities may stem from the comparable socio-economic indicators and landscapes of study regions. This study complements existing research and offers a deeper understanding of the interconnectedness between economic circumstances, emotional well-being, societal expectations, and tramadol use.

The findings add to the existing body of research that highlights the influence of external and systemic factors rather than personal shortcomings (Volkow and Li 2004). This holistic perspective can guide the development of more empathetic and comprehensive interventions. Many jurisdictions still heavily rely on criminalisation as a primary strategy to combat drug use

(Woodiwiss 2020; Tinasti 2020; Wodak 2014; Biddulph and Xie 2011; Parliament of Ghana n.d). This approach can stigmatise and marginalise persons who use drugs, hindering their access to treatment and support (Tiger 2011). However, it is essential to acknowledge that some countries have enacted inclusive drug-use policies. Notably, in 2001, Portugal decriminalised the possession of all controlled substances for personal use (Greenwald 2009). This health-focused policy emphasised prioritising treatment and harm reduction over punitive measures, consequently reducing drug-related fatalities (Hughes and Stevens 2007).

6.3.2.3 Social and religious acceptance of tramadol

Tramadol was viewed as more acceptable than cocaine by several participants in this study. Cocaine's illegal status deterred some individuals from using it in social settings, opting for the more socially acceptable tramadol. This finding has broad similarities with research indicating that the ease of concealing tramadol, and perceptions of a reduced risk of repercussions for possession due to its prescription status, contribute to its abuse (Negm and Fouad 2014). It was also used as a substitute for prohibited substances such as alcohol in certain religious contexts. Consequently, tramadol was generally perceived as a more legitimate substance, attracting considerably less societal disapproval.

There is an apparent and undebatable stigma associated with prescription drug misuse (Shupp et al. 2020). However, illicit substances, such as cocaine, may carry a greater degree of societal stigma, primarily due to their illegal status (Muncan et al. 2020). This perception of tramadol as more acceptable is shaped by cultural, religious, and societal norms and has an indirect bearing to Becker's Labelling Theory, which posits that societal judgments and labels can influence individual behaviour (Becker 1991). People labelled as 'illicit drug users' may internalise such labels, affecting their behaviour and societal perceptions. On the other hand, individuals who use tramadol may not experience the same level of stigmatisation and labelling, which can influence their perception of social acceptability. These findings broadly align with Saapiire et al. (2021), who identified a significant correlation between religion and tramadol abuse in Jirapa, Ghana. The congruence in findings highlights the significance of social and religious influences on drug use behaviours in Ghana. Therefore, interventions should consider social and religious contexts influencing drug use decisions. In Ghana, the growing partnership between the government and faith-based organisations in health education is evolving (Yeboah and Buckle 2017). This partnership capitalises on the pervasive influence of religion, a cornerstone that shapes societal norms and personal ethics across the country. Indeed, faith-based organisations have played significant roles towards achieving universal health coverage in Ghana (Grieve and Olivier 2018). These organisations can be

used to create awareness of risks associated with tramadol by integrating the teachings and values of various religious traditions.

6.4 Socio-cultural, environmental and knowledge factors contributing to continuous non-medical use of tramadol

6.4.1 Knowledge and cognitive factors

The progression from initial to continuous non-medical drug use is complex and multifaceted. Gorsuch and Butler (1976) propose a fundamental distinction, arguing that the factors leading to the initial use of a substance may differ significantly from those leading to its continuous use. However, the factors contributing to continuous use found in this study, while not entirely identical to those contributing to initial use, exhibit some similarities. The intersection of social and cultural factors was particularly salient, serving as a recurring theme linking the initial engagement with tramadol use to subsequent continuous use.

The continuous use of tramadol was influenced by participants' beliefs and misconceptions, particularly their view that tramadol is less harmful compared to cocaine, due to its prescription status and seemingly favourable side effects, disregarding the need for medical supervision and approved dosages to ensure its safe use (Fleary, Heffer and McKyer 2013; Manchikanti 2006). Existing research confirms that tramadol's perceived safety contributes to its abuse (Negm and Fouad 2014). Moreover, several studies underscore its perceived safety compared to other opioid analgesics (Subedi et al. 2019; Muna et al. 2019). Tramadol is commonly perceived as safe by people who use it, with several studies noting a prevalent lack of awareness regarding its associated health risks (Almér Herrnsdorf, Holmstedt and Håkansson 2022; Saapiire et al. 2021; Madukwe, Ann Ukachi and Klein 2020).

The predictability of chemical components in pharmaceutical drugs potentially enhances perceptions of safety, potentially leading to drug use (Hernandez and Nelson 2010). This indicates a nuanced decision-making process where risks associated with the use of tramadol are likely underestimated, as individuals weigh perceived benefits against risks, rather than considering each drug in isolation. Furthermore, it illuminates the complex relationship between education and perceptions of risk as participants with lower educational backgrounds exhibited a diminished perception of the risks associated with the use of tramadol, which in turn influenced their decision to continue use. This aligns with the argument that lower

education levels might influence risk perception (Rattay et al. 2021). Limited formal education may lead to an inadequate understanding of the potential risks of tramadol use. However, one participant with tertiary education also perceived tramadol use as low-risk compared to other drugs. This suggests the presence of factors beyond educational level.

This perception or misconception of risk associated with tramadol use, presents challenges for public health interventions as individuals using tramadol may be less receptive to risk communications if they believe tramadol is inherently associated with less harm. Tailored communication strategies, grounded in theories such as the Health Belief Model (Abraham and Sheeran 2015), can effectively reach specific demographics (Reed et al. 2021). While direct applications of the Health Belief Model in tramadol use interventions are limited, its successful implementation in smoking cessation and fentanyl use offers valuable perspectives on its potential effectiveness (Ali et al. 2020; Bonar and Rosenberg 2011; Velicer et al. 2006). By emphasising perceived severity, it can facilitate understanding among the target population.

Conversely, some participants did recognise the potential dangers of tramadol use, deeming marijuana comparatively safer. Despite understanding the risks, external pressures appeared to outweigh their informed awareness. This finding is important as it indicates that addressing information gaps alone is insufficient to curb non-medical use; instead, a comprehensive approach that addresses external contributing factors is required. Furthermore, existing awareness can be leveraged in harm reduction initiatives, with knowledgeable individuals serving as essential channels of information within their communities, potentially influencing peers' choices through shared knowledge and experiences. One such example is the peer education approach to harm reduction programmes for opioid-using populations. Syringe exchange programmes engage individuals with first-hand experience to teach safe injecting practices, resulting in a significant reduction in HIV/AIDS and Hepatitis C transmission (Turner et al. 2011; Des Jarlais et al. 1996). Implementing peer-led education tailored to tramadol's unique risks can reduce tramadol use.

Denial emerged as a significant factor in the continuous use of tramadol, potentially serving as a mechanism that shields individuals from confronting uncomfortable realities (Dare and DeRigne 2010). By dismissing the issues with their use, individuals can continue use without acknowledging the negative consequences. This denial, likely a coping mechanism, may signify an underlying addiction, acting as a barrier to recognising the need for treatment (Heshmat 2018). Denial can also be contextualised within social and cultural attitudes towards drug use and addiction. In societies with drug-related stigmas, denial may serve as an adaptive strategy to avoid judgment or discrimination (Hammarlund et al. 2018; Kelly and

Westerhoff 2010). While no existing tramadol literature directly corroborates this finding, broader research does highlight the role of denial in substance use (Dare and Derigne 2010; Verdejo-García and Pérez-García 2008; Ortega and Alegría 2005; Lonczak and Moore 1996), suggesting the potential relevance of this issue in tramadol use cases.

This finding complicates prevention efforts, as individuals may be resistant to risk messages about tramadol use if they do not perceive any associated risks (Almér Herrnsdorf, Holmstedt and Håkansson 2022). Public health campaigns must be tailored to present information in a manner that resonates with this perception (Jones et al. 2015; Noar et al. 2011). Interventions should assist individuals in confronting the reality of their use by enhancing self-awareness, encouraging acceptance, and teaching coping skills. Motivational Interviewing, a person-centred approach, has demonstrated effectiveness in helping individuals overcome ambivalence towards change by using open-ended questions, reflective listening, and discussing behaviour and value discrepancies (Smedslund et al. 2011). Tailoring Motivational Interviewing to align with Ghanaian cultural nuances can significantly enhance its effectiveness in addressing tramadol use (Leinberger-Jabari et al. 2023; Longshore, Grills and Annon 1999).

6.4.1.1 The pursuit of euphoria

The pursuit of euphoria is predominantly identified as the principal motive behind the abuse of tramadol (Nwafor et al. 2023; Ngwa 2022; Alhassan 2022a; Dumbili et al. 2021; Omar and Ahmed 2021; Chikezie and Ebuenyi 2019; Fuseini et al. 2019; Ezenwa et al. 2019; Ibrahim et al. 2017; Mohamed et al. 2015; Bassiony et al. 2015; Maiga, Seyni and Sidikou 2013; Tafesh 2013). Participants consistently emphasised tramadol's ability to induce euphoria, citing it as a factor for its continued use. The near-unanimous reports of enhanced happiness and euphoria signify the central role of emotional gratification in tramadol use. Physical euphoria, characterised by sensations such as calming, comforting and relaxing (Geiger, Wurst and Daniels 2018; Wilmot 1985), suggests some people may be using tramadol to manage stress, anxiety, or sleep issues, hinting at potential psychological dependence (Cha et al. 2014; Siegel 2005). The universal appeal of tramadol's euphoric effects for short-term emotional relief may explain the similarities in findings across different societies (Nwafor et al. 2023; Ngwa 2022; Dumbili et al. 2021; Omar and Ahmed 2021; Chikezie and Ebuenyi 2019; Fuseini et al. 2019; Ezenwa et al. 2019 Ibrahim et al. 2017; Mohamed et al. 2015; Bassiony et al. 2015; Maiga, Seyni and Sidikou 2013; Tafesh 2013). Individuals, regardless of their socio-economic or cultural backgrounds, may resort to tramadol to cope with psychological stressors, whether arising from economic struggles, conflict, or societal pressures.

This widespread reliance on tramadol as a coping mechanism underscores the necessity for intervention strategies that address the root psychological stressors and provide alternative coping strategies. Interventions integrating counselling, stress management techniques, and mental health resources into drug treatment protocols, including Cognitive Behavioural Therapy and Therapeutic communities, have been developed, yet they face notable challenges (Brackett et al. 2022; Kitchener and Jorm 2006). Implementing and sustaining these interventions require significant financial investment and resources (NIDA 2022c). Inadequate funding may compromise the quality and sustainability of models, thereby diminishing the long-term impact of these interventions (Williams et al. 2019).

6.4.1.2 Beyond the euphoria: positive subjective effects on academic outcomes, sexual experiences, physical strength, courage, and time perception

The continuous use of tramadol was largely driven by other positive subjective effects of the drug. The perception that tramadol offered overarching benefits suggests participants believed the drug enhanced their lives beyond its immediate pharmacological effects, contributing to an overarching sense of well-being and facilitating continuous use. When analysed through a cognitive-behavioural lens, participants' perceptions that tramadol provides overall benefits act as cognitive reinforcements for its continued use (An et al. 2017; McHugh, Hearon and Otto 2010). This process aligns with operant conditioning principles where perceived enhancement in well-being, seen as a positive outcome, reinforces behaviour (Mcleod 2015). Other studies concur, with reports of tramadol use as largely positive with manageable side effects in Nigeria (Madukwe and Klein 2020). Additionally, Bassiony and colleagues, in a study conducted in Egypt, similarly found that 33% of people who abused tramadol believed that it enhanced their quality of life (Bassiony et al. 2015). Despite different methodologies and populations, these findings are strikingly similar to the current study, suggesting that risk perceptions may be influenced by cultural, social, or even pharmacological factors, transcending geographical and demographic boundaries. The perceived benefits of tramadol are critical when designing interventions or anti-drug campaigns. Those who believe in its positive effects may be unreceptive to strategies that primarily focus on risk messaging (Peprah et al. 2020). Interventions may need to address and challenge these firmly held beliefs directly.

This study uncovered that tramadol was routinely used to boost academic performance due to its perceived cognitive enhancement effects and associations with increased alertness. Participants' knowledge of these supposed benefits, acquired through peer interactions, adds

to the current body of knowledge on the role of perceptions in tramadol use. The belief in these benefits illustrates the influence of strong beliefs in fostering drug dependency, even in the absence of tangible benefits (Wager and Atlas 2015; Jones et al. 2015). The inclination to use tramadol for academic enhancement may stem from socio-academic pressures and the prevalent need to excel academically (Jiang et al. 2022; Ramachandiran and Dhanapal 2018). This highlights broader concerns regarding how societal and academic expectations may drive individuals to compromise their health and well-being (Dejonckheere et al. 2022; Johnston and Cassidy 2020). Additionally, methods in which participants learned about supposed tramadol benefits illustrate the dangers of misinformation, particularly in informal settings (WHO 2022).

These findings agree with another study, where students in Nigeria reportedly abused tramadol to increase their alertness and improve their academic performance (Jonathan and Samuel 2018). The congruence in findings, despite methodological, sample, and gender differences, might stem from common socio-cultural pressures to excel academically in both regions. It also suggests that misinformation about the effects of tramadol is pervasive among young adults in academic settings across both regions. Implementing comprehensive drug education programs that are interactive and include peer-led discussions are required. In a significant collaborative effort, the Ghana Education Service, in partnership with other entities, has created books for basic school curriculums on drug education, aiming to foster early awareness and prevention (Ghana Education Service 1995). Integrating drug education in school curriculums demonstrates a minimal, yet meaningful impact on decreasing substance use generally (Melendez-Torres et al. 2018). Moreover, drug education interventions require periodic assessments and revisions to ensure their effectiveness and applicability in current drug education needs (Baer et al. 2007).

In a related but distinct facet, the use of tramadol for enhanced sexual experiences reveals the complex dimensions of continuous use. Notably, this was not a marginal perspective, but using tramadol for better sex was a commonly held belief among male participants in this study. The use of tramadol for enhanced sexual experience reported in this study corroborates a wealth of previous research (Nwafor et al. 2023; Ngwa 2022; Bio-Sya et al. 2021; Gallois, van Andel and Pranskaityté 2021; Saapiire et al. 2021; Omar and Ahmed 2021; Danso and Anto 2021; Fuseini et al. 2019; Nasiri et al. 2019; El Wasify et al. 2018; Elliason et al. 2018; Ibrahim et al. 2017; Mohamed et al. 2015). The concordance in findings could be due to widespread cultural beliefs regarding sexual performance and societal norms emphasising sexual prowess, or from anecdotal experiences perpetuating the belief in tramadol's sexual benefits. The predominant male representation in these studies may also significantly

influence the uniformity of results. The pattern of using tramadol for enhanced sexual experiences suggests how overarching cultural and societal expectations, especially around male sexual performance, significantly impact drug use trends (Spooner 2004; Westermeyer 1987). Contradictorily, one participant reported adverse effects on their sexual experience, highlighting the non-uniformity of drug experiences and effects. Recognising this nuance is essential for health professionals, educators, and policymakers when addressing the issue of tramadol use.

Delving deeper into the sociocultural nuances, it is noteworthy that while many participants acknowledged the perceived sexual enhancement benefits of tramadol, they did not consider it their primary reason for use. However, it is possible that the cultural backdrop of Ghana, where openly discussing sexual experiences is often frowned upon (Asampong et al. 2013), could result in some participants downplaying perceived sexual enhancement as a motivating factor for their tramadol use. Additionally, the intricacies of masculinity come into play as this admission may be seen as a potential ‘blow to one's self-esteem’ or perceived manliness. These cultural nuances can impact the emphasis participants place on different motivations. Therefore, interventions addressing the use of tramadol for sexual performance should be culturally sensitive to ensure effectiveness and encourage open dialogues around the real-life implications of such use. Initiatives like Men as Partners, aiming to improve men's sexual and reproductive health by fostering healthier behaviours and attitudes towards gender and sexuality, have shown promising results in other settings (Ditlopo et al. 2007). Incorporating discussions about tramadol use and sexual performance, tailored to Ghanaian cultural perspectives on masculinity, can enhance awareness of the health risks associated with such practices.

In this study, participants used tramadol to enhance their confidence to navigate challenging situations such as illegal mining and economically chaotic environments characterised by high levels of unemployment and poverty. This finding is supported by studies revealing non-medical use due to workplace pressures and the pursuit of fearlessness and invincibility (Peprah et al. 2020; Salm- Reifferscheidt 2018). The similarities between these findings may be attributed to the similar socio-cultural and economic contexts of Ghana and Togo, where these studies were conducted. The boost in confidence, attributed to tramadol use, also led to increased risk-taking behaviours such as spontaneous sexual encounters, a finding similar to those of Gallois, van Andel and Pranskaityté (2021), Kuteesa et al. (2022) and Parry and Pithey (2006). This raises serious concerns regarding the risk of unsafe sexual practices and consequential health issues, such as sexually transmitted infections or unintended pregnancies (Jahanfar and Pashaei 2022). Furthermore, relying on tramadol to cope with

daily, especially high-risk scenarios, may lead to dependency, overdose, and long-term health complications (Iwanicki et al. 2020; Habibollahi et al. 2019; Tashakori and Afshari 2010). Public health campaigns should highlight both direct and indirect risks of tramadol use, including the association with increased engagement in high-risk behaviours.

Additionally, a comprehensive approach addressing underlying socio-economic factors like economic hardships and `hustle cultures' is required. Advocacy for economic empowerment and increased job opportunities is also crucial. Ghana's National Youth Employment Program aims to reduce youth unemployment by providing vocational training in areas like agriculture and IT, as well as supporting entrepreneurship with essential business tools (Acheampong 2019). Challenges such as the temporary nature of jobs, limited program coverage compared to the vast unemployment challenges, funding deficits, mismanagement, and mismatches between taught skills and market demands undermine the program's effectiveness and overall impact (Acheampong 2019).

Tramadol's multifaceted appeal extends to enhancing physical strength and stamina, as consistently reported by participants, suggesting its use to cope with physically demanding environments or tasks, in work, sports, or other activities. The feedback loop created by the perceived physical benefits of tramadol highlights the risk of developing dependence (Tjaderborn et al. 2009), as individuals may increasingly view it as an indispensable tool for performance and continue its use, overlooking its adverse effects and overdose risks. This false perception can also hinder recognition of the need for treatment for tramadol use, as individuals may rationalise their use and fear losing what they consider as beneficial and essential for their functionality. This finding supports previous studies, confirming a link between tramadol use and physically demanding jobs, with the drug's perceived ability to enhance performance commonly reported as a reason for its misuse and abuse (Nwafor et al. 2023; Owonikoko et al. 2023; Ngwa 2022; Dumbili et al. 2021; Gallois, van Andel and Pranskaityté 2021; Omar and Ahmed 2021; Bio-Sya et al. 2021; Madukwe and Klein 2020; Chikezie and Ebuenyi 2019; Elliason et al. 2018; Ibrahim et al. 2017; Mohamed et al. 2015; Tafesh 2013). The congruence in these findings could be attributed to similarities in demographic characteristics, such as persons involved in physically tasking jobs, and a universal desire for strength and capability.

Tramadol's perceived ability to enhance physical strength, suggests potential occupational pressures and points to a larger public health concern where individuals might resort to tramadol to meet job demands or excel in competitive settings. The finding also adds to the body of knowledge, highlighting the role of occupational demands in driving tramadol use. Recognising the substantial influence of occupational demands calls for the need to redirect

public health strategies towards workplace wellness initiatives that focus on reducing stress and providing alternative coping mechanisms. Furthermore, it advocates for policy reforms that create safer work environments, decreasing the need for tramadol use to manage work-related fatigue. Employee Assistance Programs (EAPs), which provide essential services such as confidential counselling for personal and work-related challenges, including stress, anxiety, and substance use, have demonstrated effectiveness (Joseph, Walker and Fuller-Tyszkiewicz 2018). However, underutilisation of EAPs may occur due to stigma around seeking help for mental health and substance use (Matthews, Gerald and Jessup 2021; Corrigan 2004).

This study uncovered a notable theme linking rapid time perception to continued tramadol use. This rapid perception of time might serve as an escape for participants, making unpleasant situations seem brief and thus encouraging continuous use. This desire to manipulate time perception might reflect underlying socio-cultural issues. Addressing this unique cognitive effect can be crucial in therapeutic interventions, requiring strategies to help individuals manage time perception and stress differently. This finding seems novel, as no prior studies have discussed tramadol's role in altering time perception and its contribution to its non-medical use. Further research is needed in different contexts and among varied groups to validate these findings and to understand their implications better, potentially guiding more nuanced approaches to prevention and treatment.

Overall, the positive subjective effects highlighted by participants as contributing to their continuous use of tramadol, emphasise the significance of evidence-based drug education programmes to convey risks and debunk myths and misconceptions about supposed benefits. Programmes such as the NIDA's Drug Facts in the United States and the National Drug and Alcohol Research Centre (NDARC) education programmes in Australia exemplify existing strategies in this regard, delivering scientifically accurate information about drug effects and potential harms (NIDA n.d; NDARC 2023). Nevertheless, these programmes may not be available to all demographic groups that are most vulnerable to drug use. Accessibility barriers, such as lack of internet access or the unavailability of educational materials in multiple languages, can limit their impact (Miller and Sønderlund 2010).

6.4.2 Socio-cultural and environmental factors

The continuous use of tramadol appeared to be influenced by the broader societal, cultural, and environmental contexts that shape individuals' behaviours and decisions. In many cultures, the perception of being 'cool` is greatly valued. This elusive quality is frequently associated with deviation from the norm, rebelliousness, or participating in behaviours

perceived as edgy or daring (Henton 2014). When cultural narratives, portrayed by media or societal norms, link drug use to non-conformity (Manning 2013; Olley 2008), it can be perceived as a symbol of ‘coolness`. Adolescents, particularly, may be attracted to tramadol not just for its effects but to attain a desired social image or identity. The ‘coolness` factor revealed in this study, suggests that its non-medical use may serve as a means of gaining social capital and enhancing one's status within social circles, reflecting a heightened perception of social acceptance.

This study uncovered a nuanced interplay between cultural conceptions of masculinity and tramadol use, highlighting stereotypes that associate drug use with heightened masculinity and traits like courage, bravado and strength (McLellan 2017; Nuñez et al. 2016; Quintero and Estrada 1998). These stereotypes pressure men to use tramadol to assert masculinity and achieve social approval and respect. This interplay between social acceptance, perceived ‘coolness`, masculinity, and tramadol use highlights the need for societal reflection and the reshaping of cultural narratives that romanticise or glorify drug use (Motyka and Al-Imam 2021). Advocating for a broader, more inclusive interpretation of masculinity and ‘coolness` can foster healthier societal choices and behaviours (Eisenberg et al. 2014; Hansen 2012). It also offers a valuable opportunity for public health practitioners to partner with cultural leaders and influencers to shape public opinion and endorse healthier narratives, shifting societal perceptions.

Initiatives that assist men in redefining healthy masculinity and dissociating it from drug use can tackle one of the root causes of non-medical use. Existing programmes such as "Man Up Against Suicide," which challenges traditional masculinity notions through photography and storytelling, and the "Men's Sheds" movement, providing community spaces for men to engage in activities and socialise, both aim to redefine healthy masculinity. They offer alternative coping strategies for emotional distress and counteracting isolation, thereby contributing to substance use prevention (Cordier, Mahoney and Wilson 2020; Schlichthorst 2020; Cavanagh, Bartram and Shaw 2018). These initiatives could be adapted to fit the cultural nuances of Ghana to address the issue of tramadol use. No existing research has explored this nuanced layer of cultural elements and their impact on tramadol use; therefore, this phenomena warrants further exploration.

Further examining social undertones that underlie tramadol use, participant narratives highlighted how gender roles and the societal expectation for men to be primary providers place substantial pressure on individuals, often manifesting as severe mental and emotional stress (Good, Sherrod and Dillon 2000; McCreary et al. 1996). This cultural mandate, despite being old, remains relevant, leading some to seek temporary solace in tramadol use as a

coping mechanism for stress, pressure, and feelings of inadequacy stemming from attempts to conform to societal expectations. Drawing on the intersectionality framework from feminist theory (Carbado et al. 2013), men from a lower socio-economic background might experience pronounced pressures from overlapping social identities, making them more susceptible to tramadol use, as observed in this study. The finding shows that reasons for continuous use include not only the pursuit of recreational pleasure and perceived subjective effects but also the pursuit of societal approval and fulfilling perceived responsibilities. This observation indicates a need to re-evaluate entrenched cultural norms and values to address the issue effectively. While no studies directly affirm that societal gender roles contribute to the continuous use of tramadol, existing literature does imply that such roles, especially masculinity norms, can drive alcohol and cannabis addiction (Hemsing and Greaves 2020; Room 1996). Furthermore, existing evidence suggests that societal roles beyond gender, such as the perceived responsibility felt by the eldest child in a financially struggling family, can lead to feelings of hopelessness and a heightened sense of duty, contributing to tramadol use (Alhassan 2022a). Thus, this study potentially contributes to the broader understanding of how gender roles and societal expectations influence substance use behaviours.

Coping with difficult emotions and situations notably contributed to the continuous use of tramadol among participants. Tramadol served as a temporary shield against intense negative emotions arising from various struggles, including financial strain, grief and familial complexities. It extended beyond its pharmacological appeal, with individuals seeking it for relief and a sense of hope amidst their hardships, as found in existing studies (Peprah et al. 2020). The choice to continue its use was also interwoven with psychological, socioeconomic, and personal issues, with some using it to cope with the consequences of their own drug use, thereby perpetuating a continuous cycle. This study supports evidence from previous studies that found that people used, abused or misused tramadol to cope with stress, anxiety, depression, feelings of inadequacy, and psychological well-being (Alhassan 2022a; Shamseldin et al. 2021; Bassiony et al. 2022; Madukwe and Klein 2020). The similarities in findings could be rooted in shared human experiences, limited coping resources, social factors, and the influence of globalisation. Globalisation may facilitate easier access to tramadol, amplify its perceived benefits through digital platforms, and increase stress through global economic pressures, influencing its widespread use (Zembylas and Vrasidas 2005; Ya'u 2004).

Comprehensive public health interventions should address the emotional and socioeconomic triggers of tramadol use. Effective interventions should inform individuals that reliance on tramadol can exacerbate underlying issues (Ishola et al. 2022; Mohamed, Ghaffar and El

Husseiny 2015). Programmes such as the Target Capacity Expansion initiative by SAMHSA help communities develop and provide integrated SUD services (SAMHSA 2022). Furthermore, rehabilitation programmes aim to integrate mental health support such as grief counselling, socio-economic solutions such as employment programmes and financial literacy training (Suryadarma and Putri 2018). However, such rehabilitation programmes are limited in Ghana, with existing ones facing significant funding issues (Asare and Addae 2014), as highlighted earlier in Chapter 1.

The intricate relationship between economic motivations and the continuous use of tramadol suggests dimensions beyond simple consumption patterns. For instance, one participant who sold tramadol in this study may have been driven by the need to support his three dependents, becoming deeply involved in the tramadol distribution network and leading to a self-sustaining pattern of continuous use. This reflects a broader trend in substance use, where individuals may trade or sell drugs to support their own consumption, as seen in studies on substances like methamphetamine (Semple et al. 2011). At the core of this cycle lies the appeal of unrestricted, cost-free access, blurring the lines between supplier and consumer and challenging conventional drug use narratives. In essence, the findings reveal a nuanced reality where the world of tramadol is not dichotomous, with clear lines separating sellers and consumers. It is a shade of grey in which economic motivations and patterns of tramadol use intersect. This complexity underscores the intricate challenges in addressing such interconnected issues from public health and policy perspectives. Also, it reinforces the argument for addressing the sale and availability of tramadol, in addition to implementing interventions to support end users.

Social networks emerging as influencing both the initiation and continuation of tramadol use in this study emphasise how profoundly individual behaviour is influenced by one's social circles and a need for belonging and acceptance within these circles. For interventions to be effective, they must address these underlying social dynamics, using community-based, peer-led approaches and adapt strategies based on community feedback, rather than solely focusing on individual behaviour through top-down educational campaigns (Ministry of Social Justice and Empowerment (Government of India) 2019). Participants shared the opinion that belonging to a group where tramadol use is normalised reduces stigma and reinforces its use. Therefore, this study supports existing research showing that individuals using tramadol often report a heightened sense of belonging to what they perceive as a supportive social group or familial unit of other people who use tramadol (Preprah et al. 2020).

This finding highlights the need for strategies to address stigma, encourage open dialogues about the dangers of tramadol use, and promote help-seeking behaviours (Scher et al. 2023).

Research highlights the effectiveness of support groups and confidential helplines, which provide a safe space for individuals affected by drug use to share their experiences, seek advice, and receive support (Gates 2015). In Ghana, mobile health (m-health) interventions have targeted vulnerable and stigmatised groups, such as female sex workers and men who have sex with men and have also been applied in suicide prevention initiatives (Green et al. 2021; Koduah et al. 2023). This approach indicates the feasibility of utilising m-health technologies to provide support in the context of drug use. While their success in these areas remains to be fully assessed, the application of m-health interventions suggests a viable method for encouraging individuals to seek help by offering anonymity and easy access.

Perhaps the most concerning revelation from this study pertained to the role played by certain individuals, specifically employers, in enabling the continuous use of tramadol. This finding aligns with research by Preprah and colleagues, which found that some commercial driving sector drivers reportedly dismissed assistants who refrained from using tramadol, thereby promoting its use among employees (Peprah et al. 2020). Such practice suggests a form of economic exploitation where employers prioritised productivity over employee health and safety. This also raises ethical issues of power imbalance, where employees may be encouraged to use tramadol under the pretext of enhancing job performance. This finding reveals that the issue is deeply ingrained in structural and social dynamics and involves a wider network of actors, extending beyond individual responsibility and choice. It is not known if employers were unaware of the negative implications of tramadol use and facilitated its use in a misguided attempt to enhance productivity and inadvertently harm employees. The role of enablers in providing access to tramadol complicates mitigation efforts, underscoring the need for interventions to address these structural elements and educate people on the risks to individuals and communities.

The widespread availability of tramadol without prescriptions, from illegitimate sources such as markets, 'ghettos' and neighbouring country borders and presumably legitimate sources such as drug stores and pharmacies, demonstrates a significant regulatory gap and a cross-border challenge. This finding aligns with other studies and official reports, confirming that the easy availability and affordability of tramadol contribute to its use and abuse. This is compounded by porous borders, leading to the proliferation of unapproved tramadol doses (Omar and Ahmed 2021; Danso and Anto 2021; Peprah et al. 2020; Abd-Elkader et al. 2020; FDA 2019; Stoehr et al. 2009; Kayode 2019). The similarities in findings may stem from inadequate regulatory mechanisms and oversight in these areas, leading to widespread, unregulated availability of tramadol. Economic and infrastructural challenges may further amplify this, making the drug easily accessible for non-medical use.

Participants' perceptions of tramadol's affordability varied, revealing a nuanced relationship between economic circumstances and personal priorities. Some individuals with low income considered it affordable, possibly prioritising tramadol due to addiction or coping needs, highlighting the nuanced economic disparities among people and aligning with studies linking lower income to illicit drug use (Baptiste-Roberts and Hossain 2018). Several others noted tramadol's increasing cost, potentially due to economic inflation, shifts in supply and demand, and alterations in regulatory policies. In recent years, Ghana has seen a significant rise in inflation, increasing to 43.1% in July 2023 from 31.3% in 2022 (FOCUSECONOMICS 2023; WorldData.info 2022). Existing research indicates that tramadol prices are unstable and can be prohibitively high (Dumbili et al. 2021). Furthermore, participants' changing economic circumstances or increased tramadol dependence may also alter their perceptions of its affordability, as addictions generally become costlier to maintain over time (AddictionCenter 2023).

The study demonstrates the dynamic nature of substance preference, with some substituting preferred substances like cocaine for tramadol due to cost considerations, underlining the need for holistic substance use prevention and treatment approaches that consider economic influences in addition to pharmacological aspects. Furthermore, considering the varied procurement channels, including local or cross-border sources, and private residences, a multifaceted approach is required. Presently, the Ghana FDA and the Pharmacy Council are working collaboratively to control tramadol's display on community pharmacy shelves (Ghana Ministry of Health (MOH) 2024). This enforcement of regulations on tramadol's sale as a controlled substance represents a significant step forward in preventing unauthorised access (Ghana MOH 2024). However, addressing the availability and access to tramadol requires multinational collaboration beyond law enforcement and strict measures. It is essential to understand and address the underlying drivers of tramadol demand fundamentally. The domestic sale may be driven by economic challenges or indicate widespread social acceptance. Addressing fundamental social determinants, which often foster illegal activity (Caruso 2017), can make public health measures more inclusive and effective. Within Ghana's education policy, programs such as education capitation grants are established to mitigate disparities in education and income (Osei et al. 2009). Nonetheless, these programs are often hindered by issues of mismanagement and inadequate evaluation (Agbenyega 2008).

Overall, the sociocultural factors contributing to the continuous use of tramadol revealed in this study demonstrate that it is often not due to moral failings or mere biological tendencies but is deeply ingrained in societal, cultural, and economic contexts.

6.5 Multifaceted consequences of non-medical use of tramadol

In this study, the consequences of non-medical use of tramadol varied considerably among participants, highlighting the complexity and multidimensionality of the issue. This further supports that tramadol use cannot be reduced to a single, universal experience. This subjectivity of the effects of tramadol use may complicate efforts to identify the most appropriate intervention strategies, as the effectiveness of such interventions may vary depending on multifaceted individual factors. Understanding the variability can help policymakers and practitioners recognise the limitations of blanket regulations and the need for nuanced, targeted approaches to address tramadol use effectively.

The profound emotional language used by participants, such as "tramadol ruined my life" and "tramadol destroyed my life," reveals the severe and extensive impact of tramadol use on their lives, showing a depth of suffering beyond typical health complications and extending into existential distress. This finding is in sync with literature spotlighting personal testimonials attesting to tramadol ruining their lives (Curnow 2018). These expressions highlight the need for strategies which humanise what might otherwise be abstract statistics in public discourse, reminding people that individual lives are profoundly altered by tramadol use.

6.5.1 Socio-economic and emotional consequences

This study reveals that the non-medical use of tramadol has widespread socio-economic and emotional implications impacting personal lives, communities, and institutions.

Academic challenges were a recurring theme among school-aged participants. Poor academic performance, a consequence of tramadol's impairment of cognitive function (Bassiony et al. 2017), not only affects immediate outcomes but has lasting effects on economic prospects and overall well-being (Francesco 2016). Participant reports highlight how tramadol resulted in absenteeism and loss of interest in learning, disrupting their educational trajectories. This creates a demographically vulnerable subgroup that experiences substantial academic, social, and economic disadvantages. Moreover, people from lower-income backgrounds are potentially already at an academic disadvantage (Jury et al. 2017; West 2007). The added burden of tramadol use compromises their ability to bridge the educational gap, thereby perpetuating cycles of poverty and social inequality. Existing studies corroborate that tramadol use detrimentally affects academic performance, leading to absenteeism, dropouts, and

concentration issues (Ngwa 2022; Pourmohammadi and Jalilvand 2019; Jonathan and Samuel 2018; Chukwu et al. 2017; Bassiony et al. 2015; Akanbi et al. 2015). Commonalities in findings across various educational settings are likely due to the shared vulnerabilities, such as peer influence, academic pressure and experimentation, prevalent among adolescents and students.

Efforts involving cooperation between schools, healthcare providers, and community groups are essential. Integrating educational campaigns into school curricula and training for early detection are key strategies. Ghana has already incorporated health and life skills education into its national school curricula, covering substance use prevention, mental health, and healthy choices (Ghana Education Service 2023). Enhancing these programs with evidence-based methods like The Good Behaviour Game, which merges behaviour management with substance use prevention, and Mental Health First Aid, which trains school staff to recognize and manage drug use and mental health issues among students, can greatly enhance the effectiveness of these courses (Hadlaczky et al. 2014; Flower et al. 2014).

Tramadol use resulted in substantial employment difficulties, impacting both individual welfare and broader socioeconomic stability. Participants reported decreased motivation and interpersonal skills, indicating a noticeable deterioration in their ability to communicate effectively. These issues can impact financial stability and career advancement, exacerbating societal challenges such as unemployment, economic inequality, reliance on welfare and crime (Antunes and Manasse 2022; Office of Disease Prevention and Health Promotion 2020; Assari 2018; Dabla-Norris et al. 2015). In an intriguing deviation, it diverted individuals from conventional employment, enticing them into illegal drug sales. These results are consistent with prior studies indicating that individuals who abuse tramadol experience work-related problems (Ngwa 2022; Abd-Elkader et al. 2020; Naem et al. 2020 Chikezie and Ebuenyi 2019). Younger and economically disadvantaged individuals were particularly vulnerable to the appeal of selling tramadol due to its immediate financial gains, risking involvement in illicit activities. Offering alternative economic opportunities or vocational training could serve as a legitimate income source, mitigating these risks (DeBeck et al. 2007).

A distinct, yet intersecting challenge arises from participants' concerns about potential employers' biases against people involved in drug use, associating them with unreliability and altered appearance. This finding broadly aligns with evidence suggesting that the use of substances such as marijuana and cocaine substantially lowers employment prospects for males (DeSimone 2002). This can lead to discriminatory hiring practices, limiting employment opportunities for these individuals (Tews, Pons and Yu 2023). This external bias, coupled with internal barriers like impaired communication skills due to tramadol use, makes recovery and

reintegration into the workforce challenging (Aronowitz and Meisel 2022). Given this complexity, awareness campaigns targeting employers are crucial to advocate for a more inclusive workplace and mitigate the stigma associated with tramadol use. Likewise, reported effects of diminished motivation and increased feelings of laziness suggest a need for customised addiction and mental health services to address these specific aspects of employability. Although evidence on the effectiveness of occupational therapy in treating SUDs remains sparse, research has shown it can enhance social functioning and motivation among patients with schizophrenia (Jafari and Grobelna 2023). Therefore, integrating occupational therapy and employability skills training into treatment protocols can provide support for affected individuals (Hawkins et al. 1989).

Findings reveal that participants perceived themselves as lagging in life due to their tramadol use, impacting their self-perception and societal positioning. This observation validates prior research in this field of drug use and addiction, such as the study conducted by Nehlin et al. (2020), which demonstrates that individuals with substance addictions, such as heroin, experience setbacks in life areas such as employment and economic status. These findings suggest comparable consequences exist among those who engage in drug use despite the difference in used substances. The deviation from societal timelines, as reflected in the sentiments of inadequacy and isolation described by participants, notably parallels existing studies (Suls, Martin and Wheeler 2002; Obekpa et al. 2021), affirming the likelihood of tramadol use as a coping strategy amidst these societal pressures. Subsequently, it can reinforce a continuous cycle of non-medical use and impede rehabilitation, due to the pervasive feelings of having irrevocably ‘wasted` crucial years. Interlacing this individual plight with broader macroeconomic implications, this implicitly suggests a potential ripple effect, resulting in reduced productivity and increased strain on healthcare and welfare systems.

Young individuals in formative career or academic stages may experience these delays acutely. Similarly, socio-economically disadvantaged individuals may struggle more to ‘catch up` due to limited resources. Individualised interventions such as Dialectical Behaviour Therapy, which focuses on emotional regulation and distress tolerance, effectively address the socioemotional aspects of recovery beyond just abstinence (Pasieczny and Connor 2011). However, its effectiveness may be subject to factors such as the substance of use, concurrent mental health conditions, and the availability of social support (Alavi, Stephenson and Rivera 2021; Pasieczny and Connor 2011). Moreover, accessibility issues such as cost, availability of trained professionals, and stigma can limit the reach of these interventions (Alavi, Stephenson and Rivera 2021). Providing platforms for skill development, education, and vocational training can assist individuals in their career progression. Treatment models such

as the Therapeutic Community Model, in which recovery is pursued through living and working together, incorporate elements such as Cognitive Behavioural Therapy and peer counselling that can be adapted to address distress from perceived life delays (Norton, Klenck and Barrera 2010).

Another serious revelation was that participants had experienced incidents of violence, including physical and sexual assault, related to their tramadol use. The impaired judgement of these participants often made them targets of violence, a finding that aligns with a case report by Stoehr et al. (2009). Additionally, the findings support previous research that found sexual assault was linked to tramadol abuse (Ngwa 2022). Other existing studies delved into an additional facet of the phenomenon, revealing that individuals abusing the drug often exhibited inappropriate sexual behaviours, with some even perpetrating sexual abuses, particularly targeting young girls (Gallois, van Andel and Pranskaityté 2021; Obaji 2019). Given these findings, it is unsurprising that participants in this study mentioned that sometimes the assault came from within their drug-using circles.

Collectively, these findings suggest a nuanced interplay between the non-medical use of tramadol, victimisation, and violence. They also raise the subject from an exclusively personal well-being concern to one with wider socio-legal and public safety implications, necessitating interdisciplinary approaches involving public health, law enforcement, and social services. The occurrence of non-medical use-related violence necessitates broad-based interventions beyond mere drug sobriety. Drug Treatment Courts with victim support services represent a significant shift from traditional criminal justice approaches, recognising the complex relationship between drug use and violence Matusow et al. 2013; Fulkerson, Keena and O'Brien 2013). These courts offer treatment and recovery programmes for offenders while ensuring that victims of drug-related violence receive counselling, legal assistance, and other support services (Matusow et al. 2013; Fulkerson, Keena and O'Brien 2013). The implementation of drug courts, despite receiving commendation for their innovative approach (Gottfredson et al. 2007), has several significant limitations. Critics highlight that these victim support services often lack adequate resources or prioritisation within the court system (Tiger 2011). Furthermore, concerns about equity within the Drug Treatment Court system are prominent, with evidence indicating disparities in access to these courts and the outcomes achieved (Gallagher, Wahler and Lefebvre 2020). These disparities may be influenced by racial, economic, and social factors, raising questions about the fairness and inclusivity of the system (Gallagher, Wahler and Lefebvre 2020; Gallagher 2012).

The examples of victimisation revealed in this study emphasise the need for legal and social reintegration services within rehabilitation programmes, given its implications for criminal

justice and societal marginalisation. It also underscores the necessity for stakeholder awareness of the profound and enduring impacts of the phenomenon and the integral role of psychological support and trauma-informed care in holistic intervention approaches. This component of care becomes even more important, considering that many persons who use drugs usually have a traumatic past (Matheson et al. 2023). Matheson et al. (2023), emphasises the necessity of equipping staff with the necessary training to handle distressing information sensitively and effectively.

Another socio-legal dimension that emerged from the study was participants being arrested, encountering law enforcement, and facing legal prosecution in connection with their use of tramadol. This finding contrasts with a study in Ghana reporting no arrests related to tramadol use (Alhassan 2022a), possibly due to variations in willingness to disclose legal encounters or local law enforcement practices. Moreover, the association between drug addiction, including tramadol and legal troubles and criminal prosecution is well-documented (Naem et al. 2020; Karibo 2020). These experiences with law enforcement highlight the criminalisation of drug use, which is usually the standard response to drug use and misuse in many societies (Park et al. 2020). Particularly striking is the reference to police raids conducted in ‘ghettos`, which highlights the issue of social and economic inequality in drug law enforcement. It seems to imply that the war against drug use and misuse is waged disproportionately in underprivileged communities, sustaining a pattern of poverty and marginalisation.

Involvement in the criminal justice system commonly leads to job loss, familial disruption, and diminished employment prospects (UNODC n.d; Chandler, Fletcher and Volkow 2009), aggravating the social determinants that may contribute to tramadol use in the first place (Cohen et al. 2022). These lasting legal consequences may also exacerbate the stigma associated with tramadol use (Room 2005). Furthermore, criminalisation drains public resources, law enforcement, the judiciary, and corrections (UNODC 2018), raising questions about the effectiveness of such legal approaches. On a related note, it might inadvertently divert essential resources from addressing the underlying causes of tramadol use, potentially detracting focus from more urgent criminal matters (Bean 2014). Given these implications, it is essential to advocate for decriminalisation, treatment-focused policies, community-based healthcare, harm reduction strategies, and public campaigns to address tramadol use and reduce stigma. These policies, exemplified by the positive outcomes observed in Portugal following the decriminalisation of drug use, have demonstrated their effectiveness in enhancing public health outcomes, as indicated earlier in this chapter (Hughes and Stevens 2007).

Disruption of familial and social relationships was found to be a common consequence of tramadol use. Participants recounted repeated instances of conflicts with friends and family, exacerbated by altered behaviour and compromised decision-making due to tramadol use, indicating a recurring cycle of relational harm. Family members often had to bear the costs of medical treatments, legal fees and other related expenses, highlighting the significant financial and emotional strain on families. This financial burden can escalate familial conflicts and exacerbate socioeconomic inequalities (Sharma et al. 2019). Participants concealed their tramadol use, undermining trust and often leading to relationship breakdowns. Families faced the dilemma of supporting their loved ones while managing resentment from emotional and financial pressures. Additionally, tramadol use was notably found to disrupt meaningful interactions and communication, which are crucial for societal and individual relationships, leading to increased isolation, conflicts, and societal difficulties (Palmer, Newsom and Rook 2016; Umberson and Karas Montez 2010). These findings add to existing research documenting various interpersonal and family problems resulting from tramadol abuse and misuse (Ngwa 2022; Diab et al. 2021; Abd-Elkader et al. 2020; Naem et al. 2020; Bassiony et al. 2015).

Strained relationships can profoundly impact individual and community mental health and stability (Umberson and Karas Montez 2010). Such interpersonal conflicts not only isolate individuals from essential support structures but can also perpetuate a cycle of tramadol use as individuals may turn to the drug to cope with the stress and conflict stemming from their existing drug use (Sinha 2008). Hence, interventions should address social disruptions from tramadol use, possibly comprehensive community and family-based therapy strategies. Existing models, such as Family Behaviour Therapy, address drug use and family dysfunction through behavioural contracts, contingency management, and skill training, effectively improving family dynamics and reducing substance use (Donohue, Allen and LaPOTA 2009).

Participants' use of tramadol induced self-harmful behaviours, aggressive interactions, illegal activities such as theft, and high-risk behaviours, fuelled by increased irritability and a false sense of invincibility. These findings are consistent with existing literature indicating that tramadol can lead to mood alterations, aggression and violence towards self and others, anger, inconsiderateness, theft and becoming temperamental at the least provocation (Ngwa 2022; Diab et al. 2021; Fuseini et al. 2019; Obaji et al. 2019; Yassa and Badea 2019; Ebhota 2018; Jonathan and Samuel 2018; Ebo'o 2018; Bassiony et al. 2015).

The behavioural consequences of tramadol use revealed underscores the drug's potency, the substantial risks involved and the pressing need for educational initiatives, counselling services, community support groups, and legal aid for affected families and communities.

Younger individuals are particularly susceptible to impulsivity and risky behaviours, necessitating targeted interventions such as Cognitive Behavioural Therapy (Welsh et al. 2020). Those with lower income and education are also at increased risk, likely due to a lack of awareness of the dangers of non-medical use (Viinikainen et al. 2022; Jia et al. 2021). Peer-led social media campaigns that involve peers sharing information about risks associated with drug use through testimonials and interactive elements such as hashtags to engage broader audiences on social media platforms have proven beneficial (Dunn et al. 2018).

The non-medical use of tramadol can paradoxically lead to social isolation and awkwardness. Despite some people initially seeking its social and mood-altering effects, participants reported feeling lazy and a tendency to withdraw from social interactions, indicative of potential mood disorders and a decline in their mental health (Harvey and Gumport 2015). This withdrawal and inability to maintain social connections with people who may act as traditional support systems can intensify feelings of isolation, creating a vicious cycle that makes recovery more challenging (Sinha 2008). This finding broadly aligns with a study that found a positive association of emotional aloofness, usually characterised by being distanced and unfriendly, with tramadol abuse (Fuseini et al. 2019; Cloninger and Svrakic 2008). Perhaps the withdrawal stems from perceived stigma and fear of judgment. Existing literature highlights stigma as a notable social consequence of tramadol use (Diab et al. 2021; Peprah et al. 2020). The stigma associated with prescription drug use often leads to social isolation (Nelson 2022). Given the foundational role of social connections in mental well-being (Holt-Lunstad 2021; Holt-Lunstad, Smith and Layton 2010), interventions should focus on mental health support, such as counselling and psychotherapy, and strategies to enhance social integration. Recreational Therapy, using activities like sports, art, music, or outdoor adventures, promotes socialisation and teamwork (Kensinger 2019). However, its implementation requires significant resources such as skilled professionals, adequate space, and specialised equipment (Gassaway et al. 2011), which may limit its availability in resource-constrained treatment centres.

In this study, deep-rooted societal misconceptions about tramadol use led to stigmatising labels such as "bad men" or "bad boys," diminishing self-worth and potentially affecting mental well-being (Penn and Wykes 2003). Stigma can make it challenging for individuals to seek treatment for SUDs (Wogen and Restrepo 2020). Public health strategies should debunk misconceptions about tramadol use through community-based programmes such as peer support groups, public awareness campaigns, and family support programmes. Legal and institutional frameworks should be reformed to address discrimination and stigmatisation. A comprehensive approach involving medical, social, and psychological support, with regular

research on evolving public perceptions and attitudes to adapt interventions, is essential for addressing this challenge.

Furthermore, participants concealing their tramadol use due to shame and fear of judgment highlights the pervasive stigma associated with drug use, supported by multiple studies (Diab et al. 2021; Peprah et al. 2020). This insight broadly mirrors Arve (2023)'s observations on the shame and secrecy in young people from Norway attempting to discontinue tramadol use. The global stigma around drug use and addiction (Pickard 2017), and the legal status of tramadol in both Ghana and Norway (Ghana MOH 2024; Birke et al. 2019), may contribute to universal feelings of shame and secrecy across these cultures. Additionally, the finding bears broad similarities with the findings of Elsawy and colleagues, who found social phobia as a consequence of tramadol use (Elsawy et al. 2019).

Stigma leads to isolation, emotional pain, and relationship problems (Yang et al. 2017), emphasising the importance of fostering non-judgmental dialogues, creating a supportive and respectful atmosphere where seeking help is encouraged. The adoption of person-first language, highlighted earlier on in the thesis, emerges as a pivotal approach in this context (Kabakov, Polisetty and Murray 2022; Sharp et al. 2021; Atayde et al. 2021). Consequently, this will facilitate healthier coping mechanisms and reduce emotional burdens for individuals with addiction.

Individuals using tramadol for non-medical purposes not only face personal risks but can also exponentially magnify those risks by influencing others, creating a network of drug use within communities and a potential public health crisis. This study reveals a cyclic pattern, where those influenced eventually become influencers, particularly in educational settings. Though no studies explicitly evidence that individuals using tramadol influence others to do the same, the prevalent finding that peer influence contributes to tramadol use indirectly substantiates this idea. Moreover, Freeman (2019) hints at the role of individuals influenced by Boko Haram fighters in Nigeria in spreading the abuse of tramadol within the larger community. Identifying dynamics that can make an individual an influencer such as their level of social connectivity or personality traits, can allow for targeted intervention development (Conrod 2016; Griffin and Botvin 2010). Furthermore, introducing others to tramadol poses ethical and legal questions, potentially leading to drug-related charges, akin to the offence of sharing heroin among friends, a recognised violation of drug control laws in some jurisdictions (Mott 1991).

To effectively address the impact of people who use tramadol influencing others to do the same within educational settings, programs such as Peer Resistance Skills Training have been pivotal. These initiatives, which are designed to empower students with the skills to reject

drug use, employ role-playing exercises where participants engage in various scenarios to practice refusing drugs (Wolfe et al. 2012). Such interactive approaches not only enhance the students' refusal skills but also bolster their self-confidence in resisting peer influence (Wolfe et al. 2012). An exemplary instance of this strategy's success is observed in Tijuana, Mexico, where a program focused on resisting tobacco use demonstrated significant efficacy among sixth graders (Laniado-Laborín, Molgaard and Elder 1993). The program not only prevented tobacco experimentation but also exhibited a therapeutic impact, with a notable 72% of the participants ceasing smoking (Laniado-Laborín, Molgaard and Elder 1993). Given these results, adapting a similar framework to address the issue of tramadol use among students could offer a promising avenue for intervention, mitigating the risk of peer-induced tramadol use in school environments.

Another concerning consequence of tramadol use in this study is the development of negative perceptions and disapproval towards the drug. This finding reflects a link between participants' adverse experiences and their attitudes toward tramadol, which might contribute to scepticism regarding its safety and effectiveness for legitimate medical purposes among individuals and even healthcare providers. To ensure access to accurate, evidence-based information regarding tramadol's medical uses and risks of non-medical use, educational initiatives are crucial. Further research is needed to determine whether tramadol use directly causes these negative perceptions towards the drug. This understanding can enhance educational and intervention strategies by targeting specific causes of such perceptions (Palmer et al. 2012). Additionally, exploring the distinction between the influence of personal experiences with the drug and broader societal stigmas may provide insights into how individual and community attitudes towards tramadol are formed and how they can be effectively challenged or changed.

The non-medical use of tramadol had substantial financial implications, affecting individuals and their communities on multiple fronts. It made participants divert significant funds to sustain their addiction, leading to indirect economic costs and compromising future prospects and immediate responsibilities consistent with literature on the consequences of tramadol abuse (Curnow 2018). Prioritising drug acquisition can exacerbate the cycle of poverty and reliance, especially for low-income individuals who already face significant barriers to economic stability and access to healthcare (McMaughan, Oloruntoba and Smith 2020; SAMHSA 2016c). Misuse of essential household funds on drugs leads to financial strain for families and communities (Dawe 2007; Velleman and Templeton 2003), possibly increasing reliance on community resources and welfare systems. Children, dependents of those engaging in tramadol use, as shown in the study, can be deprived of basic needs, leading to potential long-term health and developmental consequences (Luby et al. 2013). The pervasive financial

strain further aggravates existing social disparities, disproportionately affecting vulnerable populations (Blank and Burström 2002), and intensifying their barriers in breaking the cycle of tramadol use.

Additionally, the non-medical use of tramadol resulted in significant healthcare costs due to required medical treatments, for adverse physical health effects, often burdening families with these expenses. Moreover, many facing these costs also reported interpersonal difficulties, reinforcing earlier assertions that beyond the direct financial strain, tramadol use can create family tensions and undermine essential support systems for recovery. This dynamic can further perpetuate tramadol use. Concurrently, the healthcare system also faces added strain (Crowley et al. 2017), emphasising the need for specialised resources such as substance use treatment programmes. The financial stress can hinder timely access to medical care, further escalating negative health outcomes (Choi 2018).

Transitioning into similar dimensions of costs, the disclosure of legal costs associated with tramadol use broadens the impact of use beyond health and social realms, affecting individuals, families, communities, and public resources. This financial burden may hinder access to essential medical treatment (Peng and Zhu 2021), contributing to a recurring cycle of tramadol use and subsequent legal issues, deteriorating overall community health and well-being. This situation exposes individuals to further socioeconomic and health disparities (Galea and Vlahov 2002). Hence, there is an evident need for diverse public health approaches addressing financial and legal aspects, with potential provisions for financial aid initiatives for those requiring legal representation or facing financial penalties. Rehabilitation facilities can establish partnerships or referral networks with local legal aid clinics that can offer legal support to these individuals.

Social welfare programs designed to mitigate income inequalities play a crucial role in addressing financial burdens of substance use, and subsequent effects on families and communities (Burnhams, Dada and Myers 2012). Ghana's Livelihood Empowerment Against Poverty policy, initiated in 2008, offers financial aid and health insurance to the nation's poorest, focusing on orphaned children, those with severe disabilities, and seniors over 65 (Kuyini 2014). The policy's framework notably lacks provisions for individuals who use drugs, indicating a possible oversight in acknowledging this group as a vulnerable demographic within the Ghanaian society. This exclusion highlights the need for redefining and re-evaluating vulnerability to include individuals who use drugs, advocating for policies that are tailored to their specific needs. Research is required to assess the long-term economic impacts of tramadol use on families and communities and examine the feasibility of related social welfare programs.

Participants in this study reported several emotional consequences including feelings of hopelessness. This finding was also reported by Diab et al. (2021), who found hopelessness to be a consequence of tramadol abuse. Despair and hopelessness are not just fleeting emotions; they can have long-term consequences for an individual's mental and overall health (Ribeiro et al. 2018). Moreover, hopelessness can contribute to a cycle of continued tramadol use, as individuals may use the drug as an escape from their emotional pain (Malmberg et al. 2010). The feeling of inability to support one's family due to tramadol use reported by a participant reveals the interconnection between emotional and socio-economic consequences, diminishing one's familial role and exacerbating feelings of worthlessness or inadequacy.

Similarly, the emotional pain resulting from the consequences of tramadol use in this study aligns with existing research indicating that drug use worsens emotional pain (Glei, Stokes and Weinstein 2020). The finding is also in broad keeping with a study which found emotional dysregulation as a consequence of tramadol dependence (Shamseldin et al. 2020). Illuminatingly, the emotional pain experienced during attempts to stop using demonstrates that overcoming tramadol use is not simply a matter of willpower but may require extensive medical and psychological interventions. The apprehension about the emotional turmoil of withdrawal may discourage certain individuals from discontinuing use (Koob 2020). The emotional distress observed in tragic cases, such as a mother losing her child due to tramadol use during pregnancy, highlights the urgent need for healthcare professionals to capitalise on preventive patient education. While some studies suggest that prenatal care as part of the substance use prevention framework may not reduce maternal drug use (Elk et al. 1998; Carroll et al. 1995), others highlight its effectiveness when combined with other substance use interventions (Elk et al. 1997; Chang et al. 1992). There is a need for current research to assess the effectiveness of prenatal care within the framework of modern clinical practices. Experts advocate for a multidisciplinary care model that includes various specialities, such as obstetrics, addiction psychiatry, and neonatology, along with social services and legal support, to address maternal drug use effectively (Mckinney et al. 2023). Moreover, prenatal care is acknowledged for enhancing various pregnancy outcomes, including breastfeeding and child vaccination success (Hu et al. 2017; Tanner-Smith, Steinka-Fry and Lipsey 2013). In Ghanaian healthcare settings, guidance on appropriate medications and essential vaccinations, should extended to include guidance on the risks of tramadol use, ensuring the well-being of mother and child.

This distress was often compounded by experiences of sexual assault and deteriorating health in this study, necessitating integrated interventions combining substance use treatment,

mental health, and medical services. The presence of gender-based violence in these situations requires the implementation of gender-sensitive approaches to provide tailored support and resources. In 2009, Ghana introduced an innovative health sector gender policy, a strategic initiative mandated by the 1992 National Constitution and other national guidelines for gender integration (Ghana MOH 2009). This policy ensures that the distinct health needs of both men and women are adequately addressed (Ghana MOH 2009). A critical component of this policy is the protocol for Gender-Responsive Treatment, which equips healthcare providers with specific frameworks and training modules (Ghana MOH 2009). These tools are designed to facilitate the delivery of gender-specific care in healthcare facilities, including psychiatric hospitals that have departments dedicated to substance use treatment (Ghana MOH 2009). The policy's effectiveness and relevance can be enhanced by periodic reviews, incorporating feedback from various stakeholders. Additionally, increasing public awareness about gender-specific health issues and the availability of gender-responsive services may help reduce stigma and promote the use of these services.

Continuing with the discussion of emotional consequences, participants reported persistent feelings of sadness due to events related to their drug use. This hints at its intertwined relationship with mental health (Newcomb and Locke 2005). Existing studies confirm sadness as a consequence of the non-medical use of tramadol (Peprah et al. 2020). Moreover, research links tramadol use or abuse with depression, a condition characterised by prolonged sadness (Bassiony et al. 2016). Furthermore, participants expressed feeling deep remorse and regret for their choices and actions related to tramadol use. This emotional burden involved overwhelming guilt, self-blame and negative self-perception, potentially impacting relationships and recovery (Batchelder et al. 2022). While direct evidence linking tramadol use to feelings of regret is currently lacking, it is not unexpected to assume that many individuals may experience some form of regret following tramadol use. Furthermore, existing research underscores the intricate role of regret in the decision-making process related to changing substance abuse behaviours, significantly influencing an individual's readiness to initiate change (Blume and Schmaling 1998).

Understanding regret as an emotional consequence of tramadol use could potentially enhance prevention strategies. The integration of real-life narratives and expressions of regret into educational campaigns, can serve as an effective means of conveying the emotional consequences of drug use (Petraglia 2007). The practical value of this approach is exemplified in the experiences of participants who sought treatment in this study, which is discussed in the next emergent theme. Showcasing the emotional aftermath of drug use through these

narratives provides a vivid illustration of the potential consequences, making the risks more relatable and tangible to the target audience.

Overall, the findings of emotional consequences of the non-medical use of tramadol revealed in this study underscores the importance of integrating emotional well-being into the framework of public health interventions, which may involve providing tools for emotional coping and resilience-building. Previously mentioned Cognitive Behavioural Therapy, which addresses negative thought patterns (Bhattacharya et al. 2013), Dialectical Behaviour Therapy, which includes mindfulness and emotional regulation (Pasieczny and Connor 2011), and Trauma-Informed Care, which integrates the understanding of the significant presence of trauma among affected persons into treatment strategies (Marks et al. 2022), have all proven effective in managing emotional consequences of substance use disorders.

6.6 The complex framework of the rehabilitation process and its role in facilitating recovery from non-medical use of tramadol

6.6.1 Pre-rehabilitation attitudes and motivations

The initiation of treatment is frequently marked by the crucial step of recognising the need for external help. Contemplation of treatment of drug use and addiction represents a critical phase where individuals engage in an introspective evaluation of their need for intervention (Bellack and DiClemente 1999). Readiness for change, involves an individual's internal motivation to alter their behaviour for the better (Vogel, Wade and Haake 2006). This readiness serves as the pivotal point where individuals transition from contemplation to action (DiClemente et al. 1991). Both concepts are essential components of effective treatment interventions. They represent the individual's agency and participation in their own recovery process. Understanding these factors allows for personalised treatment plans, enhancing the effectiveness of long-term healing (Prochaska and DiClemente 2005).

In this study, several participants contemplated treatment for their tramadol use, with the majority acknowledging the need for rehabilitation, although they had not initiated such treatment. This finding aligns with prior research that highlights the strong desire and contemplation among people with tramadol to discontinue its use (Alhasan 2022a; Abd-Elkader et al. 2020; Carmel et al. 2019; Ezenwa et al. 2019; Obaji 2019; Salm-Reifferscheidt 2018). This contemplation represents a crucial point. It reflects a growing willingness to

address their drug use and pursue recovery. It also provides healthcare professionals a timely opportunity for intervention, allowing for individualised treatment plans to help individuals transition from contemplation to actionable steps towards recovery.

As anticipated, the study reveals a connection between economic status and contemplating treatment, with most of those in the contemplation phase being either unemployed or with low income. This highlights the impact of socioeconomic factors in seeking treatment. Despite economic hardships, the mere consideration of treatment shows an evaluation of the recovery costs and benefits. This points to the need for treatment plans that consider both psychological readiness and economic limitations to ensure financial barriers do not impede recovery (Piontek et al. 2017). This outcome contrasts with findings from Peprah and colleagues, who reported a lack of inclination toward discontinuation of tramadol use among participants (Peprah et al. 2020). Interestingly, some participants emphasised that barriers to treatment access existed regardless of financial standing, challenging the idea that financial capability solely determined access to treatment and rehabilitation. They viewed their access as an opportunity, suggesting a responsibility to optimise their recovery efforts. This highlights a need for holistic treatment approaches considering financial and other factors that influence accessibility.

Complimentarily, the study underscores participants' strong desire for change, indicating their psychological readiness and personal commitment to recovery. Similar studies reveal individuals demonstrate a strong willingness for treatment (Ezenwa et al. 2019), revealing a fundamental desire for change. Consequently, these insights call for tailored interventions that leverage individuals' inherent motivation for successful recovery. Self-Determination Theory-based interventions, which focus on fostering autonomy, competence, and relatedness, significantly enhance intrinsic motivation and the potential for lasting behavioural change (Hagger et al. 2020). A key strategy within this framework is Autonomy-Supportive Counselling, where therapists empower individuals by offering choices and promoting active participation in treatment decisions, thereby nurturing a sense of autonomy (Kinsella 2017). This method not only strengthens individuals' control over their recovery journey, making them the primary agents of change, but also respects and validates their emotions and perspectives, further building trust and a sense of agency (Kinsella 2017). By encouraging individuals to set their own recovery-related goals and values, the counselling aligns the treatment with individuals' personal aspirations, thereby boosting their motivation and engagement in the recovery process (Kinsella 2017). Research highlights the perceived effectiveness of Autonomy-Supportive Counselling, yet it presents distinct challenges (Cogswell and Negley 2011). Therapists must balance fostering autonomy and providing guidance, requiring

adaptability, patience, and potentially additional training (Ryan et al. 2011). Additionally, the success of the approach hinges on the client's specific stage of change, readiness for therapy, and unique circumstances, necessitating a customised application (Oliverio et al. 2022).

Notably, some participants were even prepared to compromise confidentiality for treatment access, underscoring an urgent need for support. It possibly signifies a gap in the availability of stigma-free, discreet treatment options. This preparedness, while commendable, could impede treatment effectiveness as individuals might withhold vital information due to the lack of confidentiality (DePuccio et al. 2020; Felt-Lisk and Humensky 2003; Ward 2002). Furthermore, it may indicate a degree of desperation that could result in impulsive decisions, affecting long-term recovery. Significantly, they might be exposed to a potential risk of discrimination and social exclusion (Oni et al. 2022; López-Ibor 2002). These insights emphasise the necessity for comprehensive, confidential treatment services that reconcile the situation’s urgency with maintaining a secure environment conducive to effective recovery.

Telehealth services are increasingly used in substance use and mental health (Moreland, Guille and McCauley 2021), offering remote therapy and support groups with enhanced privacy through encrypted video conferencing, which ensures patient confidentiality and provides timely, barrier-free treatment access (Uhl et al. 2022; Lin et al. 2019). However, these services face challenges such as technological barriers like internet connectivity that may limit access for vulnerable populations (Jang-Jaccard et al. 2014; Walker and Whetton 2002), and the virtual format may impede therapist-patient relationships, potentially reducing treatment effectiveness (Sugarman et al. 2021). Despite encryption, there are still security risks with transmitting sensitive health information online (McCarty and Clancy 2002). The lack of studies on individuals' willingness to compromise confidentiality for treatment access suggests a need for more research to understand patient priorities and develop tailored treatment approaches that balance confidentiality with accessibility, address barriers, navigate ethical issues, and reduce stigma (Millum et al. 2019).

Transitioning to the underlying influences of decisions to seek treatment, multiple factors, were reported, including internal processes involving evaluation of personal lives and external influences such as family dynamics, societal perceptions and awareness of adverse consequences. Health crises from tramadol use, such as hospitalisation or medical emergencies, motivated treatment seeking as they highlighted the severity of the condition and the urgency to avoid lasting health impacts or death. This finding aligns with research showing that health complications from tramadol use often catalyse treatment efforts (Arve 2023; Alhassan 2022a). Healthcare providers can leverage this feeling of urgency to assess patients and direct those with tramadol-related crises to appropriate treatment services.

Hospitals typically follow protocols for drug-related emergencies, including patient stabilisation and referrals to addiction treatment or psychiatric care, effectively combining acute medical management with treatment of the underlying substance use disorder (Tonje, Elisabeth and Lars 2009; O'Toole et al. 2007).

Relatedly, participants experienced profound emotional exhaustion, reflecting internal conflict and dissatisfaction with their tramadol use choices, prompting them to seek treatment. This observation notably aligns with research identifying emotional exhaustion as a key motivator, albeit in the context of women with alcohol use disorders (Grosso et al. 2013), illustrating a potentially universal trigger across different substance uses. Acknowledging this exhaustion is crucial for developing timely, effective interventions and designing tailored healthcare solutions to prevent severe stages of use. Group Therapy has demonstrated effectiveness in reducing substance use, including cocaine, methamphetamine, marijuana, and opioid use (López et al. 2021). It leverages emotional exhaustion as a motivator for treatment, offering a communal space where individuals with substance use issues can share and have their feelings validated by peers with similar experiences (Wendt and Gone 2017; Ford, Fallot and Harris 2009). This validation can alleviate feelings of isolation and reinforce treatment-seeking decisions (Castelein et al. 2015; Ketokivi 2009). It may be essential to consider Group Therapy in the context of individual preferences for group settings and the specific dynamics of the therapy group. Integrating Group Therapy within a broader, personalised treatment plan may be useful.

Furthermore, the revelation that self-reflection and a deep evaluation of participants' lives influenced treatment-seeking decisions highlights the importance of self-awareness in initiating recovery from addiction. Through this introspective process, they gained awareness of the decline in their physical health, interpersonal relationships, emotional states, and overall quality of life as a result of tramadol use. It is conceivable that this heightened self-awareness catalysed the desire for personal growth and social comparison, leading individuals to seek treatment for tramadol use. In 12-step programmes such as Alcoholics Anonymous and Narcotics Anonymous, the encouragement of self-reflection and awareness through specific inventory steps is pivotal for recovery (Ryland 2014). These steps, including conducting a thorough moral inventory and acknowledging one's faults (Galanter 2007; Bigner et al. 1993), are designed to help participants overcome denial (Ann Stoddard Dare and Derigne 2010, O'Brien 1991), identify and understand the patterns of their substance use, and cultivate empathy and humility (Post et al. 2016; Sandoz 2014; Vourakis 2013). This enhanced self-awareness and accountability are essential, enabling individuals to rectify past mistakes, adopt healthier behaviours, and lay a robust foundation for ongoing sobriety and personal

development (Surdyka 2021). 12-step programmes are recognised for facilitating recovery, particularly through their emphasis on anonymity, which creates a secure environment for open sharing, essential for overcoming addiction (Spiegel and Fewell 2004).

Furthermore, while the religious and spiritual elements of the 12-step programmes are acknowledged for their positive impact on recovery (Dermatis and Galanter 2016), there is a critique regarding their prescriptive nature, which may not accommodate the diverse recovery needs of all participants (Lile 2003). The emphasis on a 'higher power' within the programmes may not align with the beliefs of secular individuals or those from different religious backgrounds, potentially limiting the programme's applicability across diverse populations. It is important to note that some scholars argue that labelling the 12-step programme as religious is a misconception, emphasising its spiritual rather than religious orientation, aiming to clarify its intended inclusivity (Mullins 2010).

Comparisons with peers and aspirations to counter societal stereotypes related to drug use induced emotional tension, propelling individuals toward action in this study. This corroborates existing research reporting the desire to enhance one's life, and to be perceived as successful by peers, as significant drivers for treatment-seeking for tramadol addiction (Arve 2023). Participants' strong desire to disprove societal stereotypes can be leveraged for recovery through self-empowerment (Hunter, Jason and Keys 2013). Their stories can challenge prejudices, support anti-stigma initiatives, and encourage the development of more compassionate and impactful substance use policies, ultimately fostering societal change (Heley et al. 2020). Strengths-Based Case Management, which emphasises individuals' strengths over their deficits, aligns well with the dynamics described by participants (Ezell et al. 2023). Capitalising on their desire to disprove societal stereotypes, this approach can guide individuals to devise practical steps to achieve this goal, thus aligning their recovery journey with their personal goals and societal contributions (Ezell et al. 2023). Strengths-Based Case Management effectively fosters resilience and is evidenced to facilitate recovery in substance use and mental health treatment (Tse et al. 2021; Vanderplasschen et al. 2007). However, it is essential also to identify and address any weaknesses, ensuring the provision of well-rounded care and support for each person.

The study reveals the critical role family responsibilities, particularly towards children, have in motivating individuals to seek treatment for tramadol use. Participants' awareness of potential harm to their children highlights the influential role of family dynamics in shaping treatment-seeking behaviours. The concern for family observed among participants contradicts the stigma that people who use substances are solely self-interested, advocating for interventions that leverage familial accountability (Carroll 2016). This observation is consistent with prior

literature, which suggests that family responsibilities often serve as a catalyst for individuals to pursue tramadol addiction treatment (Curnow 2018). This familial motivation for change emphasises the need for family-centred public health approaches and holistic support systems involving families to foster healthier relationships and benefit both individuals and their dependents. Community-based Family Support Centres, which provide a comprehensive array of services and activities aimed at bolstering family well-being, including childcare, educational programs, counselling services, and recreational activities, present a significant advantage in substance use treatment (Lander, Howsare and Byrne 2013; Doyle et al. 2003). However, there is a paucity of empirical evidence regarding the availability and effectiveness of such centres in Ghana. This gap highlights a critical area for further research to explore the availability, implementation and impact of community-based family support centres within the Ghanaian setting.

6.6.2 Treatment approaches

The study revealed participants using a range of treatments for tramadol use, from unconventional to comprehensive rehabilitation methods, reflecting varied beliefs and preferences across cultures. While some participants found alternative treatments, such as prayer by pastors or religious leaders, and adherence to traditional healers' care plans, beneficial, others did not, emphasising the complex nature of addiction and the need for tailored interventions. These observations reflect a broader perspective on healing that integrates spiritual or cultural dimensions into the recovery process. This diversity in treatment preference implies a need for adaptable treatment strategies beyond standardised medical treatments. Public health initiatives should consider incorporating or at least acknowledging alternative methods, aiming to provide inclusive but evidenced-based treatment options (Lazar and O'Connor 1997).

Residential rehabilitation was accessed for treating tramadol use. These programmes are comprehensive, addressing not only the medical aspects but also the psychological, social, and economic facets of addiction (de Andrade et al. 2019). The inclusion of elements such as vocational support and life skills training highlights that recovery extends beyond mere abstinence to equipping individuals for post-treatment life (Sereta et al. 2016). Detoxification emerged as a crucial but initial step in recovery from tramadol use consistent with existing research (Stoehr et al. 2009). While detoxification clears substances from the body, health professionals emphasise its insufficiency for full recovery, advocating for a multifaceted treatment approach (Zhu and Wu 2018). Notably, participants acknowledged the discomfort and challenges of detoxification, such as withdrawal symptoms, but also deemed it essential

for effective treatment. Informing individuals about detoxification expectations is standard practice, aimed at mentally preparing them for potential withdrawal symptoms and challenges (Kouimtsidis, Sami and Kalik 2023). Additionally, treatment providers are equipped to manage the physiological challenges of detoxification (SAMHSA 2006; Kosten and O'Connor 2003), and should similarly be trained to address the emotional challenges accompanying the process.

Another critical aspect that emerged is the importance of incorporating spiritual and moral dimensions into residential rehabilitation programmes. Incorporating these dimensions offered participants with emotional and motivational support. Adaptable spiritual frameworks such as the serenity prayer played a crucial role in enhancing emotional regulation, essential for long-term recovery. These practices allowed individuals to cognitively reframe their struggles, enhancing resilience and emotional management. These insights broadly reflect those of Jang and Johnson (2022), who discuss the role of religion and spirituality in addiction treatment. A substantial portion of research highlights the positive influence of faith in addiction treatment, with 84% of studies supporting its benefits in prevention and recovery, and fewer than 2% suggesting any risk (Grim and Grim 2019). This data underscores the potential advantages of incorporating faith-based elements into addiction treatment protocols. However, as discussed in previous sections, it is crucial to acknowledge that these programmes may not resonate with all individuals, especially those who do not share the faith underpinning the programme. Imposing certain religious beliefs or values, could potentially alienate or stigmatise these individuals (Modood and Thompson 2022), a sentiment subtly echoed by some participants' who described the dissonance between reciting beliefs of a `higher power' by atheists in the programme for formality's sake and genuine acceptance.

Furthermore, the study illustrates the complex, non-linear nature of recovery, with many participants making multiple attempts at rehabilitation, indicating the likelihood of relapses and setbacks. This aligns with broader addiction treatment literature, although the findings are not tramadol specific (Laudet, Savage and Mahmood 2002). Re-enrolment reflects a persistent desire for change and the impact of contextual factors, such as the individual's environment, support system, and resource accessibility. Thus, one-size-fits-all approaches might be inadequate.

6.6.3 Barriers to rehabilitation engagement

Participants encountered numerous individual, societal, and systemic barriers to engaging in rehabilitation. Significantly, some perceived rehabilitation as forfeiting personal autonomy, indicating a psychological struggle between wanting recovery and fearing loss of control. This

perception suggests that traditional treatment models may deter some due to concerns over freedom restriction. This largely aligns with findings that fear of losing autonomy, and beliefs that substance use disorder treatment will require lifestyle changes, often pose significant barriers to seeking help (Finn, Mejldal and Nielsen 2023). Hence, more patient-centred approaches that engage individuals in recovery decisions, including Recovery Coaching Models, such as strength-based case management, are needed to empower individuals while addressing autonomy fears. These models focus on empowering individuals by supporting them in developing personalised recovery plans, setting their own goals, and developing strategies to achieve them (Hansen et al. 2022). Despite the rapid integration of recovery coaching models into healthcare settings, there remains limited empirical evidence regarding their best practices and effectiveness (Eddie et al. 2019). Therefore, there is a need for research to identify the essential components that drive success, determine its most beneficial target groups, and develop best practice guidelines for its application.

Psychological and emotional barriers such as self-sufficiency hindered individuals from seeking professional help. They felt capable of discontinuing use independently, underestimating the challenges and risks of withdrawal and recovery. This finding corroborates research highlighting self-reliance as a barrier to accessing treatment (Arve 2023). This belief can impede access to essential support systems, impacting long-term recovery. Public health interventions should focus on enhancing individuals' awareness of the advantages of professional treatment. Educational campaigns should highlight the limitations of self-managed cessation. Denial also acted as a psychological barrier to engaging in rehabilitation for tramadol use, preventing participants from acknowledging their need for professional help. This finding aligns with previous research where participants; choice of language implied denial of their problem with tramadol use (Abood, Scott and Wazaify 2018).

Consequently, public health professionals should deploy educational initiatives to create supportive environments to reduce stigma. Such environments can promote acknowledgement and acceptance of addiction issues, thereby enhancing the accessibility of treatment (Corrigan et al. 2017). Strategies such as Motivational Interviewing, Cognitive Behavioural Therapy, Group Therapy and 12-step programmes have been proven successful in overcoming denial as a barrier to engaging in rehabilitation (López et al. 2021; Dermatis and Galanter 2016; Bhattacharya et al. 2013; Smedslund et al. 2011).

Furthermore, scepticism, fuelled by observed relapses by friends or acquaintances and concerns about costs and uncertain recovery outcomes, emerged as a key psychological and emotional barrier to engaging in rehabilitation. This finding is consistent with a study showing that scepticism towards psychiatry and social services, stemming from perceived neglect,

hindered seeking treatment (Arve 2023). The observed scepticism highlights the importance of public health interventions aimed at building trust in treatment services. Resistance and receptiveness to treatment were also revealed as psychological barriers to engaging in rehabilitation, particularly in marginalised communities such as `ghettos', despite awareness and availability of these services. This reluctance could stem from various factors, including a lack of readiness to embrace change, hesitation in making a definitive decision to seek help, pervasive distrust in the healthcare system, or the stigma associated with acknowledging the need for treatment (Thybaut et al. 2023; Ellis et al. 2020). Findings showed that the fear and stigma surrounding rehabilitation services hinder engagement in treatment, with societal stereotypes associating rehabilitation with mental instability or psychiatric disorders. This finding aligns with previous studies sighting sensitive cultural stigma as a barrier to seeking treatment for tramadol abuse (Diab et al. 2021). While a plethora of research documents psychiatric or mental health stigma (Corrigan and Kleinlein 2005; Corrigan and Watson 2002), there seems to be a noticeable absence of studies directly exploring the perception of rehabilitation as psychiatric, and how it impedes the pursuit of treatment for tramadol use.

Multimedia campaigns using factual data, statistics, and research findings have effectively addressed treatment doubts across various public health issues (Robinson et al. 2014; Bertrand et al. 2006). These campaigns, adaptable to different audiences, can be spread across social media, television, radio, websites, public forums, and print media (Wakefield, Loken, and Hornik 2010). Asmah, Twerefou, and Smith (2013) found that television significantly influenced women's healthcare decisions in Ghana. Additionally, incorporating real-life stories and testimonials from those who have successfully completed rehabilitation enhances campaign relatability (Gjylbegaj 2024). Sharing personal success stories in these campaigns has proven beneficial, as participants in recovery feel their experiences can demonstrate the positive outcomes of seeking treatment, underscoring the power of narrative and peer experiences in engaging others in treatment.

While sharing personal narratives offers benefits, it is imperative to implement measures that safeguard confidentiality and prevent stigmatisation. Individuals should be given the choice to share anonymously or under pseudonyms, ensuring no identifiable details are disclosed without explicit consent (Felt-Lisk and Humensky 2003). Furthermore, language and presentation should be carefully crafted to avoid sensationalism or trivialisation, ensuring content is respectful, empathetic, empowering, and not depicting victimisation (Bertholet et al. 2019; Broyles et al. 2014). Healthcare providers are also expected to correct misconceptions when discussing treatment options, to ensure informed decisions and promote help-seeking behaviour (Murthy 2017).

Practical and systemic barriers significantly impacted access to treatment for tramadol use. Firstly, lack of time was highlighted as a barrier to accessing and engaging in rehabilitation for tramadol use, underscoring the complex individual challenges to treatment accessibility. Despite knowing about services, some individuals struggled to accommodate treatment within their schedule due to work and family obligations, indicating a need for more flexible treatment options to suit varying lifestyles and time commitments. Although specific corroborative research for tramadol use appears lacking, "lack of time" is a known barrier for those seeking treatment for SUDs in general (National Academies of Sciences, Engineering, and Medicine 2016; Rosen, Tolman and Warner 2004). Additionally, financial constraints emerged as a prominent systemic barrier to accessing rehabilitation for tramadol use, underscoring the impact of socioeconomic inequalities on healthcare access and accentuating feelings of frustration and alienation among those unable to afford treatment. This insight broadly aligns with Diab et al. (2021), who found economic struggles and limited job opportunities hindered recovery attempts, and Nelson and Abikoye (2019), who cited treatment costs as a barrier to drug services, though not exclusively for tramadol.

Consequently, urgent public health actions, including economic measures like subsidies, are needed to guarantee treatment access for everyone, regardless of financial status. National Health Insurance Scheme (NHIS), established by the Ghanaian Parliament in 2003, aims to provide equitable healthcare opportunities, embodying principles of recognitive and distributive justice by striving to eliminate healthcare access discrimination (Kuyini 2014). The NHIS has been commended for its prospective role in advancing health outcomes for economically disadvantaged populations (Vellekoop, Odame and Ochalek 2022). Nevertheless, the scheme's reach is limited, and a significant portion of the impoverished population faces challenges in affording the annual premium, excluding them from the benefits (Christmals and Aidam 2020; Kotoh and Van der Geest 2016; Kuyini 2014). Crucially, it appears that the NHIS does not extend coverage to treatments for substance use disorders (Government of Ghana 2004). In Ghana, the predominantly privatised nature of rehabilitation facilities results in considerable costs, as evidenced in participants' comments on detoxification costs, monthly residential charges, maintenance and occasionally, hospital bills.

Transitioning into another facet, social stigma stood out as a significant systemic barrier to engaging with rehabilitation, a finding supported by existing research (Jambo 2023; Diab et al. 2021). Fear of judgment and exclusion deterred individuals from seeking treatment. Entrenched societal attitudes perpetuate a cycle where the lack of open dialogue maintains the stigma (Yang et al. 2017). Both interpersonal and institutional stigmas, raised confidentiality and media exposure concerns. This finding aligns with Almér Herrnsdorf,

Holmstedt and Håkansson (2022), who found privacy concerns were a primary deterrent for adolescents and young adults to seek help for tramadol misuse. Therefore, rehabilitation services should prioritise and explicitly convey their commitment to confidentiality to address concerns and enhance accessibility. Making the assurance of confidentiality a forefront feature in informational campaigns and consultations has been evidenced to be effective in reducing apprehensions and incentivising help-seeking (Felt-Lisk and Humensky 2003). Additionally, patient advocates, who address confidentiality issues and help individuals navigate the system, have successfully enhanced patient engagement and trust in healthcare services (Oehrlein et al. 2019).

Additionally, information and knowledge gaps significantly hindered engagement with rehabilitation services, showing a systemic failure in information dissemination. Most participants were unaware of the availability, locations, and procedures for these services. This finding parallels existing literature, highlighting that a lack of awareness regarding accessing addiction services is a barrier to recovery (Curnow 2018). Accurate and readily accessible information can demystify the rehabilitation process, reduce stigma, and facilitate informed decisions (Nelson and Abikoye 2019). Current information sources like news reports may be insufficient for actionable guidance, perpetuating a cycle of misuse and addiction. The Ghana MOH could significantly enhance treatment accessibility by creating an online directory similar to SAMHSA's Treatment Locator, providing a detailed database of drug and alcohol treatment facilities across different regions and districts (SAMHSA n.db). This platform would offer comprehensive information on the types of care, available services, and payment options, aiding individuals with substance use disorders in finding suitable treatment options. However, to ensure reach beyond those with internet access or digital literacy, this digital initiative could be complemented by the existing practice in hospitals and clinics, which distribute lists of local rehabilitation resources to patients. Additionally, collaborating with local media, particularly radio, can further broaden the reach, disseminating information about treatment services to a wider audience, including those in remote or underserved areas (Nyirenda et al. 2018).

Female participants encountered unique barriers, including societal, cultural, and financial challenges, in engaging with rehabilitation. This finding is in accordance with studies that indicate that women in Gaza avoided seeking help for tramadol abuse to maintain their social reputation (Diab et al. 2021). The prevailing stigma, potential loss of parental rights and obligations like childcare often deter women, who constitute one-third of persons who use drugs but only 20% of those in treatment globally, from seeking help (SAMHSA 2019b; SAMHSA 2019a; UNODC 2019; Ahern, Stuber and Galea 2007; Bianchi et al. 2001).

Moreover, this fear is not unfounded, and evidence has shown a link between child removal and an increased risk of drug-related deaths among women (Tweed et al. 2022). Losing custody, a deeply traumatic event, can aggravate substance use issues and increase their risk of fatal outcomes (Tweed et al. 2022). Mixed-gender programmes also intensified female participants' reluctance to access treatment. Evidence shows that women-targeted treatment positively influences rehabilitation outcomes for women (Greenfield et al. 2007; Ashley, Marsden and Brady 2003). The existing health sector policy in Ghana could support the establishment of women-only facilities that provide a safe and supportive environment for women seeking treatment. Educational campaigns to change prevailing norms are also essential (Boyle, LaBrie and Omoto 2020).

Given the identified barriers in accessing rehabilitation for the non-medical use of tramadol, it was unsurprising that assurance of confidentiality and privacy, affordability, access to reliable information, and the presence of a strong support system, especially from family and friends, emerged as pivotal facilitators. Participants accessed rehabilitation through varied referral pathways encompassing legal systems, family interventions, and healthcare professional recommendations, demonstrating the complex interaction between societal mechanisms and health services. Comparison of these findings with those of other studies confirms family as a primary source of referral for treatment (Zaki et al. 2016). The reliance on legal channels as a pathway to referral underscores a gap in the public's knowledge regarding the accessibility to rehabilitation services out with the legal system. Deliberately exhibiting erratic behaviour in front of a judge as a tactic to secure a referral to rehabilitation, is reported by some participants. This reality is telling, suggesting that such extreme measures were deemed necessary to facilitate access to the requisite treatment. The emergence of family and healthcare professional referrals to rehabilitation highlights the need for awareness campaigns on tramadol use and integrated addiction management models. Given the diverse referral pathways, a standardised approach might be insufficient for rehabilitation access, necessitating tailored resource allocation, such as collaborations between courts and rehabilitation centres (Belenko, Hiller and Hamilton 2013). Overall, these findings showcase the interplay of ethical, educational, systemic and social efforts in facilitating engagement with rehabilitation for tramadol use.

6.6.4 Barriers to rehabilitation success

A multitude of factors precluded individuals from achieving sustained recovery and overcoming their tramadol use in this study.

This study revealed several challenges associated with the design and implementation of rehabilitation programmes, highlighting some limitations. Firstly, adapting to the structured environment of rehabilitation facilities required significant changes both logistically and psychologically, necessitating lifestyle and behavioural adjustments. Despite these challenges, participants' acknowledgement of the long-term benefits implies that while it is difficult, these obstacles are surmountable. This stresses the need for tailored rehabilitation approaches, such as gradual acclimation or adaptable rules, to facilitate transitions and enhance treatment engagement (Playford et al. 2022). Current research on the impact of structured rehabilitation environments on drug use recovery is sparse, with existing literature primarily examining how individuals adjust to such settings (Georgakas 2010; Shaidukova 2013). These studies suggest various strategies for adapting to and thriving within these environments, including cognitive and lifestyle changes, social skill development, destigmatisation efforts, and the integration of group and family psychotherapy (Georgakas 2010; Shaidukova 2013). Further studies are required to enhance understanding and potentially refine these strategies, aiming for improved recovery outcomes.

Systemically, underfunding appeared to critically affect some rehabilitation facilities, compromising basic care like nutrition and emphasising the need for diverse and adequate funding solutions. Underfunding can also impact health equity and programme efficacy, risking higher relapse rates and the perpetuation of addiction cycles. It appears that direct studies on the impact of underfunding on tramadol use rehabilitation efficacy are sparse. However, broader literature emphasises the vital role of adequate funding in effectively addressing the opioid crisis and substance use (Pullen and Oser 2014).

Organisationally, this study reveals a significant lack of holistic approaches in rehabilitation services, with numerous facilities reportedly falling short in offering a comprehensive range of services essential for full recovery. Specifically, some participants mentioned the absence of detox clinics and inadequate mental health support. These findings are consistent with other studies that, although not explicitly mentioning the lack of holistic approaches, indicate a general dissatisfaction with the services for individuals who misuse tramadol (Jambo 2023). The neglect of mental health overlooks the psychological aspects of addiction, such as underlying triggers and coping mechanisms, making individuals vulnerable to relapse (SAMHSA 2020). This finding emphasises the need for holistic, multidimensional models that incorporate physical, psychological, and social dimensions to address the complexities of addiction. The Biopsychosocial Model exemplifies this approach by recognising the intertwined roles of biological, psychological, and social factors in addiction, thus facilitating a thorough understanding and treatment that addresses genetic, mental health, and

environmental aspects (Papadimitriou 2017; Gonzalez and Skewes 2013). The focus on psychological dimensions within the Biopsychosocial Model has informed the development of integrated treatments for concurrent mental health and substance use disorders (Papadimitriou 2017; Gonzalez and Skewes 2013). Treating these co-occurring conditions simultaneously has been shown to enhance recovery outcomes by addressing the fundamental contributors to substance dependency (Brewer, Godley and Hulvershorn 2017).

Furthermore, substantial language and literacy barriers within rehabilitation programmes were revealed. Although not specific to rehabilitation for tramadol use, existing literature suggests that such language and literacy barriers exist more broadly in healthcare, hindering effective communication between healthcare providers and patients and possibly leading to misunderstandings and suboptimal care (Al Shamsi et al. 2020). These barriers restrict access to essential information and full engagement in recovery processes, creating disparities in treatment outcomes. Participants mentioned relying on peers to overcome language barriers. While peer support in this context is commendable, it is neither sustainable nor equitable for long-term recovery. Implementing language-inclusive strategies, such as multilingual materials and bilingual staff, is needed to ensure equitable access to rehabilitation services and promote inclusivity (Marjadi et al. 2023).

The structure and amenities within rehabilitation programmes are nuanced yet crucial aspects impacting the recovery process. Shortcomings, such as the absence of diverse and engaging activities, including adequate gym facilities, were identified in the rehabilitation service by participants in this study. Descriptions of the service emphasised its monotony, which can demotivate individuals and limit constructive distractions from tramadol use triggers (Caputo 2019). Physical activities, such as working out in a gym, provide therapeutic benefits by serving as outlets for stress and improving mental well-being (Avers 2020). Participants' feedback implies the need for more individualised and diverse programme structuring. With no existing research seemingly corroborating or exploring physical or recreational activities, there is a potential area of unmet need and a direction for future inquiry into rehabilitation programme facilities for tramadol use. Moreover, at an individual level, there was an emphasis on the lack of diverse recreational activities. Consequently, introducing activities catering to varied interests and energy levels could markedly enhance mental well-being and the overall effectiveness of rehabilitation programmes (Caddick and Smith 2014), despite the logistical and economic challenges of implementing such changes.

Finally, the scarcity and lack of awareness of aftercare support underscore significant barriers to recovery, a finding that seems to lack corroborative studies in existing tramadol use literature. It highlights the need for ongoing, accessible, and well-publicised services to prevent

relapse and sustain recovery. Strategies encompassing decentralised support and using telehealth services are imperative for bridging geographical and informational barriers (Gajarawala and Pelkowski 2021). Such strategies facilitate a seamless transition from inpatient to community-based support, making aftercare a crucial focal point for sustainable interventions aimed at the non-medical use of tramadol (Sannibale et al. 2003; Brown et al. 2002).

Moving on to a more internal dynamic, involuntary participation in rehabilitation programmes affected the success of rehabilitation in this study. Existing literature, while applicable broadly to substance use, corroborates this finding, suggesting that involuntary enrolment in rehabilitation impacts successful rehabilitation. It is often associated with lower completion rates due to diminished motivation to engage in recovery (Generes 2023). Moreover, people who misuse tramadol were found to exhibit higher dropout rates than cocaine in a study conducted in Sweden (Almér Herrnsdorf, Holmstedt and Håkansson 2022). Similarly, a systematic review of compulsory treatments reveals inconsistent outcomes, indicating that forced participation does not necessarily equate to successful rehabilitation (Werb et al. 2016), as demonstrated in this study.

Forced enrolment, typically by relatives, heightened resistance and likelihood of relapse, emphasising the importance of individual willingness for successful rehabilitation (Caputo 2019; SAMHSA 2019c). This insight is crucial for clinicians and policymakers in framing rehabilitation strategies, possibly necessitating interventions with preparatory phases to transition prospective patients from resistance to willingness (DiClemente, Schlundt and Gemmell 2004). The focus should be on community programmes emphasising readiness and awareness over involuntary admissions, utilising methods like Motivational Interviewing to enhance an individual's preparedness for treatment (Leinberger-Jabari et al. 2023.

Considering the challenge of forced enrolment, it makes sense that there were accounts of disruptions in rehabilitation settings, due to residents re-entering high-risk environments against house rules. This situation appeared to jeopardise individual recovery and the therapeutic environment, straining staff resources and diminishing programme effectiveness. Participants highlighting that facilities with strict policies and substantial resources face fewer such issues, emphasises the importance of quality and structure in rehabilitation centres for improved recovery outcomes (Miori, Garwood and Cardamone 2017). The existing literature seems to fall short in examining these disruptions within rehabilitation environments, leaving an opportunity for further exploration of the implications of such disruptions for the effectiveness of the rehabilitation process.

Lastly, it is not unexpected that the COVID-19 pandemic significantly disrupted the rehabilitation process for tramadol use, forcing many participants to prioritise family responsibilities over their treatment. Extensive literature details the impact of COVID-19 on substance use and treatment, revealing disruptions and strained infrastructures (Mongan et al. 2020). Research specifically targeting tramadol remains sparse. Nonetheless, it is reasonable to assume that findings related to other substances could offer valuable insights and inform strategies for tramadol recovery, given the potential similarities in the impact of the pandemic on various types of substance use disorders. This finding highlights the fragility of the recovery process when faced with competing life demands, like caring for vulnerable family members during a crisis. It also suggests a need for adaptable rehabilitation services, such as remote support or flexible scheduling, to accommodate unforeseen challenges that could derail recovery. Virtual support groups that offer a valuable space for individuals to access a community of support and share experiences irrespective of their physical location, facilitate continuous engagement with their support network (Beck et al. 2023; Clemmensen et al. 2023; Barrett and Murphy 2021). Similarly, telehealth services enable patients to partake in counselling and therapy sessions remotely, eliminating the need for physical presence at a facility. Research indicates that patients utilising telehealth for substance use disorder treatment have experienced high levels of satisfaction and outcomes comparable to those of traditional in-person care (Lin et al. 2019).

6.6.5 Facilitators of rehabilitation success

The pivotal role of social and relational support in the rehabilitation journey for the non-medical use of tramadol was revealed in this study. Social and relational support acted as a substantial motivator for individuals to adhere to recovery programmes. The persistence of supportive relationships, even amid frustrations and challenges posed by tramadol use, was transformative, leading individuals to seek and commit to rehabilitation. This finding is in keeping with research that stresses the role of social support in motivating individuals to commit to treatment protocols (SAMHSA 2019c). This finding highlights the importance of integrating relational support components like family therapy, peer support groups, and community engagement, including volunteer activities that cultivate a sense of belonging, into treatment plans (Collison and Best 2019; Eddie et al. 2019; Slesnick and Zhang 2016).

6.6.6 Positive feedback

Participants currently in rehabilitation and those who had completed rehabilitation expressed feelings of substantial satisfaction with the various residential rehabilitation programmes. The

positive reflections imply that, despite some limitations, the services adeptly address the multifaceted needs of individuals, encompassing physical, emotional, and logistical aspects of recovery. The multiple positive aspects of their experience included educational components that enabled them to understand addiction as a chronic medical condition. This knowledge deepened their insight into the underlying causes of relapse, the effects of drug use, and the importance of adhering to treatment, enhancing the likelihood of successful recovery. Moreover, participants' understanding can potentially shift societal perspectives, fostering a more empathetic view of addiction as a medical condition, not a moral flaw (Crothers et al. 2012). This underscores the necessity of incorporating thorough educational aspects into rehabilitation efforts to optimise treatment outcomes. Existing evidence confirms the educational components of rehabilitation for SUDs (SAMHSA 2023). Some of these components are further examined in subsequent discussions of findings.

Additionally, maintaining family communication during the rehabilitation process served as a vital source of emotional support and a sense of belonging. The practice indicates that rehabilitation centres are adopting a holistic, person-centred approach, catering to the individual's emotional and social needs in addition to medical treatment. The reassurance and motivation allowed them to share progress and receive encouragement, which is vital for successful recovery (Anggi Putra et al. 2022). It can also contribute to public health objectives by possibly mitigating the social isolation often associated with addiction (Ingram et al. 2020; Morgan et al. 2011). This finding underscores the importance of incorporating supportive communication structures in rehabilitation programmes to enhance emotional well-being and resilience in the recovery process. As already indicated, there is ample evidence underlining the indispensable role and positive impact of family support in addiction recovery, which indirectly supports the significance of prioritising family communication in the rehabilitation process.

Another significant positive aspect that merits attention is the teaching of coping skills and relapse prevention strategies in the rehabilitation programme. Participants viewed the comprehensive approach as crucial for sustained sobriety and lasting recovery. The programme's focus on these elements equips individuals with essential tools to effectively identify and address potential triggers and avoid high-risk environments. Methods such as deep breathing exercises, visualising calming scenes and journaling have proven to be practical coping skills (Guenzel and McChargue 2019). The focus on coping skills aligns with evidence-based practices, providing a solid empirical foundation that can influence healthcare policy, funding decisions, and support services post-rehabilitation. The results of this study are in broad keeping with substantial scholarly evidence supporting the efficacy of relapse

prevention strategies in SUDs rehabilitation (Witkiewitz and Marlatt 2009; Marlatt and Witkiewitz 2005).

Furthermore, the study highlights the crucial role of practical advice and experienced role models in rehabilitating individuals from tramadol use. Their relatability and authenticity offered tangible examples of successful recovery and fostered trust and receptivity, serving as exemplars of hope and empowerment. This highlights the transformative potential of integrating experiential and human-centric approaches, such as first-hand accounts in rehabilitation programmes, increasing the prospects of sustained recovery and addressing the nuanced needs of individuals. This finding aligns coherently with participants emphasising the value of peer support as a notable positive element within their rehabilitation experiences. Peer support addressed emotional needs by reducing loneliness and stigma, creating an environment where participants felt emotionally supported and understood. The finding also explains the structured peer support mechanisms in the form of recovered individuals as peer mentors highlighted by participants. Programmes can adopt other peer support mechanisms, such as book-sharing and group therapy discussions, to enhance treatment efficacy and offer personalised care. This finding is in accordance with previous work indicating peer support as empirically associated with positive rehabilitation outcomes (Scannell 2021; Zilge et al. 2020).

Synergistically, the vital role of personal development and engagement in positive tasks in rehabilitation for tramadol use emerged in this study. Engaging in constructive and stimulating tasks, such as fixing a jukebox, enhances self-efficacy, rebuilds self-esteem, and equips individuals with practical skills essential for post-rehabilitation life. These activities contribute to holistic recovery by offering intellectual stimulation and fostering positive, long-lasting habits. Consequently, this finding advocates for the integration of personal development components in rehabilitation programmes. It and can guide the formulation of more comprehensive policies, potentially attracting additional funding for more holistic addiction treatment approaches. Similarly, community contribution through volunteer work was highlighted as a positive aspect of the rehabilitation experience. Volunteering enriched the recovery journey with purpose and meaning, enhancing well-being, and aligning with therapeutic community models. The sense of community built through volunteering can also reduce isolation, which is a relapse trigger and fosters socially constructive roles, improving self-esteem and emotional ties to the community (SAMHSA 2012; Casiday et al. 2008; Musick and Wilson 2003). This enhanced commitment to recovery indicates that incorporating volunteer opportunities could significantly augment rehabilitation programmes, pushing for policy changes towards more holistic, community-based treatments. The research landscape appears deficient in exploring the potential benefits of personal development and engagement

in positive tasks and volunteering in rehabilitation for tramadol use, highlighting the need for further research in these areas.

This work accentuates the indispensability of integrating physical health support, including nutritional guidance, in tramadol use rehabilitation, fostering a balanced approach that synergistically addresses both physical and mental health. The implementation of such components is pivotal for breaking the cycle of physical symptoms hindering recovery and propelling patients to actively participate in their recovery, potentially leading to higher success rates. The revelations from this study strongly advocate for more inclusive healthcare teams and could catalyse reforms in policies, funding, and accreditation criteria, steering the focus towards more encompassing recovery programmes. This finding broadly aligns with evidence that underscores the importance of addressing physical health needs in the treatment of SUDs (SAMHSA 2020). Transitioning from the physical to the cognitive and social spheres, the integration of recreational activities in rehabilitation presents itself as another cornerstone of effective treatment. Games like Ludo, oware, and chess can act as therapeutic diversions, enhancing cognitive functions and rebuilding social skills and confidence lost to addiction, and their integration is crucial for holistic recovery. These activities, culturally sensitive and aligning with the principle of peer support in recovery, signify the importance of diversification and adaptability in treatment programs, highlighting the essential role of such 'small joys' in the intricate process of recovery. While the correlation is not direct, the study parallels research that found recreational activities as a protective factor against substance use including tramadol (Loffredo et al. 2015).

6.6.7 Personal and social outcomes

Recovery is not merely about stopping drug use; it involves a holistic transformation that includes improved well-being, self-efficacy, and functional recovery (Inanlou et al. 2020). The evidential testimonies of recovery in the study depict the profound personal and social transformation experienced through rehabilitation, with terms like “improved,” “changed,” and “recovered” emphasising their newfound liberation and well-being. Rehabilitated individuals are better equipped to engage in social and professional activities (Brooks and Penn 2003). Furthermore, the significance of recovery in this study, is amplified by the profound impact of rehabilitation in altering perceptions, enhancing resilience, and promoting growth, indicative of its ability to redirect individuals from tramadol addiction to empowered autonomy. Illustratively, participants' gratitude for ‘fresh starts’ highlights rehabilitation as a route to renewed hope and aspiration. Notably, the commitment to lifelong learning and self-improvement in recovery (Cooper 2023), emphasises rehabilitation as not just a transitional

phase, but a continual journey of self-evolution and discovery. This theme adds to empirical evidence supporting the effectiveness of comprehensive rehabilitation programmes (de Andrade et al. 2019; Jhanjee 2014; Cao et al. 2011; McLellan et al. 1996), which is essential for policy and funding decisions. Such positive outcomes indicate the need for further long-term studies to assess the sustainability of these transformative effects.

In this study, participants perceived that rehabilitation led to noticeable improvements in physical appearance and mental stability, boosting self-esteem and resilience. These enhancements extended to healthier relationships, improved social life, and feelings of reduced stigma. These outcomes not only potentially reduce the strain on healthcare services but also advocate for an approach that focuses on overall physical and mental well-being, not just on addiction. It is encouraging to compare this finding to a systematic review associating improved physical, psychological and quality of life with addiction recovery (Inanlou et al. 2020). It is also supported by Sadir et al. (2013), who found improved physical and mental outcomes among people enrolled in the Therapeutic Community (TC) model in Iran. Additionally, the interlinkage between improved physical and mental health and increased responsibility is evident. Improved well-being enables enhanced decision-making, self-regulation, and resilience, motivating individuals to exhibit responsible behaviours, as participant reports indicate. Responsibility also adds social capital through work, volunteerism, and positive social interactions.

This study also underscores the comprehensive benefits of rehabilitation programmes, marked by a shift from a drug-centred mindset to one of increased self-control and long-term consideration of actions and their impacts. Participants reported a newfound focus on the broader, long-term consequences of their decisions, contrasting sharply with their previous drug-dominated perspectives. This transformation is vital, suggesting rehabilitation's critical role in fostering not only abstinence from tramadol use but also meaningful, responsible living. These insights highlight the rehabilitative process's multifaceted value, emphasising the need for sufficient funding and resources for these programmes as part of public health budgets. Evidence highlights the positive outcomes of rehabilitation for SUDs, including an increase in sustained sobriety and improved health outcomes (Eddie et al. 2019). However, they do not explicitly corroborate these benefits, indicating a need for further research to validate these findings. Evidence demonstrating clear, distinct benefits of rehabilitation can influence policy decisions, leading to better funding and support for rehabilitation programmes (Babor, Room and Strang 2010; Pullin and Stewart 2006). These benefits might prove useful in educational campaigns that aim to address engagement barriers, such as scepticism about rehabilitation success.

Rehabilitation positively impacted participant employment, career paths and societal roles, enhancing quality of life, self-esteem, and providing educational growth, all essential for cognitive health and sustained sobriety (Walton and Hall 2016). This holistic progress potentially reduces the societal impact of addiction. It promotes economic development by integrating individuals successfully into the workforce, reinforcing the societal value of holistic rehabilitation programmes that include vocational and skills training. The benefits, including financial stability and a sense of purpose, underline rehabilitation's role as a critical investment in individual and societal well-being, suggesting a need for policy adjustments to allocate resources reflecting these multifaceted benefits. Comparison of this finding with those of other studies confirms improved employment outcomes as a benefit of rehabilitation for SUDs (Lusk and Veale 2018; Magura et al. 2004).

Given the bi-directional correlation between enhanced employment, career outcomes and improved physical and mental well-being (Henseke 2018; Kobrin 2017), it is logical that participants reported adopting healthier emotional management strategies, even in stressful situations, symbolising enhanced emotional resilience and behavioural adaptability. Improved behavioural outcomes have implications for multiple life aspects, from relationships to job performance, enhancing overall quality of life. The adoption of healthier coping strategies also points to the potential reduction in societal and economic burdens associated with tramadol use, arguing the need for holistic rehabilitation programmes that address not just physical addiction symptoms but also emotional and behavioural facets. This finding accords with an extensive body of evidence indicating the use of a range of strategies in rehabilitation to improve behavioural outcomes (Jhanjee 2014).

Lastly, the study demonstrates that rehabilitation fosters holistic transformations beyond tramadol cessation, significantly enhancing self-care and hygiene as participants spoke of it as "a personality change". These changes are crucial for overcoming self-neglect, combating stigma, and easing social reintegration, thereby improving individuals' general well-being. The structured environment in rehabilitation facilities seemed to provide a supportive framework for establishing these transformative habits, the benefits of which persist even after individuals conclude the programme. This highlights the need for rehabilitation methods that address broader personal and societal gains, rather than focusing solely on curbing substance abuse. Evidence suggests that personality change during substance use disorder treatment enhances post-treatment abstinence self-efficacy (Blonigen and Macia 2021). Overall, these positive personal and social outcomes can serve as a guide for policymakers and healthcare providers in evaluating and enhancing the effectiveness of rehabilitation programmes.

While the positive personal and social outcomes of rehabilitation are undeniable and transformative for many, it is essential to delve deeper into the post-rehabilitation phase, which presents unique outcomes and challenges. Post-rehabilitation outcomes and challenges observed in this study underscore the continuous journey of recovery beyond initial treatment. The experiences of relapse, resilience, and re-enrolment are crucial for stakeholders as they emphasise recovery's non-linear nature. View relapses as components of the intricate recovery journey rather than failures is critical, maintaining hope among individuals and families and informing treatment approaches for providers and policymakers.

This view of relapses aligns well with the Transtheoretical Model, also known as the Stages of Change Model, which is a psychological framework that describes the process by which individuals change a behaviour, acknowledging that they can move back and forth between stages (Prochaska and Velicer 1997). This behavioural change model is significant because it recognises that change is a gradual process, and relapses are a normal part of the journey (Mitchell 2005; Prochaska and DiClemente 2005), and has demonstrated efficacy in facilitating smoke cessation (Kim, Kim and Kim 2009; Davies et al. 2005). Within tramadol rehabilitation, the Transtheoretical Model can be applied through, for instance, focusing on increasing awareness of negative impacts associated with use in the pre-contemplation stage, without urging individuals towards immediate change. As individuals move into the contemplation and preparation stages, interventions can provide information on the advantages of discontinuing use, coupled with motivational support to help them visualise a life without tramadol. In the action stage, direct support such as counselling, therapy, and possibly medication-assisted treatment will be essential for implementing tramadol cessation strategies. Finally, in the maintenance stage, ongoing support can facilitate relapse prevention, treating any occurrences as learning moments rather than failures.

Lastly, the study highlights the role of social networks and aftercare programmes in managing relapses, as well as the need for readily accessible treatment for those who experience a relapse. It suggests the need for future research to develop effective long-term recovery strategies that cater to individual needs and circumstances. Other studies support these findings, agreeing that relapse is a gradual process and highlighting the crucial roles of treatment and resilience in managing the inherent setbacks during recovery (Guenzel and McChargue 2019; Melemis 2015). As illustrated in Figure 33, the self-reflective journal entry introspectively examines how personal experiences and biases shaped the discussion of the emergent themes.

6.7 Strengths and limitations of the study

The study's strength lies in its robust qualitative methodology, grounded in phenomenological principles, prioritising the depth and richness of individual narratives. This approach is particularly suited to exploring the complex, subjective experiences of sensitive issues, enabling a comprehensive understanding that often eludes more quantitative methods. Through its emphasis on individual narratives, the study amplifies the voices of a demographic frequently marginalised or neglected in discourses surrounding drug use (Kreek 2011). This methodological choice holds the potential to mitigate stigma and engender a more empathetic comprehension of their lived experiences.

Another salient strength resides in the study's purposive sampling strategy for participant selection. By strategically selecting individuals from diverse backgrounds within the context of the non-medical use of tramadol, including those involved in tramadol use and currently not in rehabilitation, those undergoing rehabilitation, and those in recovery, the study achieved a breadth and depth of experiences and perspectives. This multifaceted representation of participant experiences allowed the study to explore the intricacies of personal journeys and challenges associated with the non-medical use of tramadol, thereby enriching the overall narrative with varied and comprehensive insights. Moreover, the utilisation of face-to-face, semi-structured interviews ensured comprehensive, personal dialogues, with the in-person dynamic promoting rapport and encouraging candid and detailed disclosures from participants, ultimately enhancing the depth and richness of the findings.

While this study offers valuable and rich insights into the lived experiences of the non-medical use of tramadol in Ghana, focusing primarily on Accra and Kumasi does present several inherent limitations. Most participants were from urban settings, with only a few having urban-rural backgrounds, and only one was from a rural area. This urban-centric concentration potentially restricts the transferability and applicability of the findings to rural contexts and diverse demographic landscapes within Ghana. Furthermore, despite efforts to ensure a diverse sample of individuals with tramadol use experiences, some of the recruitment strategies employed may have narrowed the sampling scope, potentially excluding certain individuals. Utilising drug support and rehabilitation facility staff referrals may have confined the sampling of individuals already known to these services. Although the snowball sampling technique was employed to include individuals beyond those known to the rehabilitation services, the potential for their exclusion is duly acknowledged.

Additionally, the utilisation of face-to-face semi-structured interviews provided rich insights into individual experiences and narratives, but also potentially allowed for the introduction of social desirability bias, where participants might alter their responses to appear more favourable (Grimm 2010). Despite the researcher's efforts to minimise this limitation by establishing private and non-threatening environments and by clearly communicating the research's purpose, emphasising confidentiality, and the significance of honest and accurate responses, the possibility of the presence of social desirability bias remains.

In retrospect, the method of encapsulating experiences at a specific point in time introduces certain limitations, representing perceptions, experiences, and consequences of tramadol use in a fixed time frame. This limitation is significant since patterns of drug use, personal perceptions, and the effects experienced by people who use them are fluid and liable to alterations over time due to multiple influencing factors such as variations in individual circumstances, shifting societal norms and legislative changes.

Furthermore, upon reflection, while the inclusion of participants at different stages of use was crucial in enriching the study with a range of insights and experiences, providing a multifaceted view of the non-medical use of tramadol, this diversity also introduced a level of variability and complexity to the findings. Regardless of the heterogeneity in stages of tramadol use, it was observed that there were substantial similarities in the narratives shared. However, this does not negate the inherent variability in individual narratives, driven by their unique treatment trajectories and interactions with support services. For example, individuals in recovery possessed reflections and perspectives that differed markedly in nuances from others in different stages, shaped by the experiences and insights accrued throughout their recovery journey. Balancing the richness brought by diverse perspectives with the inherent challenges in comparability is crucial in interpreting and applying the findings in a meaningful and informed manner.

Given the subjective nature inherent in the chosen research methodology and methods, there exists a potential risk of introducing researcher bias (Smith, Flowers and Larkin 2009). This bias could have inadvertently influenced how participants' experiences and data were interpreted, potentially impacting the study's integrity. To mitigate this potential bias, the researcher employed various measures. The researcher engaged in an ongoing reflexivity throughout the research process, critically assessing how personal beliefs, values, and experiences could influence the study's outcomes. This approach facilitated the preservation of analytic objectivity and ensured that interpretations were grounded in participants' experiences.

Furthermore, routine peer debriefing sessions with academic supervisors were conducted, offering an external perspective that helped in recognising and mitigating personal biases during data interpretation. The researcher also ensured that the interpretation of data was grounded in existing evidence. To further mitigate bias, the researcher immersed themselves in the data, devoting substantial time to diligently reading and re-reading the transcripts. This thorough engagement aimed at achieving a more profound and accurate understanding of participant narratives. Additionally, iterative questioning was utilised, where initial interview questions were continually refined based on new insights. This strategy enabled the seeking of clarifications and ensured that participants' experiences were accurately represented. Despite implementing strategies to reduce the possibility of researcher bias, the subjectivity of interpretations is inherently present.

Excerpt from a self-reflective journal entry on discussion of emergent themes.

August 28, 2023, 11:05 pm

It has been interesting contextualising the findings of the study into the existing literature and trying to brainstorm its implication for public health and healthcare. I constantly thought about the people behind the data, especially my participants and others whose lives are affected by the non-medical use of tramadol. It is clear to me now more than ever that this issue isn't something we can simply legislate away. It is tangled up in all sorts of things; people's personal lives, where they come from, their struggles and their needs. We need to reach out with education, support, and care that address the root of the problem. It is about helping people, not just enforcing rules.

Figure 34. Excerpt from a self -reflective journal entry on discussion of emergent themes.

7 CHAPTER 7: CONCLUSION

7.1 Introduction

As this study has elucidated through participant experiences, the non-medical use of tramadol is a multifaceted problem that extends beyond the domain of legal frameworks. This chapter provides a summary of the key findings of the study, detailing the distinctive contributions to the existing body of knowledge. It also offers pertinent recommendations for future exploration and practical implementations. Lastly, the researcher's final reflections are shared, offering insights into the experiential learning and challenges encountered during the research journey.

7.2 Original contribution to knowledge

This study represents a significant contribution to the field of tramadol use research, utilising IPA to explore the lived experiences of diverse individuals involved in the non-medical use of tramadol. The prioritisation of diversity within the participant pool allowed the study to yield unparalleled insights into the various pathways through which individuals are introduced to, initiate, and continue to use tramadol. This approach enabled the study to move beyond the limitations of existing literature, which predominantly focuses on homogeneous populations such as males, adolescents, manual workers and individuals already receiving treatment. The study highlighted the underrepresented perspectives of individuals not currently accessing rehabilitation services and those who are in post-rehabilitation recovery, thus addressing a substantial gap in the prevailing knowledge on tramadol use and recovery.

The use of IPA allowed the study to leverage its idiographic commitment, placing paramount importance on exploring individual experiences and narratives to gain an in-depth understanding of the non-medical use of tramadol. This approach allowed for the revelation of unique, nuanced insights and subjective realities often overlooked by more generalised methodologies, providing a more holistic and enriched understanding of the phenomenon. The focus on individual stories was crucial, allowing for the emergence of unique themes and intricate insights from singular narratives, showcasing the richness and diversity of each participant's interaction with tramadol. This approach illuminated the varied and multifaceted aspects of tramadol use, revealing the complexities and layers within each personal experience, and contributed significantly to bridging the knowledge gap in the existing literature. By valuing and prioritising individual narratives, the study was able to maintain the

integrity and richness of the original experiences, adding invaluable depth to the understanding of the non-medical use of tramadol.

Furthermore, the study unveiled novel findings highlighting that tramadol may alter time perception. It also uncovers that some individuals are willing to forego confidentiality to access treatment, and others return to high-risk environments during the rehabilitation process. These insights open new avenues for research and intervention strategies in substance use and rehabilitation.

7.3 Recommendations

7.3.1 Implications for public health practice

Primary and secondary prevention

The study reveals that initial tramadol use is influenced by prior substance use and peer and familial influence, while continued use is motivated by perceived enhancements in academic and sexual performance. It is recommended to incorporate substance use education into school curricula, covering the neurobiology of addiction, the risks of initial and continued substance use, and the health and social impacts of tramadol and polysubstance use. This education should also debunk misconceptions about tramadol's effects on cognitive and sexual performance. The study also identified personal autonomy as a key factor in initial tramadol use. Public health initiatives should empower individuals by providing interactive workshops, seminars, online courses, and educational mobile apps to enhance critical evaluation of healthcare information and support safer and informed medication choices.

To help individuals resist peer pressure related to tramadol use, establishing confidential support services is crucial. These should include helplines, referrals to local resources, and online platforms providing live counselling, anonymous forums, and educational materials. Additionally, offering resources and support to families is essential to prevent drug use normalisation among family members, aligning with the collectivist nature of Ghanaian culture where community and family significantly influence individual choices. Public health interventions can harness community strengths by providing support systems to mitigate pressures that drive conformity to harmful norms, promoting healthier decisions and outcomes.

It is recommended to launch community programmes that promote drug-free activities and provide socialisation alternatives to reduce tramadol use at social gatherings like pubs and

parties, addressing the influence of social environments on substance use. These can include organising sports leagues in soccer, basketball, and volleyball to foster community and provide energetic outlets; offering fitness classes like yoga, dance, and martial arts to enhance both physical and mental health; conducting art workshops for therapeutic expression; hosting seminars on stress management and the dangers of drug use; teaching life skills workshops on cooking, budgeting, and self-directed projects, and social events such as movie nights, book clubs, and game evenings to ensure safe, fun interactions without drugs. The discovery of unintentional tramadol exposure calls for media campaigns to educate the public about the symptoms of intoxication and the risks of accidental exposure, crucial for increasing awareness and community safety.

To address the role of challenging neighbourhoods in initial tramadol use, public health practitioners should form strategic partnerships with local leaders, capitalising on the collectivist culture focused on community and belonging. Organising culturally tailored outreach programs such as town hall meetings and workshops can leverage community values to promote healthy behaviours and reduce drug use. Information about tramadol misuse can be disseminated during cultural events such as festivals. Additionally, training community leaders who are respected figures of authority and local organisation members in substance abuse prevention and mental health support will empower them as informed resources within their communities. Collaborating with local law enforcement to develop community policing strategies will also effectively address drug-related issues, fostering a trust-based relationship between the police and community members.

In cultural contexts where religion significantly shapes societal norms and individual ethics, faith-based organisations are strategically positioned to counteract the perceived social and religious acceptability of tramadol. By embedding education about the risks associated with tramadol use within religious teachings, they can utilise the pervasive influence of religion to align health behaviours with established spiritual values. This integration ensures that decisions regarding tramadol use are consistent with both religious teachings and public health objectives, offering a cohesive strategy for substance use prevention.

Continuous tramadol use was found to be influenced by cognitive factors such as perceived lower risk, denial, and positive subjective effects, including increased boldness, euphoria, and believed enhancements in physical strength and sexual performance. These perceptions can be effectively addressed by disseminating risk and consequence information through outreach materials at community centres and churches. Involving churches is especially pertinent given their central role in the cultural context, where they are not just places of worship but pivotal community pillars that influence values and behaviours. These materials should be based on

empirical evidence and utilise frameworks like the Health Belief Model to highlight the severity of risks associated with tramadol use effectively. Considering the role of employers in facilitating access to tramadol revealed in the study, it is imperative that risk awareness initiatives extend beyond individuals who use tramadol to include external actors such as employers. Motivational interviewing techniques that increase motivation and encourage individuals to reconsider their tramadol use. can help people explore and resolve ambivalence, guiding them toward acknowledging their drug use issues.

Public health practitioners can utilise cultural insights revealed on masculinity, coolness and gender roles by providing safe spaces which help men to engage in activities and socialise. These initiatives can include mentorship programs and support groups where men can openly discuss masculinity and its associated challenges within a supportive environment. Additionally, organising outdoor and adventure activities such as hiking, fishing, camping, or biking can foster connections with nature and facilitate bonding in a non-competitive setting. Involving men in community service projects also serves to empower them, instil a sense of purpose, and promote personal growth while positively impacting the community. Educational campaigns utilising televised documentaries offer a powerful medium to reshape public opinion and narratives around drug use and masculinity. By crafting compelling visual content, these documentaries can effectively challenge the stereotypical association of drug use with masculinity, presenting an alternative perspective that emphasises the risks and consequences of substance use.

The wide-ranging consequences of tramadol use such as impaired academic performance, hindered career progression, incidents of violence, including physical and sexual assault, detrimental effects on social relationships, social stigma, adverse behavioural outcomes, legal issues, financial strain, and various negative emotions can be leveraged in prevention efforts. Documentaries and visual media that follow the lives of individuals affected by tramadol and illustrate the profound impacts on their lives, serve as potent tools for conveying emotional narratives. Screening these documentaries in schools, churches, and community centres can significantly enhance awareness and educate diverse audiences about the risks of tramadol use.

To address the widespread availability of tramadol from both legitimate and illegitimate sources, it is essential to increase surveillance and monitoring of pharmacies, healthcare providers, and drug stores to ensure compliance with prescription regulations. This intervention could involve regular inspections and audits by health regulatory authorities. Additionally, border control measures need strengthening to prevent the illegal importation of

tramadol, utilising advanced scanning technology, sniffer dogs, and well-trained personnel to detect smuggled drugs effectively at entry points.

Given the pervasive stigma identified in this study, public health practitioners should partner with media outlets to depict tramadol addiction more humanely and accurately, shifting from sensationalised coverage to respectful reporting. This partnership could involve training journalists to use appropriate language when discussing substance use to prevent further stigmatisation. Additionally, it is essential to launch targeted public education campaigns that educate the community about addiction as a medical condition. These campaigns should clarify the complexities of tramadol addiction, highlight the challenges people involved face, and underscore that addiction can impact individuals from any social background.

Tertiary prevention

Coping with challenging emotions and life situations such as grief, economic hardship, strained family relationships, and the repercussions of drug use significantly contributed to the continuous use of tramadol, as individuals sought to numb themselves from these harsh realities. To address this, m-health interventions could offer helplines that allow people to share experiences and seek support and advice. Additionally, incorporating grief counselling and financial literacy programs into rehabilitation initiatives could provide targeted support for these underlying issues.

Addiction services should be integrated with general healthcare settings to normalise treatment and reduce the stigma associated with visiting specialised addiction treatment facilities. This approach promotes the view of addiction as part of overall health care. Provide stigma reduction training for healthcare providers, law enforcement, and other key community stakeholders. Training should focus on compassionate, respectful treatment of individuals using tramadol and the importance of supporting their rehabilitation journey.

Public health practitioners should facilitate collaborations between health services, legal assistance, and social support agencies to offer a comprehensive response to individuals dealing with legal issues, domestic violence, or other victimisation linked to drug use. This approach should include establishing co-located services where healthcare, legal counsel, and social support are available in a single location, streamlining access and enhancing service efficiency. Additionally, regular training workshops should be conducted for health practitioners, social workers, and legal professionals to reinforce the interconnectedness of health, legal matters, and social needs, ensuring a holistic support system for individuals affected by tramadol use. Training for healthcare professionals should focus on recognising

signs of trauma, understanding the impact of substance abuse-related trauma, and responding appropriately to individuals affected by tramadol use.

To overcome barriers to accessing treatment identified in the study, such as perceived lack of autonomy, belief in self-management of tramadol use, denial, scepticism about the efficacy of rehabilitation programs, and fear of such programs, multimedia campaigns should be deployed. These campaigns should present factual data, statistics, and personal testimonials to demonstrate the effectiveness of rehabilitation programs, thereby enhancing public understanding of their nature and benefits.

The Ghana Health Service should establish an online directory that functions as a treatment locator to address the lack of awareness and knowledge about rehabilitation options identified in the study. This directory would provide essential information on SUDs, types of care available, locations of services, and payment options, serving as a comprehensive resource for individuals seeking assistance. Additionally, printed lists of these resources should be made available in hospitals, community centres, and churches to ensure broad accessibility. To address participants' concerns about confidentiality and the fear of public scrutiny and humiliation associated with known drug use, confidentiality assurances should be emphasised in informational campaigns and treatment consultations. Highlighting these assurances will help alleviate privacy concerns and encourage individuals to seek help, thereby enhancing the effectiveness of treatment programs.

7.3.2 Implications for policy

Initial and continuous factors regarding financial difficulties and limited employment opportunities can be addressed by refining programs such as the National Youth Employment Program to better align vocational training with current market needs. Additionally, addressing funding deficits for these initiatives could involve securing partnerships with private sector entities, applying for international grants or reallocating government budgets to prioritise employment and training programs. Furthermore, existing social welfare policies in Ghana, such as the Livelihood Empowerment Against Poverty policy, the National Health Insurance Scheme, and the Health Sector Gender Policy, which focus on gender sensitivity, financial assistance, and educational initiatives aimed at reducing economic barriers to access and predisposition to drug use, should be expanded to include drug-using populations specifically. This expansion would ensure that drug treatment options are available to all affected, thereby enhancing their accessibility and effectiveness. Considering the high costs associated with privatised rehabilitation facilities and their concentration in urban areas, highlighted in the study, there is a pressing need to establish more state-funded and subsidised rehabilitation

centres. These facilities should be evenly distributed across the country, including rural areas, to ensure broader access and equity in healthcare provision.

To mitigate the societal stigma associated with tramadol use, found to impact employment opportunities, social interactions, treatment engagement, and legal consequences, several policy measures are essential. First, advocating for the decriminalisation of tramadol use is crucial. This policy shift should reclassify tramadol-related offences from criminal to health issues, emphasising treatment over punitive measures to reduce legal repercussions that exacerbate stigma and deter individuals from seeking help. Additionally, implementing and enforcing anti-discrimination laws is necessary to protect individuals with a history of tramadol use from employment discrimination. These laws should require employers to treat substance use disorder as any other medical condition, providing necessary accommodations and support instead of penalties. Together, these policies are critical in creating a more supportive and inclusive environment for those affected by tramadol use.

Furthermore, a comprehensive legal framework should be established to curb the involvement of employers in promoting tramadol use. This framework should encompass legislation that explicitly bans employers from encouraging or mandating drug use, supported by stringent penalties and strong enforcement mechanisms. It should also include whistle-blower protections to shield employees who report such violations. Regular monitoring and review processes are crucial to evaluate the effectiveness of these laws and facilitate necessary adjustments.

7.3.3 Implications for public health research

The revelation that tramadol use may alter time perception unveils a new research direction in the study of substance use, warranting further exploration to verify this effect. Future research should explore the prevalence of altered time perception among people who use tramadol, identify the specific conditions under which this change in perception occurs, and examine how tramadol's pharmacological properties contribute to this alteration of time. This line of inquiry is critical for developing a deeper understanding of the cognitive impacts of tramadol and informing targeted interventions.

Additionally, the emergence of negative attitudes towards tramadol necessitates an in-depth analysis to ascertain whether these perceptions directly stem from tramadol use or other societal factors. Future studies should be conducted to identify sources of information about tramadol, such as media, healthcare providers, and social networks, categorising their perception of the information as positive or negative. This insights gained can inform

educational campaigns that address these concerns and misconceptions about tramadol, ensuring that such issues do not impact adequate pain management.

Furthermore, the observed willingness of some individuals to waive confidentiality in exchange for addiction treatment emphasises the need to explore patient priorities and how confidentiality intersects with treatment access. Future studies should examine the impact of factors such as addiction severity, perceived stigma, and trust in providers on this decision. Longitudinal research is advised to assess recovery outcomes between individuals who waive confidentiality and those who retain it, to determine how this choice affects treatment commitment and potential stress or stigma. Additionally, the influence of social and community support dynamics on decisions regarding confidentiality should be explored, with a focus on cultural, familial, and societal factors that shape attitudes towards privacy in healthcare settings. These areas of investigation will provide deeper insights into the complexities of confidentiality and its implications for addiction treatment.

There is also a need to expand research on the impact of structured rehabilitation environments and physical or recreational activities in tramadol recovery processes. Future research should randomly assign participants to different treatment modalities upon entering rehabilitation centres to compare the efficacy of standard rehabilitation versus programs that include physical and recreational activities. These studies should implement a standardized regimen of physical and recreational activities, designed to be feasible and safe for participants at different recovery stages. Researchers should use statistical methods to analyse outcomes, adjusting for variables like baseline health status and addiction severity. Investigating how these factors impact or contribute to recovery outcomes can offer innovative approaches to improve rehabilitation strategies and enhance the efficacy of interventions.

Furthermore, the inherent variability observed among participant experiences at different stages of their tramadol use, highlights the need for more research focusing on distinct subgroups within the tramadol-using population. Such focused investigations are essential for developing effective public health strategies and interventions tailored to each subgroup's needs. Similarly, given the predominantly urban-centric participant pool within this study, future research should aim to include a more diverse participant demographic, particularly focusing on individuals from rural areas and those with urban-rural backgrounds. This inclusivity will ensure a more comprehensive understanding that is applicable across diverse settings.

Ultimately, as markets in Tinka Ashtown conclude their daily operations, it is imperative we remain cognizant of the less conspicuous narratives, underscoring the necessity for drug use interventions amidst prevailing socio-economic challenges.

7.4 Reflections of the study

This PhD journey has deepened my comprehension and empathy regarding the complexities of the non-medical use of tramadol. It has honed my methodological, analytical, and ethical research skills, emphasising the vital role of maintaining participant dignity and integrity. It has fostered a closer integration between theory, research, and practical application. Notwithstanding the challenges encountered, including grappling with the inherent limitations of the research design, the initial difficulty in recruiting participants and navigating the emotional landscape of participants' experiences, the journey has been intrinsically rewarding.

The ongoing reflection throughout the data collection and analysis stages, documented in reflective journal entries, has been a critical aspect of this journey. This reflective process allowed for continuous self-evaluation and critical thinking, allowing me to evaluate my methodological decisions, personal prejudices and interpretations of the data. Reflective journaling also provided a valuable space to process the emotional toll of delving into sensitive participant narratives. Furthermore, these reflective journal entries served as a tool for capturing the evolving nature of the research process, documenting challenges, successes, and insights gained at each stage. In essence, reflectively writing encouraged a more thoughtful and nuanced analysis.

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Appendices

Appendix 1: Comprehensive search strategies for included information sources

CINAHL COMPLETE **(EBSCO HOST)**

Search conducted on 16th December 2022, 3:26 pm

Search	Query	Records retrieved
#1	(MH "Tramadol") OR (TX "tramadol")	5,816
#2	(MH "Substance Abuse, Oral") OR (MH "Prescription Drug Misuse") OR (MH "Drug Misuse") OR (TX "misuse") OR (TX "use") OR (TX "non-medical"* use) OR (TX "abuse")	2,247,308
#3	(MH "Sex Factors") OR (MH "Socioeconomic Factors") OR (MH "Sociodemographic Factors") OR (MH "Sociological Factors") OR (MH "Age Factors") OR (MH "Social Factors") OR (MH "Economic Factors") OR (TX "geographical factors") OR (TX "reasons") OR (TX "factors") OR TX contributing factors or influencing factors or motivating factors or influences or motivation	2,391,084
#4	(TX "social effects") OR (TX" consequences") OR (MH "Social Problems") OR (TX "problems")	734,294
#5	(MH "Substance Abuse Treatment Centers") OR (MH "Rehabilitation") OR (MH "Psychiatric Rehabilitation") OR (MH "Psychosocial Rehabilitation") OR (MH "Rehabilitation Centers") OR (TX "drug rehabilitation") OR (TX "drug support service")	30,216
#6	#3 OR #4 OR 5)	2,667,901
#7	(#1 AND #2 AND #6)	3,281

SocINDEX with full text **(EBSCO HOST)**

Search conducted on 16th December 2022, 3:34 pm

Search	Query	Records retrieved
#1	(MH "Tramadol") OR (TX "tramadol")	295
#2	(MH "Substance Abuse, Oral") OR (MH "Prescription Drug Misuse") OR (MH "Drug Misuse") OR (TX "misuse") OR (TX "use") OR (TX "non-medical"* use) OR (TX "abuse")	810,275
#3	(MH "Sex Factors") OR (MH "Socioeconomic Factors") OR (MH "Sociodemographic Factors") OR (MH "Sociological Factors") OR (MH "Age Factors") OR (MH "Social Factors") OR (MH "Economic Factors") OR (TX "geographical factors") OR (TX "reasons") OR (TX "factors") OR TX contributing factors or influencing factors or motivating factors or influences or motivation	794,592
#4	(TX "social effects") OR (TX" consequences") OR (MH "Social Problems") OR (TX "problems")	646,083
#5	(MH "Substance Abuse Treatment Centers") OR (MH "Rehabilitation") OR (MH "Psychiatric Rehabilitation") OR (MH "Psychosocial Rehabilitation") OR (MH "Rehabilitation Centers") OR (TX "drug rehabilitation") OR (TX "drug support service")	12,900
#6	#3 OR #4 OR 5)	12,900
#7	(#1 AND #2 AND #6)	224

International Pharmaceutical Abstracts

Search conducted on 16th December 2022, 3:44 pm

Search	Query	Records retrieved
#1	(MH "Tramadol") OR (TX "tramadol")	969
#2	(MH "Substance Abuse, Oral") OR (MH "Prescription Drug Misuse") OR (MH "Drug Misuse") OR (TX "misuse") OR (TX "use") OR (TX "non-medical"* use) OR (TX "abuse")	10,478
#3	(MH "Sex Factors") OR (MH "Socioeconomic Factors") OR (MH "Sociodemographic Factors") OR (MH "Sociological Factors") OR (MH "Age Factors") OR (MH "Social Factors") OR (MH "Economic Factors") OR (TX "geographical factors") OR (TX "reasons") OR (TX "factors") OR TX contributing factors or influencing factors or motivating factors or influences or motivation	66,600
#4	(TX "social effects") OR (TX" consequences") OR (MH "Social Problems") OR (TX "problems")	28,756
#5	(MH "Substance Abuse Treatment Centers") OR (MH "Rehabilitation") OR (MH "Psychiatric Rehabilitation") OR (MH "Psychosocial Rehabilitation") OR (MH "Rehabilitation Centers") OR (TX "drug rehabilitation") OR (TX "drug support service")	24
#6	#3 OR #4 OR 5)	90,693
#7	(#1 AND #2 AND #6)	19

Scopus

Search conducted on 16th December 2022, 5:15 pm

Search	Query	Records retrieved
#1	tramadol* (All Fields)	47,175
#2	abuse* (All Fields) OR misuse*(All Fields) OR “non-medical* use” (All Fields) OR “prescription drug misuse” (All Fields)	1,218,249
#3	Factors (All Fields) OR facilitators (All Fields) OR motives (All Fields) OR reasons (All Fields)	21,008,720
#4	Impact (All Fields) OR consequences (All Fields) OR problems (All Fields)	24,349,408
#5	rehabilitation (All Fields) OR support (All Fields) OR treatment (All Fields) OR "drug support service" (All Fields) OR "drug rehabilitation" (All Fields) OR "drug abuse treatment” (All Fields)	23,745,639
#6	mice (All Fields) OR rats (All Fields)	8,954,321
#7	(#3 OR #4 OR #5)	45,845,239
#8	(#1 AND #2 AND #7) AND NOT #6	4357

Web of Science

Search conducted on 16th December 2022, 8:11 pm

Search	Query	Records retrieved
#1	tramadol* (All Fields)	7,808
#2	abuse* (All Fields) OR misuse*(All Fields) OR “non-medical* use” (All Fields) OR “prescription drug misuse” (All Fields)	433,719
#3	Factors (All Fields) OR facilitators (All Fields) OR motives (All Fields) OR reasons (All Fields)	7,626,152
#4	Impact (All Fields) OR consequences (All Fields) OR problems (All Fields) OR (All Fields) effects	18,418,677
#5	rehabilitation (All Fields) OR support (All Fields) OR treatment (All Fields) OR "drug support service" (All Fields) OR "drug rehabilitation" (All Fields) OR "drug abuse treatment” (All Fields)	13,503,670
#6	(#3 OR #4 OR #5)	30,266,979
#7	(#1 AND #2 AND #6)	618

Grey literature

Database/ Search engine	Search terms
Google Results: 58,400,000 Date Done: 18th August 2022 Time done: 12: 22 am 105 articles screened	“tramadol abuse” pdf
NIDA International Drug Abuse Research Abstract Results: 35 Date Done: 7th July 2022 Time done: 12: 56 pm.	tramadol
Ethos 1.Results:3 Date Done: 26th August 2022 Time done: 2: 53 pm. 2. Results:1 Date Done: 26th August 2022 Time done: 2: 55 pm.	1. tramadol abuse 2. non-medical use of tramadol
ProQuest Dissertations and Theses Results:98 Date Done: 26th August 2022 Time done: 2: 58 pm. Results:22 Date Done: 26th August 2022 Time done: 2: 59 pm. Results:10 Date Done: 26th August 2022 Time done: 3: 01 pm. Results:1 Date Done: 26th August 2022 Time done: 3: 05 pm.	1. “tramadol abuse” 2. “tramadol misuse” 3. “non-medical use of tramadol” 4. "recreational use of tramadol"

Database/ Search engine	Search terms
OpenDissertations.org 1.Results:3 Date Done: 26th August 2022 Time done: 3: 10 pm. 2.Results:14 Date Done: 26th August 2022 Time done: 3: 11 pm. 3.Results:12 Date Done: 26th August 2022 Time done: 3: 12 pm.	1. tramadol abuse” 2. “non-medical use of tramadol” 3. "recreational use of tramadol"

Appendix 2: Data extraction tool

Reviewer: _____ Date: _____

Author(s): _____

Title of study: _____

Publication year: _____

Publication type: _____

Journal: _____

Country of origin: _____

Aims/objectives

Study design (Please tick and state design)

☐ Quantitative_____

☐ Qualitative_____

☐ Mixed Methods_____

☐ Other_____

Population and sample (details, e.g., age/sex, sample size)

Data collection methods

_____

_____

Context and setting: _____

Terms used to describe non-medical use of tramadol:

_____

Definitions of terms used (non-medical use/ abuse/misuse/non-medical use/nonprescribed use)_____

_____

Key findings that relate to research questions

Reviewer's comments_____

_____

Appendix 3: Quality of included reports

JBI critical appraisal checklist for analytical cross-sectional studies

Author (s)	Criteria for inclusion in the sample clearly defined	Study subjects and the setting described in detail	Exposure measured in a valid and reliable way	Objective, standard criteria used for measurement of the condition	Confounding factors identified	Strategies to deal with confounding factors stated	Outcomes measured in a valid and reliable way	Appropriate statistical analysis used	Scores	Quality (high, moderate, low)
Shamseldin et al. 2021	Yes	Yes	Yes	Yes	N/A	N/A	Yes	Yes	6/6	High
Negm and Fouad 2014	Yes	Yes	Yes	Yes	N/A	N/A	Yes	Yes	6/6	High
Nnam et al. 2022	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	6/7	Moderate
Nasiri et al. 2019	Yes	Yes	Yes	Yes	Yes	No	Unclear	Unclear	4/7	Low
Winstock, Borschmann, and Bell 2014	Yes	Yes	Yes	Yes	Unclear	No	Yes	Yes	5/7	Moderate
Fawzi 2011	Yes	Yes	Yes	Yes	N/A	N/A	Yes	Unclear	5/7	Moderate
Bassiony et al. 2015	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	6/7	Moderate
Iorfa et al. 2019	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	6/7	Moderate
Barahmand, Khazaee and Hashjin 2016	Yes	Yes	Yes	Yes	Unclear	Unclear	Yes	Yes	5/7	Moderate
Sadir et al. 2013	Yes	Yes	Yes	Yes	Unclear	Unclear	Yes	Yes	5/7	Moderate
Omar and Ahmed 2021	Yes	Unclear	Unclear	Yes	N/A	N/A	Unclear	Yes	4/7	Low
Abd-Elkader et al 2020	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	8/8	High
Onu et al. 2021	Yes	Yes	Yes	Yes	Yes	Unclear	Yes	Yes	6/7	Moderate
Pourmohammadi and Jalilvand 2019	Yes	Yes	Yes	Yes	Yes	Unclear	Yes	Yes	6/7	Moderate
AbdelWahab et al. 2018	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	8/8	High
Bashirian, Barati and Fathi 2014	Yes	Yes	Yes	Yes	No	No	Yes	Yes	5/7	Moderate
Carmel et al. 2019	Yes	Yes	Yes	Yes	N/A	N/A	Yes	Yes	6/6	High
Bio-Sya et al. 2021	Yes	Yes	Yes	Yes	No	No	Yes	Yes	5/7	Moderate
El Wasify et al. 2018	Yes	Yes	Yes	Yes	N/A	N/A	Yes	Yes	6/6	High
Zaki et al. 2016	Yes	Yes	Yes	Yes	N/A	N/A	Yes	Yes	6/6	High
Mohamed et al. 2015	Yes	Yes	Yes	Yes	No	No	Yes	Yes	5/7	Moderate
Yassa and Badea 2019	Yes	Yes	Yes	Yes	No	No	Yes	Yes	5/7	Moderate
Jonathan and Samuel 2018	Yes	Yes	Yes	Yes	N/A	N/A	Yes	Yes	6/6	High
Bassiony et al. 2022	Yes	Yes	Yes	Yes	No	No	Yes	Yes	5/7	Moderate
El-Sawy and Abd Elhay 2011	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	6/7	Moderate
Saapiire et al. 2021	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	8/8	High
Ibrahim et al. 2017	Yes	Yes	Yes	Yes	No	No	Yes	Yes	5/7	Moderate
Elliason et al. 2018	Yes	Yes	Yes	Yes	N/A	N/A	Yes	Yes	6/6	High
Obekpa et al. 2021	Yes	Yes	Yes	Yes	No	No	Yes	Yes	5/7	Moderate
Cicero and Ellis 2012	Yes	Yes	Yes	Yes	No	No	Yes	Yes	6/8	Moderate
Elsawy et al. 2019	Yes	Yes	Yes	Yes	No	No	Yes	Unclear	5/8	Low

JBI critical appraisal checklist for case reports

Author (s)	Patient's demographic characteristics clearly described	Patient's history clearly described and presented as a timeline	Current clinical condition of the patient on presentation clearly described	Diagnostic tests or assessment methods and the results clearly described	Intervention(s) or treatment procedure(s) clearly described	The post-intervention clinical condition clearly described	Adverse events (harms) or unanticipated events identified and described	The case report provides takeaway lessons	Scores	Quality (high, moderate, low)
Chikezie and Ebuenyi 2019	Yes	Yes	Yes	Unclear	Yes	Yes	Yes	Yes	7	Moderate
Stoehr et al. 2009	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	8	High
Ohaju-Obodo et al. 2019	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	8	High

JBI critical appraisal checklist for case control studies

Author (s)	Groups are comparable other than the presence of disease in cases or the absence of disease in controls	Cases and controls matched appropriately	Same criteria used for identification of cases and controls	Exposure measured in a standard, valid and reliable way	Exposure measured in the same way for cases and controls	Confounding factors identified	Strategies to deal with confounding factors stated	Outcomes assessed in a standard, valid and reliable way for cases and controls	Exposure period of interest long enough to be meaningful	Appropriate statistical analysis used	Scores	Quality (high, moderate, low)
Naem et al. 2020	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	N/A	Yes	9/9	High
Nagy et al. 2022	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	10/10	High
Khayredinova et al. 2020	No	No	Yes	Unclear	Yes	Yes	Unclear	Unclear	Yes	Yes	5/10	Low
Hassan et al. 2019	Yes	Yes	Yes	Yes	Unclear	Unclear	No	Yes	Yes	Yes	7/10	Moderate
Argungu, Sa'idu and Sanda 2021	Yes	Yes	Yes	Yes	No	No	No	Yes	Yes	Yes	7/10	Moderate

JBI critical appraisal checklist for case series

Author (s)	Clear criteria for inclusion in the case series	The condition is measured in a standard, reliable way for all participants included in the case series	Valid methods used for identification of the condition for all participants included in the case series	The case series have consecutive inclusion of participants	The case series have complete inclusion of participants	Clear reporting of the demographics of the participants in the study	Clear reporting of clinical information of the participants	Scores	Quality (high, moderate, low)
Sarkar et al. 2012	No	Yes	Yes	Unclear	Unclear	Yes	Yes	4	Low

JBI critical appraisal checklist for qualitative research

Author (s)	Congruity between the stated philosophical perspective and the research methodology	Congruity between the research methodology and the research question or objectives	Congruity between the research methodology and the methods used to collect data	Congruity between the research methodology and the representation and analysis of data	Congruity between the research methodology and the interpretation of results	Statement locating the researcher culturally or theoretically	Influence of the researcher on the research, and vice- versa, addressed	Participants, and their voices, adequately represented	Research is ethical according to current criteria or, for recent studies, and is there evidence of ethical approval by an appropriate body	Conclusions drawn in the research report flow from the analysis, or interpretation of the data	Scores	Quality (high, moderate, low)
Wazaify, Alhusein and Scott 2022	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	8	Moderate
Madukwe and Klein 2020	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	8	Moderate
Nwafor et al. 2023	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	8	Moderate
Fuseini et al. 2019	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	9	Moderate
Owonikoko et al. 2023	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	9	Moderate
Alhassan 2022b	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	10	High
Alhassan 2022a	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	10	High
Ngwa 2022	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	8	Moderate
Peprah et al. 2020	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	10	High
Diab et al. 2021	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	10	High

Author (s)	Congruity between the stated philosophical perspective and the research methodology	Congruity between the research methodology and the research question or objectives	Congruity between the research methodology and the methods used to collect data	Congruity between the research methodology and the representation and analysis of data	Congruity between the research methodology and the interpretation of results	Statement locating the researcher culturally or theoretically	Influence of the researcher on the research, and vice- versa, addressed	Participants, and their voices, adequately represented	Research is ethical according to current criteria or, for recent studies, and is there evidence of ethical approval by an appropriate body	Conclusions drawn in the research report flow from the analysis, or interpretation of the data	Scores	Quality (high, moderate, low)
Dumbili et al. 2021	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	10	High
Abood, Scott and Wazaify 2018	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	10	High
Klantschnig and Dele- Adedeji 2021	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	Yes	8	Moderate
Arve 2023	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	10	High

JBI inspired critical appraisal checklist for mixed method studies

Author (s)	Research question clearly stated and appropriate for mixed methods inquiry	Sample size adequate for quantitative analysis	Quantitative data collection methods clearly described and appropriate	Quantitative data analysis methods appropriately chosen and applied	Participants selected in a way that reflects the depth and breadth of the research question	Qualitative data collection methods (e.g., interviews, focus groups) appropriate and adequately described	Approach to qualitative data analysis suitable and sufficiently rigorous	Methods of integration (e.g., concurrent, sequential, transformative) clearly described and appropriate/ Discrepancies between quantitative and qualitative results addressed	Conclusions supported by the results from both components	Scores	Quality (high, moderate, low)
Gallois, van Andel and Pranskaityté 2021	Yes	Unclear	Yes	Yes	Yes	Yes	Yes	Yes	Yes	8	Moderate
Cicero et al. 2008	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Unclear	Yes	8	Moderate
Danso and Anto 2021	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	9	High
Ezenwa et al. 2019	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	9	High
Maiga, Seyni and Sidikou 2013	Yes	Yes	Unclear	Unclear	Yes	Yes	Yes	Unclear	Yes	6	Low

JBI critical appraisal checklist for textual evidence: narrative

Author (s)	The generator of the narrative is a credible or appropriate source	The relationship between the text and its context explained (where, when, who with, how)	The narrative presents the events using a logical sequence so the reader or listener can understand how it unfolds	Arrive at similar conclusions to those drawn by the narrator as reader or listener of the narrative	The conclusions flow from the narrative account	Consider this account to be a narrative	Scores	Quality (high, moderate, low)
Ebo'o 2018	Yes	Yes	Yes	Yes	Yes	Yes	6	High

JBI critical appraisal checklist for textual evidence: expert opinion (modified)

Author (s)	The source of the opinion is clearly identified	The source of opinion has standing in the field of expertise	The interests of the relevant population is the central focus of the opinion	The opinion demonstrates a logically defended argument to support the conclusions drawn	Reference to the extant literature	Congruence with the literature/sources logically defended	Qualitative testimonials adequately represented	Scores	Quality (high, moderate, low)
Salm-Reifferscheidt 2018	Yes	Yes	Yes	Yes	No	N/A	Yes	5/6	Moderate
The Times of India 2018	Yes	Yes	Yes	N/A	No	N/A	N/A	3/4	Moderate
Freeman 2019	Yes	Yes	Yes	Yes	Yes	N/A	Yes	6/6	High
Inveen 2017	Yes	Yes	Yes	Yes	Yes	N/A	Yes	6/6	High
Ebhota 2018	Yes	Yes	Yes	Yes	No	N/A	Yes	5/6	Moderate
Smith 2014	Yes	N/A	Yes	Yes	No	N/A	Yes	4/5	Moderate
Obaji 2019	Yes	N/A	Yes	Yes	Yes	Yes	Yes	6/6	High
Curnow 2018	Yes	Yes	Yes	Yes	Yes	Yes	Yes	7/7	High

Appendix 4: List of excluded citations with explanations for exclusion

Author (s) and year	Study title	Reason for exclusion
1. Zwawua et al. 2020	Development, validity and reliability of Tramadol use and misuse knowledge assessment questionnaire	Not areas of interest. Tested participants knowledge of indications and recommended dosage, potential side effects, risk factors, signs of dependence, withdrawal symptoms, and guidelines for managing overdose and toxicity.
2. Buasumlee and Boonyarattanasoontorn 2020.	The misuse of Tramadol among children and youth and the need for having efficient policy and laws enforcement.	Review study. Reference list searched for eligible studies
3. Duru et al. 2017	Socio-demographic determinants of psychoactive substance use among students of tertiary institutions in Imo State, Nigeria	Substance use generally. Results not specific to tramadol
4. Tafesh 2013	Assessment of tramadol abuse among clients who are attending private psychiatric clinics–KAP Study.	Undergraduate thesis
5. Zabihi et al. 2011	Potential for tramadol abuse by patients visiting pharmacies in northern Iran.	Not Phenomenon of interest. Does not provide actual instances or data on real abuse, but rather focuses on the potential or likelihood for abuse based on observations or reports from pharmacies.
6. Phing and Aslam 2020.	A review study on tramadol abuse among Egyptian university students.	Systematic review. Included studies reviewed for eligibility
7. Bassiony, Youssef and Saeed 2016.	Psychiatric comorbidity and tramadol abuse	Full text unavailable
8. Gibson et al. 2009	Use of self-controlled analytical techniques to assess the association between use of prescription medications and the risk of motor vehicle crashes.	Examines risk of motor vehicle collision among persons prescribed clinical doses.

Author (s) and year	Study title	Reason for exclusion
9. Albermany 2018.	Socio-demographic profile of a sample of drug dependent patients who visit the psychiatric unit at al Dewanyea teaching hospital, Iraq.	Full text unavailable
10. Abdelfattah, Abdelaal and Sobhy 2019.	Assessment of Non-Medical Use of Tramadol among University Students.	Not areas of interest. Assessed knowledge of tramadol.
11. Williams and Wilkins 2022	Tramadol Dangers	Full text unavailable
12. Ardabili et al. 2022	Tramadol, captagon and khat use in the Eastern Mediterranean Region: opening a pandora's box	Review study. Reference list searched for eligible studies.
13. Mayoral 2022	An overview of the use and misuse/abuse of opioid analgesics in different world regions and future perspectives.	Full text unavailable
14. Scheck 2016.	Tramadol: the opioid crisis for the rest of the world.	Paid subscription required
15. Usman 2022.	Opioid crisis: the African perspective.	Review study. Reference list searched for eligible studies.
16. Winstock, Bell and Borschmann 2013.	Friends, doctors, and tramadol: we might have a problem.	An editorial article referencing the Global Drug Survey. The Global Drug Survey is included in the review.
17. Gibbison, Bailey and Klein 2015	Tramadol–the Marmite™ drug.	An editorial article about an article based on a qualitative testimonial. Article cited is included in the review.
18. Lino et al. 2019	A national study on the use of opioid analgesics in dentistry.	Not phenomenon of interest. Assessed the frequency of opioid analgesics prescribed by dentists, potential regional differences and their association with socioeconomic and health-related factors.
19. Azevedo et al. 2013	A population-based study on chronic pain and the use of opioids in Portugal.	Not phenomenon of interest. Described the prevalence and factors associated with opioid use in subjects with chronic pain.

Author (s) and year	Study title	Reason for exclusion
20. Beyene, Aspden and Sheridan 2018.	A qualitative exploration of healthcare providers' perspectives on patients' non-recreational, prescription medicines sharing behaviours.	Non-medical use of prescription drugs or opioids generally. Explored healthcare providers' experiences of, and attitudes toward prescription medicine sharing generally.
21. Basu et al. 2015	Addiction research in India.	Not phenomenon of interest. Covers other substances of misuse but not tramadol.
22. Corcillo et al. 2022.	Addictive behaviour among emergency department patients with opioid use.	Prevalence of non-medical use of tramadol.
23. Schwartz et al. 2022	Adverse childhood experiences and substance use among university students: a systematic review.	Systematic review. Included studies reviewed for eligibility.
24. Arora 2016	Ahead of Punjab polls, painkiller a pain [Chandigarh]	Not areas of interest
25. Jwihan et al. 2021	Al-Maqdese Drug abuse prevention among Palestinian youth in East Jerusalem.	Not phenomenon of interest. Summarises the implementation of an evidence-based drug abuse prevention program.
26. Rbeznieks 2018	AMA: Remove barriers to proper opioid treatment	Treatment of SUDs generally and not specifically for Tramadol use disorders.
27. Olanrewaju et al. 2022	An assessment of drug and substance abuse prevalence: a cross-sectional study among undergraduates in selected southwestern universities in Nigeria.	Prevalence of the non-medical use of tramadol.
28. Najafi et al. 2014	An assessment of suicide attempts by self-poisoning in the west of Iran.	Substance use generally. Results not specific to tramadol.
29. Helmerhorst et al. 2017	An epidemic of the use, misuse and overdose of opioids and deaths due to overdose, in the United States and Canada: is Europe next?	Prevalence of the non-medical use of tramadol.
30. Quintero, Peterson and Young 2006.	An exploratory study of socio-cultural factors contributing to prescription drug misuse among college students.	Non-medical use of prescription opioids generally. Results not specific to tramadol.

Author (s) and year	Study title	Reason for exclusion
31. Monárrez-Espino et al. 2013	Analgesics and road traffic crashes in senior drivers: an epidemiological review and explorative meta-analysis on opioids.	Systematic review. Included studies reviewed for eligibility.
32. Rose 2018.	Are prescription opioids driving the opioid crisis? Assumptions vs facts.	Non-medical use of prescription opioids generally. Results not specific to tramadol.
33. Abdullahi and Kehinde 2019.	Are they using it the right way? A survey of commercial drivers on substance use.	Substance use generally. Results not specific to tramadol.
34. Das et al. 2022	Are we ready to manage an opioid epidemic in the intensive care unit?	Not phenomenon of interest.
35. Guo et al. 2019	Association between nonmedical use of opioids or sedatives and suicidal behaviour among Chinese adolescents: an analysis of sex differences.	Non-medical use of prescription drugs generally.
36. Brent, Hur and Gibbons 2019.	Association between parental medical claims for opioid prescriptions and risk of suicide attempt by their children	Not a phenomenon of interest. Focused on patients who had prescription fills covering more than 365 days of an opioid and specifically opioid abuse or misuse among the sample population.
37. Schroeder et al 2019	Association of opioid prescriptions from dental clinicians for US adolescents and young adults with subsequent opioid use and abuse	Non-medical use of prescription opioids generally.
38. Raes, Verstraete and Wennig 2008.	Drugs and driving. In Handbook of analytical separations	Not phenomenon of interest
39. Habibollahi et al. 2020	Characteristics of Patients with Tramadol Use or Abuse: A Systematic Review and Meta-Analysis	Systematic review. Included studies reviewed for eligibility.
40. Vetrova et al. 2020	Characteristics of sleep disturbances related to substance use disorders.	Review study. Reference list searched for eligible studies.

Author (s) and year	Study title	Reason for exclusion
41. El-Sarnagawy, Hafez and Amer 2022.	Characteristics of suicidal poisoned patients admitted to tertiary care centre during COVID-19 pandemic.	Physical and mental health effects
42. Zosel et al. 2013	Characterization of adolescent prescription drug abuse and misuse using the researched abuse diversion and addiction-related surveillance (RADARS®) system.	Non-medical use of prescription drugs generally. Results not specific to tramadol.
43. Yang et al. 2021	Characterizing tramadol users with potentially inappropriate co-medications: A latent class analysis among older adults.	Not phenomenon of interest. Investigated Adverse drug reaction when tramadol was taken with inappropriate co-medication.
44. Juska and Balon 2013.	Chronic non-cancer pain and substance use disorders: challenges and strategies.	Not phenomenon of interest. Focused on pain management in patients who had chronic non-cancer pain but also SUDs.
45. Jurcik, Sundaram and Jamison 2015.	Chronic pain, negative affect, and prescription opioid abuse.	Not phenomenon of interest. Focused on the complications associated with opioids, the impact of negative affect, craving, and chronic pain and reviewed treatment strategies for chronic pain individuals at high risk of opioid misuse.
46. Silverman et al. 2022	Clinical and economic burden of prescribing tramadol and other opioids for patients with osteoarthritis in a commercially insured population in the US.	Not phenomenon of interest. Examines abuse liability for persons prescribed clinical doses for osteoarthritis patients.
47. Zacny et al. 2003	College on Problems of Drug Dependence taskforce on prescription opioid non-medical use and abuse: position statement	Non-medical use of prescription opioids generally.
48. Assar and Salman 2022	Collegian Student's Awareness Regarding Drug Uses Consequences at Al-Muthanna University.	Not areas of interest. Investigated awareness of effects of drug use.

Author (s) and year	Study title	Reason for exclusion
49. Nekouei 2014.	Demographic findings of tramadol poisoned women admitted to Ayatollah Taleghani hospital, Urmia, Iran from Jan 2012 to Jan 2013	Prevalence of non-medical use of tramadol.
50. Just, MückE and Bleckwenn 2016.	Dependence on prescription opioids: prevention, diagnosis and treatment.	Non-medical use of prescription opioids generally.
51. Farook and Koçak 2022.	Determination of epidemiological characteristics of addicts treated in drug addiction clinics in Kabul.	Substances of use generally. Results not specific to tramadol.
52. Abraham et al. 2022	Development of the Adolescent Opioid Safety and Learning (AOSL) scale using exploratory factor analysis.	Not phenomenon of interest.
53. Zwawua et al. 2020	Development, validity and reliability of Tramadol use and misuse knowledge assessment questionnaire	Not areas of interest
54. Ojima Adejoh et al. 2020	Do peer and family factors determine substance abuse? Voices of adolescents undergoing treatment in a psychiatric ward, Lagos, Nigeria.	Substance use generally. Results not specific to tramadol.
55. Muscat 2013	Doctor shopping for tramadol	Physical and mental health effects
56. Tiscione 2019	Driving under the influence of drugs: when the law misses the mark.	Not phenomenon of interest. Investigated driving under the influence of drugs which does not necessarily connote `non-medical use'.
57. Gjerde, Strand and Mørland 2015.	Driving under the influence of non-alcohol drugs–an update. Part I: epidemiological studies.	Not phenomenon of interest. Investigated driving under the influence of non-alcohol drugs which does not necessarily connote `non-medical use'.
58. Rafel et al. 2009	Drug abuse: The addiction of the 21st century?	Not phenomenon of interest.
59. Snyder and Melanson 2014.	Drug addiction or false conviction?	Substance use generally. Results not specific to tramadol.

Author (s) and year	Study title	Reason for exclusion
60. Avasthi and Ghosh 2019.	Drug misuse in India: Where do we stand & where to go from here?	Substance use generally. Results not specific to tramadol.
61. Kabbash, Zidan and Younis 2022.	Drug use among students of Tanta University: prevalence and correlates. Journal of Substance Use, pp.1-7.	Prevalence of non-medical use of tramadol.
62. Mayberry, Bloemer and Ray 2020.	Drugs of abuse.	Physical and Mental health effects
63. Emirates news agency 2012	Dubai Customs launches awareness campaign to highlight risks of Tramadol abuse	Physical and Mental health effects
64. Schweitzer 2007.	Effects of drugs on sleep.	Not phenomenon of interest. Does not consider tramadol.
65. Preston 1989.	Effects of Tramadol in Humans: Assessment of its Abuse Potential	Not areas of interest. Looks at the abuse potential of tramadol.
66. Dasgupta 2020	Environmental Factors Linked to Opioids, Drugs, and Alcohol Abuse	Substance of use generally. Results not specific to tramadol.
67. Muneer et al. 2022	Epidemiological Study of Suicidal Ideation and Suicidal Behaviour Among Patients with Substance Use Disorders in a Rehabilitation and Treatment Centre for Addiction in Dubai.	Mental health effects
68. Aghakhani and Nikoonejad 2015.	Epidemiology of tramadol poisoning in Urmia.	Physical health effects
69. Canan et al. 2021	Estimating the prevalence of and characteristics associated with prescription opioid diversion among a clinic population living with HIV: Indirect and direct questioning techniques.	Non-medical use of prescription opioids generally. Results not specific to tramadol.
70. Perelló et al. 2021	Evaluation of medicine abuse trends in community pharmacies: the Medicine Abuse Observatory (MAO) in a region of southern Europe	Prevalence of the non-medical use of tramadol.
71. Reguly, Dubois and Bedard 2014.	Examining the impact of opioid analgesics on crash responsibility in truck drivers involved in fatal crashes.	Not phenomenon of interest. Investigated positive drug tests which does not necessarily indicate abuse on fatal crashes.

Author (s) and year	Study title	Reason for exclusion
72. Kim, Lee and Shin 2020	Explosive increase in tramadol use in Korea 2003–2013: Analysis of patient trends based on the Korea National Health Insurance	Not phenomenon of interest. Examined prescribing patterns of tramadol and not on its non-medical use.
73. Frenk, Lukacs and Gu 2019.	Factors associated with prescription opioid analgesic use in the US population, 2011-2014	Non-medical use of prescription opioids generally.
74. Sanz-Gallen et al. 2020	Fatal accident involving a welder employed by a shipping container company, associated with the use of tramadol and antidepressant agents.	Not phenomenon of interest. Focused on legitimately prescribed use.
75. Rizk et al. 2016	Frequency and factors associated with occurrence of seizures in patients with tramadol abuse: an Upper Egyptian Experience.	Mental health effects.
76. Dumbili, Ezekwe and Odeigah 2020.	Codeine Diet" to "Gutter Water": polydrug use among Nigerian young adults. Drugs and Alcohol	Polydrug use. Study does not focus on tramadol use alone.
77. Bassiony et al. 2021.	Gender Differences in a Sample of Egyptian University Students with Opioid Use Disorders Attributed to Tramadol.	Prevalence of the non-medical use of tramadol.
78. El Habiby et al. 2020	Gender Differences in Clinical and Sociodemographic Patterns of Substance Use Disorder.	Substance use generally. Results not specific to tramadol.
79. Degenhardt et al. 2019.	Global patterns of opioid use and dependence: harms to populations, interventions, and future action	Prevalence of the non-medical use of tramadol.
80. All Africa.com 2018	Government to Launch Medicine Policy to Check Counterfeit Medication, Others.	Paid subscription required
81. The Herald 2015	Growing problem of drug deaths in older age groups	Not phenomenon of interest
82. Basco et al. 2022	High-risk opioid analgesic dispensing to adolescents 12–18 years old in South Carolina	Non-medical use of prescription opioids generally. Tramadol excluded from analysis.

Author (s) and year	Study title	Reason for exclusion
83. Amirabadizadeh et al. 2018	Identifying risk factors for drug use in an Iranian treatment sample: a prediction approach using decision trees.	Not phenomenon of interest. Tramadol not examined.
84. Bassam 2010	Illegal sale of controlled drug on the rise	Could not be located
85. Desai et al. 2014	Increase in prescription opioid use during pregnancy among Medicaid-enrolled women.	Not phenomenon of interest
86. All Africa.com 2021	Increased Risk for Nigerians as Drug Smugglers Rebrand Tramadol [analysis]	Not phenomenon of interest
87. Daniulaityte, Carlson and Kenne 2006.	Initiation to pharmaceutical opioids and patterns of misuse: Preliminary qualitative findings obtained by the Ohio Substance Abuse Monitoring Network.	Non-medical use of prescription opioids generally. Findings were not specific to tramadol.
88. Weinstein, Wakeman and Nolan 2018.	Inpatient addiction consult service: expertise for hospitalised patients with complex addiction problems.	Not phenomenon of interest. Does not examine tramadol.
89. Mohammed, Ibraheem and Khudhair 2021.	Knowledge and attitude of substance abuse among youths in Tikrit-Iraq.	Substance use generally. Results not specific to tramadol
90. Chioma et al. 2022	Knowledge and indulgence in substance abuse among adolescents in Anambra state, South-East Nigeria.	Substance use generally. Results not specific to tramadol
91. Ratnapalan 2013.	Legal substances and their abuse: legal highs.	Physical health effects
92. Scherrer et al. 2022	Long-term prescription opioid users' risk for new-onset depression increases with frequency of use.	Not phenomenon of interest.
93. Lind et al. 2017	Maternal use of opioids during pregnancy and congenital malformations: a systematic review.	Systematic review. Included studies reviewed for eligibility.

Author (s) and year	Study title	Reason for exclusion
94. Rudisill et al. 2016	Medication use and the risk of motor vehicle collisions among licensed drivers: a systematic review.	Systematic review. Included studies reviewed for eligibility.
95. Casati, Sedefov and Pfeiffer-Gerschel 2012.	Misuse of medicines in the European Union: a systematic review of the literature.	Systematic review. Included studies reviewed for eligibility.
96. Krüger, Meißner and Zimmer 2014.	Misuse of opioid analgesics: An internet analysis.	Prevalence of the non-medical use of tramadol.
97. Mojtabai et al. 2019	Misuse of prescribed opioids in the United States.	Prevalence of the non-medical use of tramadol.
98. Pinkofsky, Woodward and Reeves 1996.	Mood alterations and tramadol.	Mental health effects.
99. Kabashi et al. 2021	Multimorbidity, psychoactive substance use and psychological distress among acute medically ill patients: a cross-sectional study.	Not phenomenon of interest. Discuss alcohol use, illicit drug use, and psychoactive medicinal drug use, but there is no specific mention of tramadol or its abuse.
100. All Africa.com 2017	Nacob, Fda Raise Red Flags - Over Abuse of Tramadol Among the Youth - Say the Drug Could Cause Kidney Failure, Stroke Et Al	Full text unavailable
101. Dattilo et al. 2020	Narcotic consumption in opioid naïve patients undergoing unicompartmental and total knee arthroplasty.	Not phenomenon of interest. Examines abuse liability for persons prescribed clinical doses for unicompartmental and total knee arthroplasty.
102. The Sunday Telegraph 2019	Nigerians hooked on the jihadists' courage drug: Abuse of fear-suppressing tramadol by Boko Haram militants has created an opioid crisis to rival the US	Could not be located
103. Agberotimi 2020	Non-medical use of pharmaceutical drugs at workplace among skilled workers: a pilot study in Nigeria	Non-medical use of prescription opioids generally. Pilot study findings does not pertain to tramadol alone
104. Guo et al. 2015	Non-medical use of prescription pain relievers among high school students in China: a multilevel analysis.	Non-medical use of prescription drugs generally. Findings not specific to tramadol.

Author (s) and year	Study title	Reason for exclusion
105. Juan et al. 2015	Non-medical use of psychoactive drugs in relation to suicide tendencies among Chinese adolescents	Non-medical use of prescription opioids generally. Findings not specific to tramadol.
106. Delaveris, Teige and Rogde 2014.	Non-natural manners of death among users of illicit drugs	Not phenomenon of interest
107. Wu, Pilowsky and Patkar 2008.	Non-prescribed use of pain relievers among adolescents in the United States.	Prevalence of non-medical use of tramadol.
108. Smith and Woody 2005.	Nonmedical use and abuse of scheduled medications prescribed for pain, pain-related symptoms, and psychiatric disorders: patterns, user characteristics, and management options.	Non-medical use of prescription opioids generally. Findings not specific to tramadol.
109. Obstetrics and gynecology 2012	Nonmedical use of prescription drugs.	Could not be located. Document has been withdrawn or is no longer available.
110. Trist, Sahota and Williams 2017.	Not so patchy story of attempted suicide… leading to 24 hours of deep sleep and survival!	Not phenomenon of interest
111. The Daily Telegraph	Olympic chiefs to examine painkiller in Team Sky controversy: DRUGS IN SPORT	Paid subscription required
112. Kaynar, Kilic and Yurdakul 2012.	On-demand tramadol hydrochloride use in premature ejaculation treatment.	Not phenomenon of interest. Tested efficacy of tramadol in treating premature ejaculation.
113. Chau et al. 2008	Opiates and elderly: use and side effects.	Not phenomenon of interest. Focused of side effects of clinically prescribed doses.
114. Ilgen et al. 2016	Opioid dose and risk of suicide.	Not phenomenon of interest. Examines risk of suicide in persons prescribed clinical doses.
115. Hoffman, Ponce Terashima and McCarty 2019.	Opioid use disorder and treatment: challenges and opportunities.	Pharmacological treatment of non-medical use of tramadol.
116. Zipursky and Juurlink 2021.	Opioid use in pregnancy: an emerging health crisis.	Review study. Reference list searched for eligible studies.

Author (s) and year	Study title	Reason for exclusion
117. Sabatowski, Mordenti and Miceli 2014.	Opioids and driving ability: current data do not support one opioid being more favourable than another.	Not phenomenon of interest
118. Martinez-Calderon et al. 2021	Pain catastrophizing, opioid misuse, opioid use, and opioid dose in people with chronic musculoskeletal pain: a systematic review.	Systematic review. Included studies reviewed for eligibility.
119. Agwogie et al. 2022	Parenting and School Context Differentiate Nigerian Adolescents' Profiles of Substance Use.	Prevalence of the non-medical use of tramadol.
120. Karrari et al. 2013	Pattern of illicit drug use in patients referred to addiction treatment centres in Birjand, Eastern Iran.	Non-medical use of prescription opioids generally. Findings not specific to tramadol.
121. Ghadirzadeh et al. 2018	Patterns of drunk and drugged driving in fatally injured drivers in Tehran, Iran.	Frequency of the non-medical use of tramadol.
122. Adham et al. 2023	Patterns of substance use and predictors of class membership among university male students: a latent class analysis.	Not phenomenon of interest. Does not examine tramadol.
123. Geller et al. 2012	Polypharmacy and the role of physical medicine and rehabilitation.	Review study. Reference list searched for eligible studies.
124. Auckloo and Davies 2019.	Post-mortem toxicology in violent fatalities in Cape Town, South Africa: A preliminary investigation.	Non-medical use of prescription opioids generally. Findings not specific to tramadol.
125. Brat et al. 2018	Postsurgical prescriptions for opioid naive patients and association with overdose and misuse: retrospective cohort study.	Frequency of the non-medical use of tramadol.
126. Dowling, Storr and Chilcoat 2006.	Potential influences on initiation and persistence of extramedical prescription pain reliever use in the US population.	Not phenomenon of interest. Does not examine tramadol.
127. Kamba et al. 2018	Predictors of controlled prescription drug non-medical and lifetime use among patients accessing public mental health services in Uganda: a cross-sectional study.	Non-medical use of prescription opioids generally. Findings not specific to tramadol.

Author (s) and year	Study title	Reason for exclusion
128. Gray and Hagemeier 2012.	Prescription drug abuse and DEA-sanctioned drug take-back events: characteristics and outcomes in rural Appalachia.	Not phenomenon of interest. Focused on disposal of prescription drugs to potentially avoid abuse.
129. Hernandez and Nelson 2010.	Prescription drug abuse: insight into the epidemic.	Review study. Reference list searched for eligible studies.
130. Sheridan, Jones and Aspden 2012.	Prescription drug misuse: quantifying the experiences of New Zealand GPs.	Non-medical use of prescription opioids generally. Findings of interested areas not specific to tramadol.
131. Abbasi-Ghahramanloo et al. 2015	Prescription drugs, alcohol, and illicit substance use and their correlations among medical sciences students in Iran.	Non-medical use of prescription opioids generally. Findings do not specify the type of opioids.
132. Beyene, Aspden and Sheridan 2016.	Prescription medicine sharing: exploring patients' beliefs and experiences.	Not phenomenon of interest. Does not examine tramadol.
133. Vietri et al. 2014	Prescription opioid abuse and tampering in the United States: Results of a self-report survey.	Prevalence of non-medical use of tramadol.
134. Ling, Mooney and Hillhouse 2011.	Prescription opioid abuse, pain and addiction: clinical issues and implications.	Review study. Reference list searched for eligible studies.
135. Abraham, Thakur and Brown 2019.	Prescription opioid misuse and the need to promote medication safety among adolescents.	Review study. Reference list searched for eligible studies.
136. Hamina et al. 2022	Prescription opioids among older adults: ten years of data across five countries.	Prevalence of non-medical use of tramadol.
137. Miech et al. 2015	Prescription opioids in adolescence and future opioid misuse.	Non-medical use of prescription opioids generally. Findings not specific to tramadol.
138. Wu et al. 2008	Prescription pain reliever abuse and dependence among adolescents: a nationally representative study.	Non-medical use of prescription opioids generally. Findings do not specify the type of opioids.

Author (s) and year	Study title	Reason for exclusion
139. Umar, Salihu and Owolabi 2017.	Prevalence and correlates of ADHD in individuals with substance use disorder in Nigeria.	Mental health effects
140. Loffredo et al. 2017	Prevalence and correlates of substance use by Egyptian school youth.	Prevalence of non-medical use of tramadol.
141. Ansari-Moghaddam et al. 2016	Prevalence and patterns of tobacco, alcohol, and drug use among Iranian adolescents: A meta-analysis of 58 studies.	Systematic review and meta-analysis. Included studies reviewed for eligibility.
142. Mbanga et al. 2018	Prevalence and predictors of recreational drug use among medical and nursing students in Cameroon: a cross sectional analysis.	Non-medical use of prescription opioids generally. Discusses tramadol and marijuana together and not independently.
143. Abdelhamid et al. 2022	Prevalence of drug abusers in patients undergoing elective surgeries at the Cairo University Teaching Hospital; Prospective cohort study.	Prevalence of non-medical use of tramadol.
144. Alavi, Mehrdad and Makarem 2016	Prevalence of substance abuse/alcohol consumption and their predictors among patients admitted in operating rooms of a General Educational Hospital, Tehran, Iran.	Substance use generally. Results not specific to tramadol.
145. Hosseini et al. 2022	Prevalence of substance use among Iranian male adolescents: Systematic review and meta-analysis.	Systematic review and meta-analysis. Included studies reviewed for eligibility.
146. Feingold et al. 2017	Problematic use of prescription opioids and medicinal cannabis among patients suffering from chronic pain.	Non-medical use of prescription opioids generally. Discussion not specific to tramadol.
147. Elliott and Booth 2014.	Problems with medicine use in older Australians: a review of recent literature.	Systematic review and meta-analysis. Included studies reviewed for eligibility.

Author (s) and year	Study title	Reason for exclusion
148. Ibrahim et al. 2018	Psychoactive substance use disorders among females in northern Nigeria: findings of a five-year descriptive survey at the Federal Neuropsychiatric Hospital, Maiduguri.	Substance use generally. Results not specific to tramadol.
149. Albals, Yehya and Wazaify 2022.	Psychoactive substances use in Jordan: Descriptive study of data from Anti-narcotic Department (AND), 2014-2018.	Not phenomenon of interest. Focuses on number of confiscated tramadol which might suggest but does not necessarily connote abuse.
150. Hajiha and Ehsan 2023.	Qualitative analysis of family interactions with Iranian women with substance use disorder: from before becoming aware of addiction to consecutive relapses.	Non-medical use of prescription drugs generally. Discussion not specific to tramadol.
151. Wazaify, Alhusein and Scott 2022.	Qualitative exploration of the experiences of men who use drugs of obtaining psychoactive medicinal products in Jordan.	Duplicate
152. Ford and Rigg 2015.	Racial/ethnic differences in factors that place adolescents at risk for prescription opioid misuse.	Non-medical use of prescription opioids generally. Does not specifically examine tramadol.
153. Shapira et al. 2022	Recent use of synthetic cannabinoids, synthetic opioids, and other psychoactive drug groups among high-risk drug users.	Prevalence of non-medical use of tramadol.
154. Martin-Denham 2020.	Riding the rollercoaster of school exclusion coupled with drug misuse: the lived experience of caregivers.	Non-medical use of prescription drugs generally. Findings not specific to tramadol.
155. Park and Lavin 2010.	Risk factors associated with opioid medication misuse in community-dwelling older adults with chronic pain.	Prevalence of non-medical use of tramadol.
156. Cragg et al. 2019	Risk factors for misuse of prescribed opioids: a systematic review and meta-analysis.	Systematic review and meta-analysis. Included studies reviewed for eligibility.

Author (s) and year	Study title	Reason for exclusion
157. Elvik 2013.	Risk of road accident associated with the use of drugs: a systematic review and meta-analysis of evidence from epidemiological studies.	A correction of an error in a previously published systematic review. Included studies in that review were reviewed for eligibility.
158. El-Hamrawy et al. 2021	Risk of suicide among tramadol users in comparison to users of other substances.	Mental Health Effects.
159. Quintero 2009.	A qualitative analysis of recreational pharmaceutical use in a collegiate setting.	Non-medical use of prescription drugs generally. Findings not specific to tramadol.
160. Akinnawo et al. 2021	Self-Medication with Over-the-Counter and Prescription Drugs and Illness Behaviour in Nigerian Artisans	Prevalence of non-medical use of tramadol.
161. Schelde et al. 2020	Sex and age differences among tramadol users in three Nordic countries.	Prevalence of non-medical use of tramadol.
162. Xie et al. 2021	Sex differences in the associations of nonmedical use of prescription drugs with self-injurious thoughts and behaviours among adolescents: A large-scale study in China.	Mental health effects
163. Li et al. 2018	Sexual attraction and the nonmedical use of opioids and sedative drugs among Chinese adolescents.	Non-medical use of prescription opioids generally. Findings not specific to tramadol.
164. Fenner 2011.	Tramadol is an effective therapy for mild to severe c.	Not phenomenon of interest. Examines the clinical efficacy of tramadol premature ejaculation.
165. Khaleej Times 2014	Sharp increase in drug cases in Ras Al Khaimah	Could not be located
166. Bidel et al. 2014	Smoking stages, prevalence of drug abuse and role of associated psychological and social factors: a study on male high school students in Ilam city.	English translation not available

Author (s) and year	Study title	Reason for exclusion
167. Hamzat, Kanmodi and Adesina 2019	Stimulant, narcotic, and hallucinogen use among long distance commercial drivers in Sokoto: A survey on prevalence and consequential knowledge.	Prevalence of non-medical use of tramadol. While the study evaluated participants' awareness of adverse consequences, it did not identify this knowledge as a contributing factor.
168. Olugbenga-Bello, Ilori and Idowu 2022.	Street youths: reproductive health risk status, reproductive health challenges and barriers to health services utilisation in a southwestern City, Nigeria.	Not phenomenon of interest.
169. Momtazi and Rawson 2010.	Substance abuse among Iranian high school students.	Review study. Reference list searched for eligible studies.
170. Idowu et al. 2018	Substance abuse among students in selected secondary schools of an urban community of Oyo-state, Southwest Nigeria: implication for policy action.	Substance use generally. Results not specific to tramadol.
171. Amr et al. 2014	Substance abuse and dependence among patients attending an emergency hospital in eastern Nile delta, Egypt.	Prevalence of non-medical use of tramadol.
172. Teferra 2018.	Substance-related disorders treatment service in a general hospital in Ethiopia: Experience, challenges and opportunities.	Pharmacological treatment of the non-medical use of tramadol.
173. Obadeji et al. 2020	Substance use among adolescent high school students in Nigeria and its relationship with psychosocial factors.	Substance use generally. Results not specific to tramadol.
174. Aly et al. 2022	Substance Use among Adolescents: A Retrospective Study (2017–2018) in the Toxicology Unit, University Hospital of Lille, France.	Physical health effects

Author (s) and year	Study title	Reason for exclusion
175. Mandal et al. 2019	Substance use among treatment seeking Indian adolescent girls: Are they unique?	Treatment of SUDs generally. Findings not specific to tramadol.
176. Armoon et al. 2022	Substance use and associated factors among Iranian university students: a meta-analysis.	Systematic review and meta-analysis. Included studies reviewed for eligibility.
177. Loffredo et al. 2015	Substance use by Egyptian youth: current patterns and potential avenues for prevention.	Substance use generally. Results not specific to tramadol
178. Bassiony et al. 2019	Substance use disorders among industry workers in Egypt.	Substance use generally. Results not specific to tramadol.
179. Dennis and Garneau-Tsodikova 2020.	Substance use disorders: leading the road to recovery.	Review study. Reference list searched for eligible studies.
180. Khafagy, Gomaa and Elwasify 2021.	Substance use patterns among university students in Egypt.	Prevalence of non-medical use of tramadol.
181. Mehrez et al. 2021	Suicidal behaviours among patients with tramadol dependence in a sample of Egyptian population.	Mental health effects
182. Richard 2022	Survey Finds 1 in 7 Physicians Uses Alcohol or Drugs on the Job to Cope with Stress	Substance use generally. Results not specific to tramadol.
183. Alcohol & Alcoholism 2014	Symposia: Prescription Drug Abuse and diversion, a global problem, strategies to curb the abuse...16th International Society of Addiction medicine (ISAM), October 2-6, 2014, Yokoyama, Japan	Not areas of interest. Paper is also a symposium brief.
184. Owens 2015	Tackling prescription drug abuse.	Non-medical use of prescription drugs generally. Findings not specific to tramadol.
185. Tahour-Soltani 2022.	The comparison of risky behaviours and some of their underlying factors in the college students from military and non-military families.	Substance use generally. Results not specific to tramadol.

Author (s) and year	Study title	Reason for exclusion
186. Lipman and Webster 2015.	The economic impact of opioid use in the management of chronic non-malignant pain.	Not phenomenon of interest. Tramadol only discussed in relation to cost effectiveness of pain treatment.
187. Schenck and Arend 1978.	The effect of tramadol in an open clinical trial (author's transl).	Not phenomenon of interest. Assessed the clinical effectiveness of tramadol.
188. Wickens et al., 2017	The impact of medical and non-medical prescription opioid use on motor vehicle collision risk.	Not phenomenon of interest. Does not mention or examine tramadol.
189. Ricardo et al.2019	The opioid crisis and the disease model of addiction: is science sufficient for public support?	Full text unavailable
190. Kurth et al. 2018	The opioid epidemic in Africa and its impact.	Review study. Included studies reviewed for eligibility.
191. Khatir et al. 2022	The prevalence of substance use among drivers with traffic injuries in Mazandaran Province, Northern Iran.	Prevalence of non-medical use of tramadol.
192. Direkvand-Moghadam et al. 2020	The prevalence of substance use disorders among university students, a cross-sectional study.	Substance use generally. Results not specific to tramadol.
193. Nelson 2023.	The socio-economic context of entry and exit from retail drug dealing: Exploring the narratives of Nigerian dealers.	Not phenomenon of interest. Focuses on illegal drug retail which does not necessarily translate into abuse.
194. Manchikanti et al. 2010	Therapeutic use, abuse, and nonmedical use of opioids: a ten-year perspective.	Non-medical use of prescription drugs generally. Does not specifically mention tramadol.
195. Kim, McCarthy and Lank 2021.	Tramadol, codeine, and risk of adverse outcomes.	Physical and mental health effects
196. Anon. nd	Tramadol: increased mortality?	Could not be located

Author (s) and year	Study title	Reason for exclusion
197. Pothiawala and Ponampalam 2011.	Tramadol overdose: a case report.	Physical health effects
198. Bay of Plenty Times 2018	Tramadol trend a prescription for trouble	Could not be located
199. Soyka, Backmund and Hasemann 2004.	Tramadol use and dependence in chronic noncancer pain patients	Could not be located
200. Khan and Rasaily 2013.	Tramadol use in premature ejaculation: Daily versus sporadic treatment	Not phenomenon of interest. Assessed the clinical effectiveness of tramadol.
201. Hodgins et al. 2022	Treatment of Opioid Use Disorder in Canadian Psychosocial Addiction Programs: A National Survey of Policy, Attitudes, and Practice	Treatment of SUDs generally. Findings not specific to tramadol.
202. Näslund and Dahlqvist 2003.	Treatment with tramadol can give rise to dependence and abuse	Full text unavailable
203. Jin, Vermund and Zhang 2022.	Trends in Prescription Opioid Use in Motor Vehicle Crash Injuries in the United States: 2014–2018	Not phenomenon of interest. Investigated the prevalence of prescription opioids in Motor Vehicle Crashes injuries varied temporally, spatially, or by enrolees' characteristics.
204. Cicero and Ellis 2017.	Understanding the demand side of the prescription opioid epidemic: Does the initial source of opioids matter?	Non-medical use of prescription drugs generally. Does not specifically mention tramadol.
205. Bougie et al. 2022	Use and misuse of opioid after gynaecologic surgery	Not areas of interest. Looks at the risk of abuse in patients who have undergone gynaecologic surgery.
206. Edvardsen et al. 2014	Use of alcohol and drugs among health professionals in Norway: a study using data from questionnaires and samples of oral fluid.	Prevalence of non-medical use of tramadol.
207. Zitoun et al. 2022	Use of potentially driver-impairing drugs among older drivers.	Not phenomenon of interest. Focuses on drivers who took prescribed doses

Author (s) and year	Study title	Reason for exclusion
208. Mahic et al. 2015	Use of prescribed opioids by children and adolescents: Differences between Denmark, Norway and Sweden.	Prevalence of non-medical use of tramadol.
209. Kiepek and Baron 2019	Use of substances among professionals and students of professional programs: A review of the literature	Systematic review. Included studies reviewed for eligibility.
210. Robert 2022	Using Cognitive Behavioural Therapy to Enhance Well-Being	Not phenomenon of interest.
211. Ghebrehiwet et al. 2021	Using local terminology to measure substance use behaviours among youth in post-conflict Liberia: a mixed methods study.	Substance use generally. Results not specific to tramadol.
212. Bassam 2010	warns drugs prosecutor Crackdown on Tramadol abuse	Physical and mental health effects
213. Geneesmiddelenbulletin 2015	What has 2014 brought us? New drugs, developments and adverse effects	Non-medical use of prescription drugs generally. Does not specifically mention tramadol.
214. Soyka et al. 2005	Where are the 1.9 million patients dependent on legal drugs hiding?	Non-medical use of prescription drugs generally. Does not specifically mention tramadol.
215. World Health Organization 2019	WHO Expert Committee on Drug Dependence: forty-first report.	Physical and mental health effects
216. Soliman et al. 2022	Work schedule and substance abuse in vocational students.	Prevalence of non-medical use of tramadol.
217. Nairn et al. 2022	Youth perceptions of and experiences with opioids for pain management: intersecting stigmas and ambivalence.	Not phenomenon of interest. Examines side effects of clinically prescribed doses.
218. Flaherty 1998	Commonly prescribed and over the counter medications: causes of confusion.	Mental health effects
219. Page and Singer 2010.	Comprehending drug use: Ethnographic research at the social margins.	Not phenomenon of interest. Looked at using ethnographic research to understand drug use.

Author (s) and year	Study title	Reason for exclusion
220. García et al. 2021	Drug-facilitated sexual assault and other crimes: A systematic review by countries.	Systematic review. Included studies reviewed for eligibility.
221. Maiga et al. 2012	Tramadol misuse by adolescents and young adults living on the streets.	Prevalence of non-medical use of tramadol.
222. Rudisill 2015	Medication use and the risk of motor vehicle collision in West Virginia drivers 65 years of age and older: a case-crossover study	Examines risk of motor vehicle collision among persons prescribed clinical doses.

Appendix 5: Data on initial and continuous non-medical use of tramadol and identified gaps from included reports

Factors that contribute to the non-medical use of tramadol				
Author (s) and year	Introduction and initial non-medical use factors	Continuous non-medical use factors	Not specified as introduction and initial or continuous non-medical use factors	Gaps
Shamseldin et al. 2021	Does not provide insights	To cope with undesirable negative emotions.		The study is confined to the Egyptian context, not considering other cultural or geographical settings. The cross-sectional approach lacks the nuanced insights a qualitative method could offer. It does not to explore the introduction and initiation into tramadol use. The study does not account for perspectives from individuals not accessing rehabilitation for their tramadol use.
Onu et al. 2021	Adverse childhood experiences. Participation in casual or uncommitted sexual relationships	Does not provide insights		The quantitative nature of study may not capture the depth and nuances of individuals' lived experiences around tramadol use, limiting a holistic understanding. It does not explore continuous use factors.
Curnow 2018	Does not provide insights	To alleviate the discomfort/ pain from animal bites. To sustain prolonged periods of work. Due to unfavourable economic circumstances. For leisurely enjoyment/ recreational purposes. For relaxation. To feel powerful. To cope with the pressures/struggles of life.		The opinion piece might lack the rigour and depth of academic studies, and editorial bias could influence its content. The sample, limited to two unique occupations, may not capture the broader societal experiences of tramadol use. The context is limited to the Cairo district of El Malek El Salah.
Wazaify, Alhusein and Scott 2022.			Familial influence	Limited to male participants potentially leaving unexplored experiences from female perspectives. Culturally and geographically limited to Amman, Jordan. Findings are limited to participants undergoing treatment, which might not encompass the breadth of experiences from those who are not engaged in rehabilitation or those who have successfully completed rehabilitation. The results do not differentiate between initial reasons for using tramadol and reasons for continued use.
Gallois, van Andel and Pranskaityté 2021.	Energy enhancement and increase in work efficiency or performance.	To alleviate pain and facilitate more comfortable intimate interactions with men who are either their official partners or unfamiliar men they get paid for. It was used by children for its recreational effects. Improvement of sexual prowess and increased energy for work.		The Baka communities in Cameroon provide a unique cultural and geographical perspective, leaving a gap in understanding these experiences in different settings. Though study provides data on women, men, and children, it does not cover the varied experiences of individuals who are at different stages of tramadol use, from those in rehabilitation, or those who are in recovery.
AbdelWahab et al. 2018	Does not provide insights.	For pleasure seeking. To get more energy. To stay awake. To fall asleep		The study's sample exclusively consisted of men, potentially limiting the generalisability of the findings to women. The context is confined to Egypt and specifically to those seeking treatment, potentially missing out on experiences of those not in treatment.
Negm and Fouad 2014.	Perceived safety among youth due to tramadol's prescription status.	Due to discreet concealment because of its prescription status. For its prolonged effects, and a reduced risk of repercussions upon discovery.		The study's cross-sectional design might miss the depth of personal experiences a qualitative approach can uncover. The study is primarily centred on adolescent school students, potentially limiting its applicability to adult populations and varied occupational groups. Limited to the context of Zagazig, Egypt and does not capture experiences from other cultural and geographical contexts. Study highlights tramadol's perceived safety for initial use but does not explore its introduction pathways.
Elliason et al. 2018	Does not provide insights	To boost their energy. To enhance sexual experiences. To alleviate pain.		The cross-sectional survey design offers broad insights but does not delve deep into intricate factors contributing to tramadol use. Does not explore the initial use factors.

Author (s) and year	Introduction and initial non-medical use factors	Continuous non-medical use factors	Not specified as introduction and initial or continuous non-medical use factors	Gaps
Nasiri et al. 2019	Does not provide insights	To enhance sexual interactions. To manage addiction.	Misconceptions about tramadol's effectiveness due to its prescription status. Easy obtainability/ accessibility	Did not engage directly with people who used drugs, presenting a gap in first-hand accounts. The cross-sectional design primarily utilises questionnaires and sales data which may not capture the intricate lived experiences of use. Does not provide insights into the various pathways through which individuals were introduced to tramadol. Lacks a distinct differentiation between initial and continuous use factors for some of the findings. Limited to the cultural and geographical context of Nigeria.
Winstock, Borschmann, and Bell 2014.	Does not provide insights	For pain management. For relaxation and euphoria. For combating boredom or distress. For addressing withdrawal symptoms. For aiding sleep.		Reflects a western context, that may differ significantly from experiences in a West African context with unique cultural, societal, and economic influences. While the study presents reasons for continuous use, the initial factors leading to tramadol use remain relatively unexplored. The cross-sectional design and reliance on anonymous online survey, may not capture the depth of personal narratives and lived experiences surrounding tramadol use.
El Wasify et al. 2018	Premature ejaculation/erectile dysfunction in males. Novelty seeking. Seeking solace from personal difficulties. Peer influence.	Does not provide insights		Limited to geographical and cultural context of Egypt. Does not investigate the continuous use factors of tramadol. The descriptive cross-sectional design based on structured clinical interviewing might not provide nuanced and deep insights of tramadol use. Focuses on participants undergoing treatment and does not delve deeper into diverse user experiences such as those not engaged in rehabilitation, or those in recovery
Stoehr et al. 2009	Managing headaches.	To experience euphoria. For increased energy levels.		Limited to the geographical and cultural context of the US. The focus on two individuals, inherently lacks breadth in exploring varied experiences of tramadol misuse.
Fuseini et al. 2019	Peer pressure. Curiosity. Post-traumatic addiction.	To enhance mental alertness and induce a heightened sense of euphoria. To foster optimism or hope for the future. For its analgesic effect. To destress after a after a strenuous day's labour. To enhance sexual experience. To boost energy to enhance work performance.		Data gathered through FGDs might lead to participants withholding personal experiences due to privacy fears and group pressure. Dominant participants can overshadow others, potentially skewing data. Emotional distress, confidentiality concerns, cultural norms, and moderation difficulties further complicate these discussions. There is a gap in understanding the diverse experiences across various stages of tramadol use as study focuses on only those in treatment.
Nwafor et al. 2023.	Introduced to tramadol through co-manual labourers who are using the drug. Few others were introduced by their relatives.	For energy/power to work more than usual. To relieve body pain during and after work. For feelings of high/euphoria after work. For sexual stamina.		Primarily focuses on manual laborers in Anambra state, Nigeria, which may limit the insights to experiences and challenges intrinsic to their occupation and lifestyle, potentially missing the diverse experiences and motivations across different societal and professional backgrounds. The specific cultural and societal context of this locale may not generalise to regions with different cultural nuances.
The Times of India 2018	Does not provide insights	To enhance their physical state and experience a sense of relief.		Primarily relied on the insights of a single expert, which inherently imposes limitations on the diversity and comprehensiveness of the presented perspectives. Journalistic narrative format, inevitably offers a condensed and simplified representation of the subject, lacking in-depth, multifaceted exploration of individual experiences. The article does not afford an exploration into the introduction and initiation of tramadol use.

Author (s) and year	Introduction and initial non-medical use factors	Continuous non-medical use factors	Not specified as introduction and initial or continuous non-medical use factors	Gaps
Abood, Scott and Wazaify 2018.	Introduced through friends. Out of curiosity. As an escapism from problems.	To proficiently handle household tasks without anxiety and completely free from back pain.		The study's context in Aden, Yemen inherently brings forth cultural, economic, and societal nuances unique to the region which can vary significantly across other regions. Data from community pharmacies may possibly exclude others who obtain tramadol differently. Only two participants conveyed experiences explicitly pertaining to tramadol use signalling a need for more experiences focused explicitly on tramadol use.
Ezenwa et al. 2019	Does not provide insights	To sleep well after work. For managing arthritis and rheumatoid pain. For boosting energy for extended work periods. For relieving or preventing pain following strenuous tasks for artisans and labourers. Accessibility due to lax border controls and corruption. To seek boldness and suppress fear. To manage epilepsy and convulsions. To prolong sex by delaying ejaculation. For euphoric feelings. To find focus and operate efficiently.		Does not explore the initial non-medical use factors of tramadol. Limited to the geographical and cultural context of Enugu State, Nigeria. Qualitative data collected through focus group discussions may result in withheld personal experiences due to privacy and group dynamics. Dominant voices can bias outcomes.
Smith 2014			To improve cycling performance. To alleviate the pain from Peloton. To maintain consistency as it felt like the right thing to do. Normalisation (To adhere to the common practice in time trials, as seen being done by experienced riders)	Opinion piece may lack the depth and rigour of peer-reviewed studies and could be influenced by journalistic styles or editorial decisions, limiting comprehensive insights. Focuses on tramadol use in professional cycling, limiting the broader applicability of findings in other professions. Based on a single testimonial and might not represent the broader population of cyclists. Limited to cultural and geographical context of UK. The study does not differentiate between factors for initial use and reasons for continued use.
Abd-Elkader et al 2020	Does not provide insights	To improve mood. To alleviate pain. To help in sustaining tasks. For medical treatments. To enhance sexual experience.		Limited to the geographical and cultural context of Egypt. The reliance on a cross-sectional design and predesigned questionnaire restricts the depth of exploration into personal experiences, presenting a gap in nuanced, individualised insights. The quantitative findings, though indicate correlations, it does not provide a comprehensive understanding of the surrounding context that might influence those correlations. Does not explore the initial introduction to tramadol. Heavily skewed towards males, thereby overlooking potentially insightful female perspectives.
Alhassan 2022a.	Peer pressure. Curiosity. Post-traumatic addiction.	To enhance sexual experiences. To cope with financial constraints which hindered educational pursuits. To manage anxiety, worry and uncertainty and stress. Due to unmet personal aspirations and work-related stressors. The disillusionment stemming from disproportionate compensation for hard work in Ghana, where intense labour often results in minimal earnings. Feelings of burden as the eldest in a financially struggling family and the resulting sense of hopelessness and responsibility. To counter feelings of shyness and boost energy. Physical pain alleviation. To feel calm and to aid sleep.		Reliance on secondary data from newspaper articles might introduce potential biases due to media narratives not always reflecting ground realities. The absence of non-verbal cues in telephone interviews limits nuanced understanding of participants' emotions and responses. The potential for third-party overhearing during telephone interviews poses a methodological gap, especially for discussions on sensitive topics. The exclusion of individuals without phone access or limited phone minutes creates a methodological gap, potentially excluding vital demographic perspectives.

Author (s) and year	Introduction and initial non-medical use factors	Not specified as introduction and initial or continuous non-medical use factors		Gaps
Carmel et al. 2019	Peer influence. Others started on their own initiative/ autonomously. Some were introduced by girls (acquaintances) and some by vendors.	To feel stronger. For its analgesic effects. To stay awake. To enhance sexual performance. To boost motivation. For feelings of well-being. To cope with cold.		The focus on male motorcycle taxi drivers may not capture the broader spectrum of experiences across varied demographics and occupational groups, possibly omitting insights from females and people in different lines of work. Limited to Togo and understanding tramadol misuse in different geographical and cultural settings may vary. The standardised questionnaire may lack in yielding nuanced, detailed insights into the lived experiences.
Inveen 2017	Introduced through co-workers.	To stay awake while they work. In order not to feel sick. Due to availability and affordability. To enhance sexual performance. For alleviating pain during extended periods of physical work. Due to increase in youth gang activity and a prevailing attitude that favours or is indifferent to illegal activities.		Zeroes in on adolescents with a history of trauma, especially those with post-traumatic stress disorder. The specificity of this focus means that the findings may have limited applicability outside of this subset of adolescents. Limited to the socio-cultural and geographical nuances of Egypt. Using a standardised questionnaire may lack the depth and nuance open-ended methods could provide.
Cicero and Ellis 2012	Does not provide insights	To relieve pain. To experience euphoria.		Limited to the unique cultural, societal, and legislative framework of the US. Sample being predominantly white, and female unveils a gap in comprehending the motivations and experiences across a diverse demographic spectrum, underscoring a need for research reflecting varied backgrounds for a more nuanced understanding. Does not explore how individuals were first introduced to tramadol and what factors influenced its initial use. The use of a standardised online survey might fall short in capturing the depth of participants' experiences, suggesting a need for more immersive qualitative methodologies.
Bassiony et al. 2022	Does not provide insights	To counter tiredness and extend their working hours. To self-manage feelings of anxiety and depression. For premature ejaculation.		Its specific focus on Egypt underscores the necessity for research in a different cultural and geographical contexts. The study's quantitative approach captures prevalence and correlations but may miss the nuanced insights that qualitative methodologies can provide. Additionally, the lack of exploration into initial introductions and motivations for use leaves crucial aspects of the tramadol use trajectory unexamined.
Madukwe and Klein 2020.	Peer influence.	For pain relief, deeming it superior to alternatives like paracetamol. Used predominantly by those in physically demanding jobs like construction and farming, to boost work performance and endure challenging conditions for extended periods. To manage the physical and emotional impacts of poverty.		Even though poverty was mentioned as a contextual variable in the study, it focused primarily on preconceptions of tramadol being perceived as improving physical work performance and providing pain relief, leaving a gap in our understanding of other potential factors contributing to tramadol use. Involves a homogeneous participant pool, leading to a limited scope of insights into the varied experiences and impacts of tramadol use. It limited to the Nigerian context, and other cultural or geographical settings might yield different and unique findings.
Saapiire et al. 2021	Peer influence. Curiosity. History of substance use.	A substantial portion had no specific reason for use. Peer influence. To enhance sexual performance and extend the duration of sexual intercourse. For feelings of euphoria. To escape their problems. For managing post-traumatic pain. Lack of awareness of consequences.		The cross-sectional approach, relying mainly on questionnaires, might not fully grasp the nuanced personal experiences.
Ebo'o 2018.	Due to its affordability and availability	To alleviate the discomfort and stress of lengthy drives on bad roads. Reported to be administered by Boko Haram to suicide bombers for terror operations.		The opinion piece, without details on who giving out the information presented, it is unclear whose experiences and perspectives are being represented, thereby raising questions about the reliability and validity of the results. This might limit the depth and breadth of understanding around tramadol use.

Author (s) and year	Introduction and initial non-medical use factors	Continuous non-medical use factors	Not specified as introduction and initial or continuous non-medical use factors	Gaps
Chikezie and Ebuenyi 2019.	Introduced to tramadol by his friends. Pain relief (body pains such as back ache, ulcer pain.	For its calming effect. To be confident and happy.		Case report design and textual analysis of medical records predominantly offered clinical and objective insights though some of the data relied on participant descriptions. This inherently limited the exploration of individual nuanced subjective experiences, feelings, and perceptions. Assessed a limited number of cases which constrained the exploration of diverse experiences and insights, especially because data saturation was not a methodological priority. Findings are limited to the context of Niger Delta region of Nigeria.
Bio-Sya et al. 2021	Experimentation was the common initial use reason for males.	Men used it to enhance sexual performance. To overcome fatigue. Women used it to alleviate pain. Use of other substances		Focuses solely on students in grades 8 to 12, primarily representing a younger demographic, leaving out older age groups and their distinct experiences with tramadol. The cross-sectional survey design may potentially miss the complexities qualitative approach can provide. Limited to the cultural context of Benin.
Ibrahim et al. 2017	Peer group influence. Curiosity. Prescribed by a health worker.	To alleviate fatigue. To improve mood (euphoric effect). To prolong time of sexual intercourse. To relief pain. To prevent withdrawal symptoms. Compulsive urge (craving). Others (e.g. socialisation, no specific reason)		Limited to the cultural and geographical context of Nigeria and may not be directly applicable to different regions. The study's retrospective analysis of medical records may not capture the depth of personal experiences and subjective narratives. Insights limited to people accessing addiction treatment which may not be applicable to others at different stages of tramadol use.
Barahmand, Khazaee and Hashjin 2016			Childhood abuse. Childhood neglect. Severity of tramadol abuse in people who experienced abuse in childhood are as follows; Physical Abuse (mild 55; moderate to severe 19), Emotional Abuse (mild 48; moderate to severe 26), Sexual Abuse (mild 57; moderate to severe 17), Physical Neglect (mild 21; moderate to severe 53), Emotional neglect mild 16 moderate to severe 58). To experience euphoria, to forget worries, to be sociable. Social belong (To fit in a group and to understand things differently).	Limited to the cultural context of Iran and may not be directly applicable or representative of different regions. Primarily focuses on adolescent males who abused tramadol and their experiences in a boot camp for de-addiction and rehabilitation services and may not be directly applicable or representative of demographic groups, such as those not accessing treatment, females and other age groups. The cross-sectional design might limit its capacity to capture the intricate depth and nuances associated with individual experiences.
Omar and Ahmed 2021.	Knowing people who use tramadol (the most common relationship was friendship, followed by co-workers. Smaller percentages mentioned family members others and neighbours.	Regarding the reasons for tramadol use, the majority cited it as an energy booster. For pain relief. For enhancing sexual ecstasy. Some were unsure of the reasons. Additionally, a significant majority knew where to readily obtain tramadol.		Focuses on the urban Hodan district in Mogadishu may not reflect tramadol use patterns in different geographic or cultural settings. The descriptive cross-sectional design might limit its capacity to capture the intricate depth and nuances associated with individual experiences.

Author (s) and year	Introduction and initial non-medical use factors	Continuous non-medical use factors	Not specified as introduction and initial or continuous non-medical use factors	Gaps
Khayredinova et al. 2020	Being overly sheltered and excessively controlled by family members. Feeling neglected and emotionally distanced by family members. Abusive familial relationship. Having family members with alcoholism, drug addiction or both.	Does not provide insights		Culturally and geographically limited to Uzbekistan. Focuses on risk factors but does not delve into the dynamics of how individuals were introduced to tramadol. The use of a questionnaire might capture generalised patterns but not access deeper, qualitative insights into individual experiences. Focuses on persons in treatment for hashish and tramadol dependency, leaving a gap in capturing a broader spectrum of experiences across different stages of tramadol use.
Freeman 2019	Traumatic experiences (escaping the memories of the Boko Haram assault and the ensuing run for survival). Given to captives of Boko Haram to numb their feelings. Introduced by Boko Haram to overcome the fear during battle. Medical treatment (treat wounded comrades).	To mask the anguish and monotony of life in Nigeria, as well as the prevailing sense of despair. Drivers use it to mitigate the weariness and strain of navigating Maiduguri's dusty roads. Farm labourers use it to for extra energy. Due to its availability and affordability.		Reliance on one expert and one person who uses tramadol may not capture the broader experiences on use. The journalistic format presents concerns over journalistic bias, editorial influence, and a lack of methodological rigour. The narratives of women, youths, or other demographic groups, especially those affected differently by the insurgency, might be underrepresented or absent.
Sarkar et al. 2012	Introduced through a friend (recommended for alleviating of exhaustion from working in the fields). Substitution for other opioids. Mitigation of opioid withdrawal symptoms. Pain relief (headaches).	To experience euphoria		Limited to the cultural, economic, and social and geographical context of India. The study exclusively focuses on men, excluding women's perspectives and experiences. Focusing on participants in treatment centre may miss the experiences of those not seeking treatment, limiting the diversity and comprehensiveness of insights.
Peprah et al. 2020	Introduced through friends, relatives and other members of the community they lived in. Curiosity, peer coercion and enticement were reported as factors influencing initial use. Employers (commercial vehicle driver owner) enabled use by sacking assistant because they had not used tramadol, encouraging use.	Perceived improvement in sexual performance/ prolong time of sexual intercourse, euphoria, alertness and attentiveness. Energy booster, Alertness and attentiveness, Sense of hope and belonging, Tiredness or fatigue reliever, Affordability, Availability/accessibility.		
Bashirian, Barati and Fathi 2014		Social pressure or expectations. Perceptions of ease and acceptability play significant roles in the intention to abuse tramadol.		Limited to the cultural setting or context of an urban area in Iran which may not be applicable to other regions. Does not differentiate between factors influencing intention to initiate and intention to continue. Predominantly features homogeneous participant sample of college educated students, limiting insights to specific demographic. The use of self-administered questionnaire, might not explore the depth of personal experiences and subjective narratives.
Obekpa et al. 2021			Self-esteem. Peer influence. family relationships are key factors in determining tramadol use.	Limited to the cultural and geographical context of context of an urban area in Nigeria. Relies on a retrospective review of medical records, which might not capture the nuanced personal experiences and perceptions of the individuals. Focuses solely on patients in rehabilitation, and therefore findings may not apply to individuals not accessing treatment. Does not differentiate between factors influencing initial use and that of and continue use.
El-Sawy and Abd Elhay 2011	Adolescents who experienced trauma were more susceptible to starting drug use at an earlier age compared to those who had not experienced trauma. Among these adolescents who started using drugs early due to trauma exposure, there was a notable preference for tramadol.	Does not provide insights		The study does not specify factors that contribute to the continuous non-medical use of tramadol. Utilises standardised questionnaires, which might limit the depth of personal experiences. Limited to the geographical context of Egypt and relatively young age group (12-17) and is set in a specific urban outpatient clinic.

Author (s) and year	Introduction and initial non-medical use factors	Continuous non-medical use factors	Not specified as introduction and initial or continuous non-medical use factors	Gaps
Mohamed et al. 2015	Family history of substance use. Family history of psychiatric disorders. Euphoria (Pleasurable effect). Prolongation of the time of intercourse. To delay sensation of fatigue. For pain relief. For anxiety. For depression. Peer pressure.	Does not provide insights		Limited to cultural and geographical context of Egypt. The study's cross-sectional design and use of semi-structured questionnaires limit the depth of understanding of the participants' lived experiences. it does not explore the reasons for continued use among individuals. Limited to individuals already receiving addiction treatment, and therefore findings may not apply to individuals who are not
Cicero et al. 2008	Does not provide insights	Easy accessibility (sourced through dealers, doctor's prescription, friend or relative, forged prescription and internet.)		Limited to cultural and societal context of the US. The study's exploratory sequential design, targeting the internet's role in drug procurement, provides structured insights into how individuals access prescription opioids for non-medical use. However, it lacks depth in exploring the personal, social, and cultural factors influencing drug abuse behaviours. Focused on individuals seeking treatment for abuse issues.
Danso and Anto 2021	Introduced by their friends or colleagues at the transport terminals. Abuse of other substances	Pain relief and sexual enhancement.	Tension or fighting among family members. Abuse of drugs by a family member. Having a friend who abused drugs were associated with tramadol abuse. Participants who consumed alcohol, tobacco and marijuana were more likely to abuse tramadol.	The study's focus on commercial drivers and assistants provides a specific occupational perspective but may miss variations within this group and broader contextual factors affecting tramadol use. The use of focus group discussions can potentially limit the depth of individual experiences captured, with dominant voices overshadowing quieter ones. Participants may often hesitant to share sensitive details in a group setting, leaving a potential gap in capturing individualised, in-depth narratives that personal interviews or other qualitative methods might have unveiled.
Maiga, Seyni and Sidikou 2013	Does not provide insights	Improving work performance. Mitigating and managing fatigue work-related fatigue. Managing physical pain. Euphoria (sensation and pleasure). Delinquency and dependence.		While set in West Africa, the cultural and administrative contexts of Niger and other West African regions may influence tramadol use differently. Does not explore introduction pathways and factors leading to initial use. Limited to knowledge and attitudes of local officials and vendors which may differ from that of people actually using tramadol. The use of focus group discussions can potentially limit the depth of individual experiences captured, with dominant voices overshadowing quieter ones and participants often hesitant to share sensitive details in a group setting.
Owonikoko et al. 2023	Does not provide insights	To enhance work (farming) performance. For feelings of courage. For feelings of invincibility.		Limited to the geographical and cultural context of Nigeria. Does not explore factors leading to the initial use of tramadol. The focus on women farmers though highlighting the intersection of gender, occupation, and tramadol use may not be applicable to other occupational demographics. The ethnographic approach while offering valuable observational insights may not capture the individual subjective essence of tramadol abuse and its nuances

Author (s) and year	Introduction and initial non-medical use factors	Continuous non-medical use factors	Not specified as introduction and initial or continuous non-medical use factors	Gaps
Dumbili et al. 2021	Introduced through friendship groups.	To enhance performance through improving stamina/enhancing energy and skill in sports. Easy availability or accessibility (purchased from pharmacies without a prescription). Peer influence. For feelings of completeness. For confidence.		Limited to the geographical and cultural context of Nigeria. The study's focus on college-educated students limits the understanding of tramadol use across diverse socioeconomic and educational backgrounds, potentially overlooking varied motivations, and experiences of non-college-educated populations.
Bassiony et al. 2015	History of smoking	Does not provide insights		The use of a cross-sectional design captures specific trends and statistics without diving deep into the lived experiences of the participants. Limited to the geographical and sociocultural context of Egypt that may not be broadly applied in other contexts. Limited to Egyptian school students aged 13–18, overlooks older age groups, out-of-school youth, and adults, potentially missing diverse experiences and effects linked to tramadol abuse. Does not explore continuous use factors.
Alhassan 2022b		For pain relieve from strenuous work. To navigate the conditions of being a youth, to help deal with life struggles such as the death of a parent, feel a sense of hope. To deal with boredom.		

Appendix 6: Data on social effects of non-medical use of tramadol and identified gaps from included reports

Social effects of the non-medical use of tramadol.			
Author (s) and year	Intrapersonal social effects	Interpersonal/ societal level social effects	Gaps
Shamseldin et al. 2021	A lack of emotional awareness and clarity. Difficulties controlling impulsive behaviours when experiencing negative emotions. Non-acceptance of negative emotions.	Does not provide insights	The study is limited to the socio-cultural context of Cairo, Egypt. The study narrows its focus to emotional dysregulation, potentially overlooking the other ramifications of tramadol abuse on personal, social, work, and family life. The cross-sectional design, while capturing hard data, may miss the nuances and complexities inherent in the evolving experiences of individuals with tramadol use over time. The study does not investigate the interpersonal or broader societal implications of tramadol use Findings limited to only people accessing treatment for tramadol dependence.
Fuseini et al. 2019	Irritability, anger and emotional aloofness.	Does not provide insights	The study primarily draws its sample from a psychiatric unit receiving treatment for tramadol use and may not capture the broader experiences of people outside of clinical settings. It does not explore the societal level social effects of tramadol use. The study's use of FGDs may capture collective views but risks overshadowing individual narratives especially in investigating such a sensitive topic.
Alhassan 2022b	Societal stigmatisation, with widespread negative perceptions towards people who used it. Feelings of alienation, expressing a strong desire to be perceived as 'normal' within society.	Societal stigmatisation leading to exclusion	The study's use of the telephone interviews might not capture the non-verbal cues and depths of emotions as effectively as face-to-face interactions. It partly relied on discourse analysis emphasising language and media representation, which may be sensationalised and oversimplified.

Author (s) and year	Intrapersonal social effects	Interpersonal/ societal level social effects	Gaps
Klantschnig and Dele-Adedeji 2021.	Stigmatisation from being involved in crime and deviant behaviours.	Associated with criminality and deviance. Tramadol use is associated with the insurgents causing unrest in the country.	The study focuses on tramadol traders and regulators, emphasising market and regulatory dynamics, possibly overlooking the personal experiences of actual people who use tramadol. It is limited to the distinct cultural, socio-economic, and political landscapes of Lagos, Nigeria.
Argungu, Sa'idu and Sanda 2021.	Marked decline in the quality of sexual life.	Does not provide insights	The study primarily zeroes in on the intrapersonal effects of tramadol abuse, particularly on sexual function. However, it does not delve into the wider interpersonal or societal consequences that might arise due to the altered sexual functionality. Limited to socio-cultural nuances of Kware, Sokoto State, Nigeria that may not be generalisable to other African regions. It employs a case-control design, which primarily focuses on identifying and comparing specific outcomes between groups. This design might overlook the deeper, qualitative aspects of the participants' experiences. The study exclusively samples married males, omitting females entirely, potentially overlooking gender-specific experiences and effects associated with tramadol abuse. It is also restricted to individuals already undergoing treatment for drug use disorders, creating a gap in understanding the experiences of those who might be abusing tramadol but are not yet in treatment.
Owonikoko et al. 2023	Behavioural challenges such as women farmers causing physical harm to husband.	Domestic violence towards husbands	Limited to the geographical and cultural context of Nigeria. The focus on women farmers though highlighting the intersection of gender, occupation, and tramadol use may not be applicable to other occupational demographics. The ethnographic approach while offering valuable observational insights may not capture the individual subjective essence of tramadol abuse and its nuances.
Hassan et al. 2019	Decreased intercourse satisfaction. Reduced sexual desire. Overall lowered sexual satisfaction.	Does not provide insights	The structured clinical interview might not capture the intricate personal narratives and the emotional and psychological experiences of individuals involved in tramadol use. Although the study identifies individual sexual consequences, it does not explore the broader implications of tramadol use on personal relationships, work-life, and social interactions. There is also an absence of exploration into how these identified sexual challenges might affect spousal relationships, self-esteem, or overall quality of life. Limited to persons already undergoing treatment for tramadol use. By focusing solely on the sexual functions in males, the study might overlook other significant personal and societal consequences of tramadol use.
Ebhota 2018	Erratic behaviour.	Does not provide insights	The journalistic format of this report predominantly focuses on corruption as a driving force for drug abuse in Nigeria, relying mainly on expert opinion. Therefore, there is a lack of first-hand experiences and narratives of those actually involved in tramadol abuse. The report lacks a comprehensive exploration of the interpersonal and societal ramifications of tramadol use. This leaves a gap in understanding how tramadol use affects relationships, community dynamics, and broader societal structures.
Pourmohammadi and Jalilvand 2019	Decreased academic performance, with those who have a history of using tramadol tending to score lower on average compared to their peers who don't use the drug.	Does not provide insights	The descriptive-analytical design is limited to gathering quantitative insights, but may miss the nuanced, depth that can be uncovered through qualitative approaches. Limited to the unique socio-cultural dynamics surrounding tramadol use in Damghan, Iran, which may not be transferrable to other regions. The study does not delve into the societal and interpersonal social effects of tramadol use. The study primarily sheds light on the relationship between tramadol use and academic performance and does not cover effects on other facets of life.
Naem et al. 2020	Decline in occupational status or performance. Legal challenges. Lower sexual self-esteem, more negative perceptions of one's sexuality, and a notably lower quality of sexual life. Reduced preoccupation with sexual thoughts.	Moderate to severe family or social issues.	A survey questionnaire, while efficient in capturing structured data, may not dig deep enough to uncover the personal lived experiences, emotions, challenges, and intricate narratives associated with tramadol use. Limited to people already receiving treatment for tramadol use. Limited to the cultural and societal nuances specific to Egypt. Focusing exclusively on tramadol-positive males might not give a complete picture. The experiences of females, those not currently testing positive but have a history of abuse, or other demographic groups might be overlooked.

Author (s) and year	Intrapersonal Social Effects	Interpersonal/ Societal Level Social Effects	Gaps
Nnam et al. 2022	Does not provide insights	There were correlations between tramadol use among violent offenders and various types of violent behaviours. Specifically, tramadol use shows strong associations with armed robbery (.962), murder (.791), and multiple drug use (.999). Moderate correlations are observed with kidnapping, cultism, assault battery, and burglary. These findings suggest that tramadol use is closely linked to increased violent activities and polydrug use among offenders.	The cross-sectional survey design does not delve into inmates' personal experiences and emotions, missing insights into individual triggers and motives behind their actions. While there is mention of societal impacts in terms of correlation with violent crimes, there is no exploration of how tramadol misuse might be affecting families, or workplaces. The study does not delve into the interpersonal effects of tramadol misuse, despite participants clearly facing legal issues, as shown by the sample description.
Dumbili et al 2021	The cycle of tramadol use led to a dependency where individuals felt unable to function or be productive without taking the drug daily.	Does not provide insights	The study lacks insights into the experiences and consequences faced by individuals undergoing or those who have completed rehabilitation for tramadol use. While the study highlights intrapersonal consequences, such as the cycle of dependency after daily function, it doesn't provide insights into how tramadol misuse impacts relationships, family dynamics, or wider societal interactions. Findings are specific to the socio-cultural and geographical context of Anambra State, South-eastern Nigeria.
Yassa and Badea 2019.	Increased incidents of verbal aggression. Individuals abusing tramadol often exhibited physical aggression directed at inanimate objects. Tramadol abuse was linked to acts of self-harm and physical self-aggression.	Tramadol abuse was linked to physical violence towards others	The study focuses on establishing relationships between tramadol abuse and violent behaviours, primarily using clinical data and quantitative measurements. This leaves a gap in understanding the underlying reasons, emotional experiences, and personal narratives behind tramadol misuse and its social impact. The findings are regionally specific to Upper Egypt. Therefore, it does not necessarily encompass the experiences or patterns seen in other African regions. Predetermined effects (violence) of tramadol use limits the exploration of other potential social effects.
Elsawy et al. 2019	Heightened levels of social phobia more than other drugs studied. Exhibition of higher rates of social anxiety. Notably, after a month of withdrawal, tramadol users experienced a marked increase in social phobia.	Does not provide insights	The use of structured clinical interviews, urine analysis, physical examinations, and psychometric tests to gather data, may not capture the deeper, nuanced experiences and personal stories of individuals using tramadol for non-medical purposes. The study does not address the broader societal or interpersonal implications of tramadol use. The study is conducted in Egypt and may reflect socio-cultural influences unique to that region. Predetermined effects (social phobia) of tramadol use limits the exploration of other potential social effects.
Obaji 2019	Does not provide insights	Numerous cases have been documented where individuals, particularly internally displaced persons who regularly abuse tramadol, have exhibited aggressive behaviours, bullying, intimidation, and even making unwarranted sexual advances.	The journalistic format of the opinion piece may lack the depth and rigor associated with academic research. The report focuses on Boko Haram survivors in an internally displaced persons camp in Nigeria, which is a very specific population group. It might not provide insights about the other populations affected by tramadol use. The report's omission of whose experience or perspective was being shared undermines its credibility and makes it challenging to assess the representativeness and reliability of its findings.
Carmel et al. 2019	Experiencing accidents, such as highway incidents or falls from motorcycles, while under the influence of the drug. These accidents were frequently associated with high dosage intakes, ranging from 750 to 2500 mg		The study's survey-based approach captures statistical data and might offer a broad but potentially superficial view of the tramadol misuse among motorcycle drivers. The study exclusively examines motorcycle taxi drivers, which provides insights into a specific occupational group but might miss the experiences of the broader population. The study is based in Lome, Togo, which might have unique socio-cultural influences on tramadol misuse and might not apply in another context.
Ngwa 2022	Workplace challenges arose for those who abused tramadol, affecting job performance and stability. Academic difficulties are prevalent among people who abused tramadol.	Family relationships became tense and strained due to tramadol abuse. Community relations and standing were negatively affected for people who abused tramadol.	The research in the Nigerian context primarily relies on secondary sources. This might lack the depth and nuance that first-hand data can offer. The report covers Cameroon and Nigeria, each with their unique socio-cultural nuances. However, this might leave gaps in understanding the specific context of other West African countries.

Author (s) and year	Intrapersonal Social Effects	Interpersonal/ Societal Level Social Effects	Gaps
Diab et al. 2021	Aggressive behaviours. Mood fluctuations. Many people who abuse tramadol have behavioural challenges. Feelings of hopelessness. Resulted in social deterioration and isolation of people who used it, with many considering this isolation one of the most harrowing outcomes of their drug use.	Experts noted the erosion of moral and spiritual traditions within Palestinian society as a consequence of tramadol abuse. It led to strained social relationships. It led to families are disruptions., It resulted into violent outbursts targeted at household members and increased instances of domestic violence. Some people who abused tramadol admitted to damaging relationships with close friends and family, particularly spouses. It subjected people who used it to the risk of marginalisation and social exclusion, fuelled by the prevalent social stigma.	The Gaza Strip study, given its distinct cultural, social, and political environment, may produce findings that are not broadly generalisable to other populations. The study seems to provide broad qualitative insights but might not deeply delve into individual experiences and narratives. The study had sampled either medical experts or those receiving care in treatment centres. This might lead to a specific subset of experiences being captured, possibly missing out on the experiences of those not in treatment.
Curnow 2018	Neglecting familial duties. Life-altering negative impacts (ruined their lives). Accumulation of significant debts.	Does not provide insights	The report's journalistic format may provide a surface-level understanding, lack the depth and rigour of academic research and may not explore individual narratives in depth. The report is focused on a unique socio-cultural context of Cairo's El Malek El Salah district, which may differ from other regions. The report sample of two consisting of a horse and donkey barber and a photographer may not capture experiences representative of the broader population due to their specific professions. It does not provide insights into the societal level or interpersonal effects of tramadol abuse.
Salm-Reifferscheidt 2018	The non-medical use of tramadol resulted in feeling lost and far from normal. Disorientation or psychological disconnection	The non-medical use of tramadol was associated with an increased risk of road accidents.	The report relies on testimonials, which, although insightful, may not expose certain nuances potentially missing out on a more profound understanding of participants' lived experiences. While the report is based in West Africa, the cultural, socio-economic, and regulatory differences between Togo and other west African countries could lead to distinct patterns of tramadol use and its social implications. The sample, limited to just two individuals using tramadol for non-medical purposes and not prioritising data saturation, potentially misses a broader range of experiences and perspectives from a more diverse group of people who use it.
Abd-Elkader et al 2020	Individuals who abused tramadol encountered work challenges.	People who abused tramadol faced family issues. Construction workers were especially affected, with 95.3% experiencing family problems and 91.3% work disturbances, a rate notably higher than other professions.	The study is large-scale and quantitative in nature, focusing on general patterns across a significant sample. While it gives a statistical overview, it might not capture the deeper intricacies of individual experiences. The pre-designed questionnaire in the Egypt study may gather consistent data across participants but might lack the adaptability to explore unforeseen topics or areas of interest that arise during data collection. The study is concentrated on male workers in specific industries (minibus driving, construction, textile). While this allows for sector-specific findings, it might miss out on experiences of those outside these industries or women. The study is based in Mahalla El Kubra City, Egypt, a specific urban context with its socio-cultural peculiarities influencing tramadol abuse which might not be generalisable to other settings.
Freeman 2019	Does not provide insights	Influencing others to abuse tramadol as Boko Haram fighters administer it to the numerous young boys and girls they abduct and indoctrinate over the years. When these individuals manage to escape or are freed from Boko Haram's clutches, many continue using the drug, further spreading its abuse within the broader community.	The opinion piece provides limited personal accounts, featuring only an expert and a single individual who has misused tramadol. The context ties tramadol abuse directly to the Boko Haram insurgency. This context presents a unique backdrop and might not capture the broader spectrum of reasons people might misuse tramadol in other parts of Africa.
Ebo'o 2018.	Does not provide insights	Boko Haram exploits the drug by administering it to suicide bombers for terror missions. Tramadol misuse has been a catalyst for increased violence and crime in countries like Gabon and Ghana where instances of robbery, rape, and stabbings have been directly linked to it.	The report does not provide insights into the intrapersonal social effects of tramadol misuse. The journalistic narrative's methodological rigor and detail may be limited due to its format and intended audience. The report lacks clarity on whose experiences and perspectives are being shared, leaving gaps in understanding the foundation and context of its findings
Smith 2014	Does not provide insights	Tramadol use has been associated with a significant number of crashes during the concluding stages of one-day 'Classics' races.	The opinion piece is based on testimonials, which, while valuable for public awareness, may not delve deep enough to understand the comprehensive personal and societal implications of tramadol use. The report's data comes primarily from a 25-year-old professional cyclist in the UK. This limited scope omits a broader range of experiences, particularly from diverse demographic backgrounds and contexts. The setting is the UK, specifically within the realm of professional cycling. This might differ significantly from the experiences of people who use tramadol in other countries with different cultural, socio-economic, and health system factors.

Author (s) and year	Intrapersonal Social Effects	Interpersonal/ Societal Level Social Effects	Gaps
Madukwe and Klein 2020.	Tramadol abuse led to erratic mood fluctuations within individuals. Diminished energy levels.	Does not provide insights	The study does not delve into the interpersonal or societal level effects of tramadol use, which is an important dimension, especially in understanding the broader consequences on the community and relationships. The study is specific to Owerri in South-eastern Nigeria. There might be cultural, economic, or social nuances specific to this region that may not apply more broadly or in other African countries. The study is narrowly focused on tramadol's roles as a pain reliever and physical work performance enhancer, potentially overlooking other consequences associated with other reasons for use.
Peprah et al. 2020	Irritability, anger, and feelings of discouragement and sadness. Individuals reported a pervasive feeling of discomfort and a significant loss of interest or pleasure in daily activities due to tramadol use.	The non-medical use of tramadol led to pronounced social stigma and a distinct lack of respect from the community. The community's widespread disapproval of tramadol misuse resulted in heightened stigmatisation of people who used tramadol for non-medical purposes.	The study specifically targets commercial vehicle drivers and their assistants as its primary demographic and might not capture the complete spectrum of experiences across a diverse populations. Though study utilises in-depth face-to-face interviews to generate thematic findings, it does not prioritise individual narratives that might uncover richer, more nuanced personal experiences and their meaning-making processes.
Chikezie and Ebuenyi 2019.	Tramadol misuse led to incoherent speech. People who misused tramadol exhibited irrational speech patterns. Affected day-to-day functionality with individuals experiencing symptoms like dizziness and excessive daytime sleepiness which affected productivity at work.	Reduced productivity at work	The study provides valuable insights from a specific context in the Niger Delta based on a limited number of cases from one rural teaching hospital. Notably, it restricts its findings to a homogenous group of young male adults, missing potential variances in experiences across gender, age, or other socio-demographic factors. Additionally, the data collection is based on textual analysis of medical records, which may not delve deeply into the personal and societal implications of tramadol misuse beyond immediate medical observations. This leaves a gap in understanding the broader personal narratives, lived experiences, and societal ramifications of tramadol misuse.
Iorfa et al. 2019	Tramadol abuse may lead to a diminished value for life in individuals when compared to people who do not use it. Those abusing tramadol might exhibit decreased levels of moral integrity and self-worth compared to their non-using counterparts.	Does not provide insights	The study employs a cross-sectional design, offering broad quantitative insights into relationship between tramadol use and life value, yet it lacks the depth of individualised narratives. While the study delves into intrapersonal effects, it does not provide insights into how tramadol abuse affects relationships, societal perceptions, or community dynamics. Limited to the distinct cultural, socio-economic, and political factors of Nigeria, the findings might not be universally applicable to other regions. The focus on predetermined effects limits the examination of other potential social effects.
Fawzi 2011	Nearly half (48.3%) of tramadol-related incidents were involved accidental falls or self-inflicted unintentional injuries. Behavioural challenges (violent behaviours)	Tramadol overdose significantly heightened the risk of various accidents, with 18.7% resulting in road traffic incidents. Acts of violence, including fights and domestic altercations, constituted 33% of incidents related to tramadol overdose.	The study's retrospective observational design, while capturing broad trends and relationships, might not delve deeply into the personal and emotional experiences of people who abused tramadol. The sample consists of patients presenting with acute tramadol toxicity, leaving a gap in understanding the experiences of people who use tramadol but have not reached such critical conditions. The focus on predetermined effects limits the examination of other potential social effects.
Jonathan and Samuel 2018	A significant number of students noted experiencing aggressive and violent behaviours (22.5%), decreased concentration in academic work (16.9%), and a decline in grades combined with increased class absenteeism (28.5%). This indicates that the majority of the respondents felt that tramadol abuse had a discernibly negative impact on their academic and personal lives	Does not provide insights	The study employs a descriptive survey design using structured questionnaires. While such designs can be effective for gathering broad, quantitative insights, they might not capture the depth, nuance, and lived experiences of the participants. It is conducted in Ignatius Ajuru University of Education in Nigeria. The cultural, socio-economic, and regulatory differences between Nigeria and other countries might lead to unique patterns of tramadol use and implications. It also does not delve into the societal and interpersonal effects of tramadol abuse. The focus predetermined effects limits the exploration of other potential social effects.
Gallois, van Andel and Pranskaityté 2021.	Does not provide insights	Sexual abuse. Victimisation of young girls encouraged to drink alcohol and use tramadol and exposed to inappropriate content such as pornographic videos by persons who use tramadol. Sexual exploitation by engaging in sexual play with young girls.	The study outlines societal level consequences but does not delve deeply into the individual level social effects of tramadol use. The study primarily captures the socio-cultural dynamics of the Baka communities in south-eastern Cameroon and might not encompass the distinct cultural, socio-economic, and individual intricacies of tramadol misuse in other African contexts.
Bassiony et al. 2015	Tramadol abuse led to significant lack of concentration, as reported by 77.7% of users. Financial difficulties were experienced by 55.5% of individuals abusing tramadol. Passivity and reduced motivation were reported by 55.5% of people who abused tramadol. A perception of overwhelming chaos in life was reported by 44% of people who abused tramadol.	A considerable 55.5% of those abusing tramadol became inconsiderate towards others. Tramadol abuse was linked to the disruption and destruction of family life, as stated by 55.5% of respondents.	While the study offers valuable quantitative data on tramadol use among Egyptian adolescents, it employs a cross-sectional design that captures specific trends and statistics without diving deep into the lived experiences of the participants. Limited to the geographical and sociocultural context of Egypt that may not be broadly applied in other contexts. The study, limited to Egyptian school students aged 13–18, overlooks older age groups, out-of-school youth, and adults, potentially missing diverse experiences and effects linked to tramadol abuse.

Appendix 7: Data on rehabilitation and support for non-medical use of tramadol and Identified gaps from included reports

Rehabilitation and support for persons involved in non-medical use of tramadol.				
Author (s) and year	Type of rehabilitation and support service	Barriers and facilitators to accessing and engaging in rehabilitation and support services/ to successful recovery in rehabilitation	Outcomes of rehabilitation and support service	Gaps
Sadir et al. 2013	Therapeutic Community residential	Facilitators to recovery: Individuals with higher educational levels, current employment, and a history of incarceration demonstrated a greater probability of successfully completing the Therapeutic Community programme.	Participants who abstained from tramadol and other substances consistently displayed better physical and mental health outcomes in comparison to those who did not. Abstinence rates post-treatment was recorded as follows: 87% at the end of the first year, 58% by the fourth year, and 22% by the sixth year.	Sample exclusively comprises males, which leaves a significant gap in understanding the experiences of the therapeutic community model for females. Limited to the context of an urban centre in Kerman, Iran and may not accurately represent the experiences and outcomes of individuals in different settings. Cross-sectional design limits the deep exploration into the lived experiences. The study does not delve into barriers to accessing treatment nor does it explore barriers to recovery, leaving significant gaps in understanding the challenges faced by individuals seeking and undergoing addiction treatment.
Diab et al. 2021	Does not provide insights	Barriers to access: The social status of women in Gaza presents challenges to their accessing treatment for tramadol abuse. A deeply rooted cultural stigma associated with tramadol use within the community also served as a barrier to access. Economic hardships and the scarcity of job opportunities hinder the motivation and the personal resources required for recovery from tramadol use.	Does not provide insights	Does not provide insights on the type of rehabilitation and support available. While it highlights some barriers, it doesn't delve into what facilitates access to treatment. It does not offer information on the outcomes of rehabilitation. Findings are limited to the unique socio-cultural landscape of the Gaza strip which may not be generalisable to other contexts.
Ohaju-Obodo et al. 2019	Psychotherapy	Does not provide insights	Does not provide insights	Focused on a single case report that presents an atypical withdrawal symptom from tramadol abuse and might not offer a broad understanding of the diverse experiences related to tramadol use rehabilitation programme. Does not explore the barriers and facilitators to accessing and engaging in rehabilitation and support services. Does not explore the outcomes after attending rehabilitation services. Limited to distinct cultural, societal, or healthcare system dynamics of Nigeria which may not be transferrable to other context.
Ezenwa et al. 2019	Does not provide insights	Barriers to access: Nearly half (47.5%) of people who used tramadol for non-medical purposes did not know where to seek help/treatment. Some others reported not being aware that cravings for tramadol are manageable and treatable. There was a prevalent fear among people who used tramadol for non-medical purposes about potential arrests by law enforcement. Concerns about the costs associated with treatment deterred them from seeking help.	Does not provide insights	The study sheds light on the barriers to rehabilitation specific to Enugu State, Nigeria, potentially differing from dynamics in other African contexts. The study does not provide insights into the type of rehabilitation and support service available, outcomes of such services, and facilitators to accessing these services. The use of focus group discussions can potentially limit the depth of individual experiences captured, with dominant voices overshadowing quieter ones and participants often hesitant to share sensitive details in a group setting, leaving a potential gap in capturing individualised, in-depth narratives that personal interviews or other qualitative methods might have unveiled.
Nagy et al. 2022	Pharmacotherapy CBT model.	Does not provide insights	Individuals who abuse tramadol exhibited increased rates of abstinence when treated with integrated treatment approach combining pharmacotherapy with CBT.	The study's focus on the socio-cultural intricacies of Egypt, particularly at the Institute of Psychiatry, Ain Shams University Hospital, may limit its generalisability to other African contexts. Its utilisation of structured clinical interviews, psychometric assessments, and questionnaires may not delve as deeply into the personal lived experiences and narratives of rehabilitation and support service experiences. The study does not explore the type of rehabilitation and support services available, barriers and facilitators to accessing these services. Findings are limited to those already receiving treatment for tramadol abuse may overlook the diverse experiences and barriers faced by broader tramadol use populations.

Author (s) and year	Type of rehabilitation and support service	Barriers and facilitators to accessing and engaging in rehabilitation and support services/ to successful recovery in rehabilitation	Outcomes of rehabilitation and support service	Gaps
Zaki et al. 2016	Outpatient and inpatient addiction services	Facilitators to access: No observable correlations were identified between the duration of illness, age, and the extent of social support received. When seeking initial consultation, the majority turned to their family as the primary point of contact. The primary referrals to the clinic were majorly from family members. On the other hand, referrals from friends facing similar issues and from emergency services were less frequent.	Does not provide insights	The study's reliance on a questionnaire-based, cross-sectional design might limit its capacity to capture the intricate depth and nuances associated with individual experiences of tramadol use and rehabilitation. There is a lack of insights regarding barriers to accessing and engaging in rehabilitation and support services, as well as the outcomes of such services. The study at Ain Shams Institute in Egypt focuses solely on male patients attending addiction services, possibly overlooking gender-diverse insights and reflecting Egypt's distinct cultural, socio-economic, and healthcare dynamics.
Curnow 2018	Participation in Narcotics Anonymous meetings several times weekly	Barriers to access: A lack of awareness regarding the locations and procedures to access addiction treatment. When initially approached with the idea of seeking assistance, there was resistance and refusal to get help. Facilitators to access: Having a supportive middle-class family facilitated access to treatment. The birth of his daughter, mounting debts, and the tragic death of a family member due to tramadol use became catalysts for considering cessation and subsequent treatment.	Does not provide insights	The journalistic narrative format, relying on testimonials and expert opinions, may lack the depth and comprehensive understanding that an approach centred on individual lived experiences can offer. As a non-traditional research paper, it may prioritise storytelling over a systematic exploration of the subject matter. The opinion piece does not provide detailed insights into the outcomes of rehabilitation and support services. The study's focus on just two individuals using tramadol, limits its breadth of perspectives, and its lack of emphasis on data saturation might leave some aspects unexplored. It does not delve into the types of rehabilitation and support services available or the outcomes of these services. Findings are limited to the socio-cultural intricacies and healthcare factors of Egypt.
Arve 2023	Outpatient care, treatment institutions, foster care, inpatient psychiatric care	Barriers to access: A notable absence of intrinsic motivation among individuals. General dissatisfaction with the provided services. Past negative experiences stemming from prior interventions. Coexisting mental health challenges. Experiences of dependency and the withdrawal symptoms that accompany discontinuing tramadol use. Facilitators to access: Constructive and supportive relationships with professionals. Strong support networks comprising family and friends. An environment that nurtures fundamental needs, specifically autonomy, competence, and relatedness.	The initial stages of treatment were frequently characterised as tumultuous, with many participants still engaging in drug use or facing multiple relapses. Over time, there was a marked enhancement in participants' capability to withstand drug cravings and sustain sobriety over time.	The study focuses on the experiences of young individuals in Norway. The socio-cultural, economic, and healthcare dynamics in Norway may differ significantly from those in other countries. While the study is qualitative and focuses on thematic findings, it may not capture the intricate nuances of individual narratives, possibly missing some depth in understanding experiences with rehabilitation and support services.

Author (s) and year	Type of rehabilitation and support service	Barriers and facilitators to accessing and engaging in rehabilitation and support services/ to successful recovery in rehabilitation	Outcomes of rehabilitation and support service	Gaps
Stoehr et al. 2009	6-week inpatient detoxification programme. Residential treatment programme. Follow-up care with an addiction medicine physician. Voluntary 5-year monitoring programme for professionals. Monthly office visits with an addiction specialist. Bimonthly group counselling sessions. Documented participation in 12-step meetings. Intensive outpatient programs. Counselling to address personal histories of abuse. Participation in specialised 12-step meetings, such as Pills Anonymous.	Does not provide insights	Does not provide insights	The study is a case report on two individuals, which, while providing in-depth clinical progressions, might not capture the broader array of experiences and narratives that arise from a more varied group of participants. The study employs textual analysis of patient records which, although it gives accurate medical histories, might not capture the emotional and experiential elements of tramadol use and rehabilitation. Limited to the unique healthcare infrastructure in the US which may differ significantly from other countries. It does not provide insights into barriers to accessing rehab services, what facilitates engagement in such services, or the outcomes of these services.

Appendix 8: Introduction of research and recruitment assistance email to gatekeepers

Hello (Insert name of potential gatekeeper),

As I mentioned earlier on the phone, I am qualitatively exploring Tramadol Abuse in Ghana. I want to understand the initial and continuous use factors, how it impacts people's personal, work, social, and family life and their experiences accessing support and rehabilitation. I would like to request your assistance in finding people who might be eligible for the study. I would request 60-90 minutes of their free time to interview them face to face and individually on their experiences with Tramadol non-medical use.

Aside from potential emotional discomfort in recounting experiences, risks will be minimal as interviews will be strictly confidential and voluntary. I will signpost participants who indicate adverse emotional reactions to professional counselling support. The information shared within the interviews, including names and other personal details, will be kept confidential. However, I would be required to divulge any information that involves sexual abuse, child abuse and endangerment, suicides and homicides to law enforcement authorities. I will guide the interview to mitigate this situation from arising, but if this occurs, the interview will be terminated.

I will record and transcribe the interviews. Only research supervisors and I will see the interview transcripts. I will not share it with anyone else. In addition, the interview transcripts will be anonymised using a unique ID number, so it will not be possible to identify them from the transcripts. Their names will not appear in any research papers produced as a result of the study. They will be given a voucher worth ¢150 as a thank you and respectful acknowledgement of their time. I will also provide them with ¢20.00 for transport to the interview site.

The study is sponsored by the Ghana Scholarship Secretariat, and the ethics will be approved by the School of Health Sciences, Robert Gordon University, and the Ghana Health Service Ethical Review Committee. I have attached a protocol summary of the study, an introduction letter from my university and a link to a press release on the study. Please let me know if you would need more information on the study. Thank you very much for your time.

https://www.modernghana.com/amp/news/1103810/tramadol-abuse-in-ghana-exploring-contextualised.html

Kind Regards

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Email: m.owusuaa-asante@rgu.ac.uk

Appendix 9: Eligibility screening questions

Are you over 18 years? Yes ☐ No ☐

Is Ghana your permanent country of residence? Yes ☐ No ☐

Please tick all that apply.

I have been diagnosed with Tramadol abuse by a medical doctor	
I am in recovery from abusing Tramadol	
I am in rehabilitation for abusing Tramadol	
I have used Tramadol, which has not been prescribed to me by a medical doctor	
I have used Tramadol longer than my doctor prescribed	
I have increased my Tramadol dosage without my doctor's approval	
I have used more than 400mg of Tramadol in a day	

Appendix 10: Interview guide

THE LIVED EXPERIENCE OF TRAMADOL ABUSE AMONG PEOPLE IN GHANA

Hello, my name is Maame. Thank you for meeting with me today. The purpose of this interview is to ask you about your experiences with using Tramadol to better understand the complexities and realities of its use.

Have you read the Participant Information Sheet dated 24th March 2022 for the study?
Have you had the opportunity to consider the information, ask questions and have these questions been answered satisfactorily? Do you have any further questions?

The information you share within this interview, including your name and other personal details, will be confidential. However, I would be required to divulge any information that involves sexual abuse, child abuse and endangerment, suicides and homicides to law enforcement authorities. I will guide the interview to mitigate this situation from arising, but if this occurs, the interview will be terminated. I will record and transcribe this interview. I will also write field notes that document non-verbal cues, post-recording interactions and observations for inclusion in the analysis. Only research supervisors and I will see your interview transcript and the field notes. I will not share it with anyone else. In addition, the interview transcript will be anonymised using a unique ID number, so it will not be possible to identify you from the transcript. Please do not mention your own name during the interview so that the information on the recording is also anonymous. Your name will not appear in any research papers produced as a result of this research. Individual anonymised quotes from interviews may be used to illustrate the research findings in research papers and reports.

If you are satisfied with the information, I have provided you with and agree to participate in the study, please sign both copies of the informed consent. I will take back one signed copy from you, and you will keep the other copy.
I would start by requesting you to filling out the Demographic Information Sheet

A. Questions exploring lived experience.

General Question

Can you tell me about your use of Tramadol at the moment?

Main Theme Questions

Theme 1-Experiences around the introduction and initial and continuous use

Question: Can you tell me about how you started using Tramadol?

Prompts

How long ago was this?

How old were you when you started using Tramadol?

Can you tell me the circumstances around taking it?

Where and who did you get it from?

Question: Describe what this experience was like for you?

Prompts

Who else was involved in this experience?

What is your relationship with this person?

What role did they play in this experience?

Question: What was your emotional reaction to this experience, and why do you think you reacted this way?

Question: Did you use it again after this experience?

Prompts

How often did you use it after this experience?

What do you think influenced your action or decision?

Question: What are your thoughts on Tramadol based on this experience?

Theme 2-Impact on personal, social and family life

Question: What areas of your life do you think have been impacted by using Tramadol?

Prompts

Do you think that using Tramadol has affected your personal life? If so, can you tell me how it has affected it?

Do you think it has affected your family life or relationships? In what way?

Do you think it has affected your social life? In what way?

Do you think it has affected your work life? In what way?

Other drugs

Do you use any other substances aside from Tramadol?

What other substances do you use?

Can you describe to me how you take these other substances?

What is the motivation behind taking these other substances?

Theme 3- Experiences using support and rehabilitation services.

For all participants

Questions

- Have you thought about using support and rehabilitation services?
- Do you know anything about support and rehabilitation services?
- Is there anything stopping you from to accessing these services?

Prompts

What could be done to overcome these barriers?

Is there anything else you think would help you or others in a similar situation?

For participants accessing support and rehabilitation services

Questions

- Have you used any support and rehabilitation services?
- What support or rehabilitation services have you used?
- How did you find out about this/these support and rehabilitation service/s?
- How did you access this/these support and rehabilitation service/s?

- Can you tell me about your experience using this/these support and rehabilitation service/s?
- What influenced your decision to seek support?
- What are/were your expectations of the support and rehabilitation service?
- Do you think it has helped with your emotional and mental wellbeing? If yes. How?
- Are there gaps in the rehabilitation and support service you need? If yes, what are they?
- Would you recommend the rehabilitation and support services to others?

Potential probes and follow-ups

- When did that happen?
- How do you feel about that?
- Can you give me an example?
- Can you tell me more?
- Could you go back and tell me about…..?

- You said that… Is this correct?
- Can you elaborate on what you said?
- Can you explain in more detail?

You have shared some very interesting details about your experiences with using Tramadol. What do you consider to be the most significant thing you have told me today?
Is there anything about your experience using Tramadol you would like to add?

As I said at the beginning of this interview, all the information you have shared within this interview, including your name and other details personal to yourself, will be kept confidential. Only I and my research supervisors will see your interview transcript. I will not share it with anyone else. In addition, the interview transcript will be anonymised using a unique ID number, so it will not be possible to identify you from the transcript. Your name will not appear in any research papers produced as a result of this research. Individual anonymised quotes from interviews may be used to illustrate the research findings in research papers and reports. Would you like to receive a copy of the research findings?

If you get any adverse emotional reactions after this interview,
Call WABHARM Ghana-Integrated Substance Abuse and Mental Health Disorder Service on **+233 (0) 24 6161793**
OR
Call Psychosocial Africa- Mental Health Support Group on **+233 (0) 503196515**
OR
Call Hay Foundation Africa- Mental Health Service on **+233 (0) 242944636**

THE LIVED EXPERIENCE OF TRAMADOL ABUSE AMONG PEOPLE IN GHANA

Demographic information sheet.

Please fill out the following items as accurately as possible. For multiple-choice questions, please tick what best describes you.

How old are you?

18- 24 ☐

25-34 ☐

35-44 ☐

45-54 ☐

55-69 ☐

70 and above ☐

How would you describe yourself? Male ☐ Female ☐ Prefer not to say ☐

What is your ethnicity? _____

Which suburb is your home located? _____

What is your highest level of Education?

Primary ☐

Junior High ☐

Senior High ☐

Vocational ☐

Graduate ☐

Postgraduate ☐

What is your employment status? Employed ☐ Unemployed ☐ Retired ☐ Student ☐

What is your occupation? _____

What is your income range?

Below ¢3000 ☐

¢3000-¢4999 ☐

¢5000-¢6999 ☐

¢7000-¢9999 ☐

Over ¢10000 ☐

Prefer not to say ☐

What is your religion?

Christian ☐

Muslim ☐

Traditionalist ☐

Other. ☐ Please Specify: _____

What is your marital status? Single ☐ Married ☐ Divorced ☐ Prefer not to say ☐

If you have dependents, please state how many _____

Appendix 11: Excerpt of initial noting for transcript 1

Descriptive level coding/initial noting

Clustering themes	Description (Participant's own apparent interpretation of their experience)-What matters to them and what they mean	Verbatim transcript or translated from Twi to English	Interpretation- How I am making sense of their meaning-making	Non-verbal cues
Difficult emotions Intrapersonal elements External Influence Coping tool for these emotions? Awareness of possible harm? An indication of easy access?	Stress Overthinking Death/grief Hardship Prior substance use Personal choice Peer Influence Family influence Normal experience Emotional stiffness or rigidity Numbness to pain Forgetting worries Comfortable with only tramadol that purchased themselves. Conceal sale of tramadol Language Words that highlight difficult experiences Pain, unfortunate occurrences. Words that highlight personal autonomy but acknowledge external influences.	*R: Can you tell me about your use of tramadol at the moment? Any and everything about it?* *001: Sometimes, I take tramadol because, I'm stressed, and I overthink a lot. My parents are no longer alive, so I go through a lot of hardship. That is why I take tramadol.* *R: How did you first come to use it?* *001: I didn't know how to use it, but I smoked weed.* *R: Who taught or introduced you?* *001: Nobody taught me how to use tramadol but my friends and those I used to associate with were taking it. Thus, I also started taking it. That is what made me start using.* *R: How did you feel the first time you took it?* *001: I saw it as a normal experience, but later, I noticed that I forget about all my worries when I take it. I did not overthink when I took it. I also noticed that when I took the medicine, I became stiff emotionally, and if someone told me a painful story, I would not care or feel any pain.*	Offered opportunity to reveal what using tramadol for non-medical purposes is for them or means to them. The participant describes how they use tramadol as a short-term respite or distraction from debilitating challenges in several aspects of their lives, including difficult financial circumstances. The participant describes how they use tramadol to numb themselves from the reality of their painful emotions, including grief following a tragic or unfortunate loss. These aspects of the participants' lives may contribute to them having stress which causes them to overthink as they describe being overwhelmed with the mental and emotional pressure that comes along with the challenges they are facing.	Profuse sweating Hoarse voice. Projection of voice

Appendix 12: SCREC Approval Letter

ROBERT GORDON UNIVERSITY ABERDEEN

SCHOOL OF HEALTH SCIENCES
The Ishbel Gordon Building
Robert Gordon University
Garthdee Road
Aberdeen
AB10 7QG
United Kingdom
Tel: 01224 263250
www.rgu.ac.uk

Date: 25/05/2022

Dear Maame

Re: School of Health Sciences Research Ethics Committee Application

Study Title: The Lived Experience of Tramadol Abuse among people in Ghana- An Interpretative Phenomenological Analysis
Reference Number: SHS/21/06

Thank you for your submission and I can confirm you now have ethical approval.

I wish you every success with this study.

Yours sincerely: Paul Swinton

School Research Ethics Committee Convenor

Head of School
Laura Binnie
MSc BSc FHEA

Appendix 13: GHS ERC Approval letter

GHANA HEALTH SERVICE ETHICS REVIEW COMMITTEE

22|305

In case of reply, the number and date.
of this Letter should be quoted

Research & Development Division
Ghana Health Service
P. O. Box MB 190
Accra
Digital Address. GA-050-3303
Mob: 4233-50-3539896
Tel: -+233-302-681 109
Email: ethics.rescarch@ghsmall.org

28th July, 2022

My Ref G11S/RDD/ERC/Admin/App.
Your Ref No.

Owusuaa-Asante Maame Ama
Robert Gordon University
School of Health
Sciences
Garthdee Road
Ab10 7QG Aberdeen

The Ghana Health Service Ethics Review Committee has reviewed and given approval for the implementation of your Study Protocol.

GIIS-ERC Number	GHS-ERC: 029/07/22
Study Title	The Lived Experience of Tramadol Abuse among People in Ghana- An Interpretative Phenomenological Analysis.
Approval Date	28th July, 2022
Expiry Date	27th July 2023
GHS-ERC Decision	**Approved**

This approval requires the following from the Principal Investigator

- Submission of a yearly progress report of the study to the Ethics Review Committee (ERC)

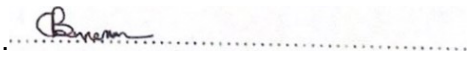
- Renewal of ethical approval if the study lasts for more than 12 months.
- Reporting of all serious adverse events related to this study to the ERC within three days verbally and seven days in writing.
- Submission of a final report after completion of the study.
- Informing ERC if study cannot be implemented or is discontinued and reasons why
- Informing the ERC and your sponsor (where applicable) before any publication of the research findings.

You are kindly advised to adhere to the national guidelines or protocols on the prevention of COVID -19.

Please note that any modification of the study without ERC approval of the amendment is invalid.

The ERC may observe or cause to be observed procedures and records of the study during and after implementation.

Kindly quote the protocol identification number in all future correspondence in relation to this approved protocol

SIGNED. . . 

Dr. Cynthia Bannerman

(GHS-ERC Chairperson)

Cc: The Director, Research & Development Division, Ghana Health Service, Accra

Appendix 14: Participant Information Sheet

SREC reference number: SHS/21/26

Date: 24th March 2022

Study Title: Lived Experience of Tramadol Abuse among people in Ghana

Introduction

My name is Maame Ama Owusuaa- Asante, and I am a student at the School of Health Sciences at Robert Gordon University, Aberdeen. As part of my PhD degree, I am undertaking a research project to explore lived experience of people who abuse Tramadol in Ghana. Tramadol abuse is a known public health challenge in Ghana, but the experiences of people who abuse Tramadol are not well understood. This study seeks to gain an in-depth understanding of the complexities and lived realities of Tramadol abuse in Ghana.

I am inviting people who live in Ghana and have a history of Tramadol use to take part in this research. You are being invited because you have indicated your interest in participating in this study. I am recruiting people who are 18 years and above who use/ have used Tramadol without prescription or in a manner, for reasons or period that was not intended by the medical prescriber.

This research project has been reviewed and approved by the Robert Gordon University School of Health Sciences Research Ethics Committee (Ref: SHS/21/26) and Ghana Health Service Ethics Review Committee (GIIS-ERC: 029/07/22). The project is funded by The Ghana Scholarship Secretariat.

Taking part in the study.

For this study, I will be conducting individual face to face interviews with people to discuss their experiences with using Tramadol. I will be asking you about how you came to first use Tramadol, your reasons for continuing to use Tramadol and how it has impacted your personal, social, work and family life. I will also be asking you about your experiences of using support and rehabilitation services, what you feel the barriers to accessing them are and what additional services or support could be provided. This interview will last approximately between 60 and 90 minutes and will be conducted in a rehabilitation facility/ local drop-in centre that is most convenient for you. All interviews will be audio recorded to make sure all the information you give is captured.

I am asking 10 people to take part in the study. All the information collected will be analysed and used in the results section of my PhD thesis. Your information will be securely stored on encrypted computer devices with strong access passwords. Your name will not be used, and it will not be possible for readers to trace information back to you.

Before the interview, I will go through this information sheet with you and answer any questions you may have. I will then ask you to sign a consent form consenting to take part in the study. A copy of the information sheet and consent form will be given to you after it has been signed or thumb-printed to keep. Participating in this study is entirely voluntary, and you are under no obligation to do so. You may withdraw from the research at any time without giving a reason.

For your time and as a thank you for participating in the study, you will receive a voucher worth ¢150. I will also provide you with ¢20.00 for your transport to the interview site.

Advantages to participating.

There will be no direct advantage to you for participating in this research. The findings will add to the current knowledge of Tramadol abuse in Ghana. It may also shape existing support and rehabilitation services and allow person-centred health and well-being to be prioritised.

Disadvantages to participating.

There is the possibility of emotional distress during interviews. In the event of any emotional discomfort, I will pause the interview and continue as and when you are comfortable and ready to continue. I will also signpost you to counselling support (find details at the bottom of this letter). There is also the possibility of legal harm as I would be required to divulge any information that involves sexual abuse, child abuse and endangerment, suicides and homicides to law enforcement authorities. I will guide the interview to mitigate this situation from arising, but if this occurs, the interview will be terminated.

Confidentiality and anonymity.

All the information you share within the interview, including your name and other details personal to yourself, will be kept confidential. The recording will be transcribed by the researcher. The researcher will also write field notes, documenting non-verbal cues, post-recording interactions and observations for inclusion in the analysis. Only the researcher and research supervisors will see your interview transcript and field notes. It will not be shared with anyone else. In addition, the interview transcript will be anonymised using a unique ID number, so it will not be possible to identify you from the transcript. I will ask you not to mention your own name during the interview so that the information on the recording is also anonymous.

Your name will not appear in any research papers produced as a result of this research. Individual anonymised quotes from interviews may be used to illustrate the research findings in research papers and reports.

All information will be collected and stored within the requirements of the General Protection Regulation (2018), Data Protection Act (2018) and RGU data storage and retention policy (2016).

Any questions?

If you have any further questions about this research, please contact Maame at the address below.

What happens if there is a problem?

Please discuss any problems with me or my supervisor. Our contact details are given at the bottom of this letter. If you have a complaint, please send details of this to Paul Swinton, Convenor of the School of Health Sciences Research Ethics Committee, Robert Gordon University, Garthdee Road, Aberdeen AB10 7QG p.swinton@rgu.ac.uk or Laura Binnie, Head of School of Health Sciences, Robert Gordon University, Garthdee Road, Aberdeen AB10 7QG l.m.binnie@rgu.ac.uk

What will happen to my research data?

A research report and paper will be written as part of my thesis and may be more widely disseminated in academic and professional journals and conferences. The data generated will be destroyed at least 10 years after the data is collected.

What happens now?

Please feel free to discuss this letter with your family and friends. If, after consideration, you would like to take part in this study, please contact me, Maame Ama Owusuaa-Asante, using one of the contact routes listed below.

Thank you for taking the time to read this letter.

Researcher:	Research Supervisor:
Maame Ama Owusuaa-Asante	Dr Karen Barnett
PhD Student	Lecturer
School of Health Sciences	School of Health Sciences

Robert Gordon University Garthdee Road Aberdeen AB10 7QG Email: m.owusuaa-asante@rgu.ac.uk Tel: +44(0)7909122902	Robert Gordon University Garthdee Road Aberdeen AB10 7QG Email: k.barnett1@rgu.ac.uk

To seek further clarification on ethical issues and your right as a participant of this study, contact Nana Abena Apatu, Administrator, Ghana Health Service Ethics Review Committee ethics.research@ghsmail.org, 0503539896

Call WABHARM Ghana-Integrated Substance Abuse and Mental Health Disorder Service on **+233 (0) 24 6161793**

OR
Call Psychosocial Africa- Mental Health Support Group on **+233 (0) 503196515**
OR
Call Hay Foundation Africa- Mental Health Service on **+233 (0) 242944636**

Appendix 15: Consent form

Study reference: SHS/21/26

Title of project: The Lived Experience of Tramadol Abuse among people in Ghana

Name of Researcher: Maame Ama Owusuaa-Asante

Please read the following statements and tick the boxes to agree.

1. I confirm that I have read and understand the information sheet dated 24.03.2022 (version 1) for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily.	
2. I understand that my participation is voluntary and that I am free to withdraw from the study at any time without giving any reason.	
3. I confirm that I am aged 18 or over.	
4. I understand that data collected during the study will be looked at by individuals from The Robert Gordon University. I give permission for these individuals to have access to the data.	
5. I agree to my interview being audio recorded for research purposes.	
6. I understand that the data gathered in this study will be stored securely, and it will not be possible to identify me in any reports resulting from this research.	
7. I agree to anonymised quotes from my interview being used in any research output (e.g. academic articles, professional papers, conference presentations) resulting from this study.	
8. I give permission for my research data to be used for other similar purposes in the future (e.g. other research projects) on the understanding that it will not be possible to identify me from the data provided.	
9. I agree to take part in the above study.	

Name of participant _____ Date _____ Signature/Thumbprint _____

Name of person taking consent _____ Date _____ Signature _____

Appendix 16: Statement of witness

I was present when the purpose and contents of the Participant Information Sheet was read and explained satisfactorily to the participant in the language he/she understood (…….)

I confirm that he/she was given the opportunity to ask questions/seek clarifications and same were duly answered to his/her satisfaction before voluntarily agreeing to be part of the research.

Name ……

Signature…….. OR Thumb Print …….....

Date ……

Appendix 17: Research risk assessment form

SREC Reference No: SHS/21/26

Short Title: Lived experience of tramadol abuse

Significant hazards.	**Who might be exposed?**	**Control measures.**	**Risk evaluation.**	
			Likelihood Low/Medium/High	**Severity Severe/Minor/Negligible**
Emotional risk	Research Participant and Researcher	Participants will be informed of potential emotional risk and their right to skip certain questions, take a break or withdraw completely from the study. Participants who indicate emotional distress will be signposted to counselling support and resources. The researcher and anyone who will have access to the recordings and transcriptions will have access to support services at RGU. The researcher will also have access to supervisors who are experienced researchers to debrief and discuss any particularly difficult events.	Low	Minor

Significant hazards	Who might be exposed?	Control measures.	Risk evaluation.	
			Likelihood Low/Medium/High	Severity Severe/Minor/ Negligible
Social harm	Research Participant	The researcher will keep participation confidential by removing names and other personal identifiers in disseminating research findings. Data will be stored on the RGU restricted access R Drive.	Low	Minor
Legal risk	Research Participant	The researcher will inform participants of instances (Homicides, sexual violence, child abuse and endangerment and suicides) required by law to be reported to law enforcement authorities. The researcher will reiterate their legal obligation if the subject arises. The researcher will guide the interview to mitigate this situation from arising, but if this occurs, the interview will be terminated.	Low	Minor
Physical Harm	Research Participant And Researcher	The researcher will carry a screech alarm during interviews to draw attention in the event of an emergency. The researcher will communicate her schedule, including appointment times and interview locations, to research supervisors and a nominated local contact. The researcher will call the research supervisor and nominated local contact before and after the interviews.	Low	Severe

Declaration

I have undertaken a risk assessment of the above-named project and have put in place the controls listed above.

Researcher name: MAAME AMA OWUSUAA-ASANTE

Supervisor/Principal researcher (if different from above) name: DR KAREN BARNETT

Date: 3RD MAY 2022

Appendix 18: Overview of participant experiences mapped to their corresponding superordinate themes, subordinate themes, and subcategories

Corresponding themes legend

Bold text	Superordinate theme
♦	Subordinate theme
▪	First level subcategory
●	Second level subcategory

Participant ID	Summary of participant experience	Corresponding themes
001	He started using tramadol at age 15, obtaining it from various local sources including the `ghetto' located in Tinka, Alabaa, and seemingly innocent provision stores, which, according to him, often serve as a front for the tramadol trade. He takes seven 120mg tablets of tramadol orally daily with energy drinks. Prior to using tramadol, he smoked marijuana (weed). Influenced by peers and an older brother, he turned to tramadol amidst the hardships of losing his parents, using it to enhance work performance and as an emotional shield to numb stress and alter his perception of time. Despite recognising its risks, he continued 'cautious' use for its various functional and emotional benefits. He acknowledged tramadol's capability to prolong sexual intercourse but clarified that this was not his reason for use. He noted that some use tramadol for criminal aggression due to its ability to make you feel invincible. Personally, tramadol use affected his cognitive functions, evidenced by his inability to recall information	**Precursors and influences of the non-medical use of tramadol.** ♦ Patterns and characteristics of the non-medical use of tramadol. ▪ Age at onset. ▪ Patterns of use and dosage. ♦ Introduction and initiation pathways to the non-medical use of tramadol. ▪ Intrapersonal factors • Prior substance use. • Personal autonomy. ▪ External factors • Peer influence and social network dynamics • Social determinants.

	studied the night before examinations. Physically, it led him to abandon his passion for football, a sport he can no longer play due to the drug's effects. Tramadol use negatively impacted his work preferences and social interactions, causing irritability, aggression, and legal troubles, which strained personal and romantic relationships. It also led him to self-isolate from former peers due to noticeable and inappropriate behaviour changes, shrinking their social circle to avoid conflicts. His use of tramadol led to financial strain on his family, with his aunts having to use money intended for their children to bail him out of trouble. Additionally, tramadol use caused him to avoid his football coach due to shame. He had not used any rehabilitation or support services for his tramadol use although he had contemplated seeking such help and treatment.	**Socio-cultural, environmental and knowledge factors contributing to continuous non-medical use of tramadol.** ♦ Knowledge and cognitive factors influencing continuous non-medical use of tramadol. ▪ Positive subjective effects. • Physical strength. • Time perception. • Euphoria • Overall benefit. ♦ Socio-cultural and environmental factors contributing to continuous non-medical use of tramadol. ▪ Emotional and environmental factors. • Coping mechanism. • Availability and accessibility. **Multifaceted consequences of non-medical use of tramadol** ♦ Individuality and profound impacts on overall well-being and life outcomes. ♦ Socio-economic and emotional consequences. ▪ Personal and professional advancement. ▪ Behavioural and legal consequences. ▪ Social and interpersonal consequences. ▪ Economic burden of use. **The complex framework of the rehabilitation process and its role in facilitating recovery from the non-medical use of tramadol.** ♦ Pre-rehabilitation attitudes and motivations ▪ Contemplation and readiness for change and treatment.
002	He started using tramadol at age 13 after getting it from the ghetto, where he referred to as a "junkie's" joint in Tinka, Alabaa. He takes three tablets of 250mg every day, orally and mixes it with a normal drink. He was not taught or necessarily introduced to tramadol, but after seeing a friend use it, he became curious and insisted on trying it. He continued to use it to forget his worries and stress, and to feel good. He also used it to be active and work better. He wishes he could stop using it but takes it due to the pain and sadness he experiences from the sudden death of his parents and tragic death of his brother. He acknowledged that he had been smoking weed (marijuana) before his use of tramadol. He was	**Precursors and influences of the non-medical use of tramadol.** ▪ Patterns and characteristics of the non-medical use of tramadol. ▪ Age at onset. ▪ Patterns of use and dosage. ▪ Introduction and initiation pathways to the non-medical use of tramadol. ▪ Intrapersonal factors • Prior substance use.

	informed by a friend that it could enhance sexual performance by delaying ejaculation. However, he clarified that this was not his primary reason for using the drug. Despite his initial indifference to this effect, he acknowledged its efficacy in delaying ejaculation. Facing increased responsibilities and societal expectations to provide as a man, he was stressed, and tramadol became a means to alleviate his worries, offering a sense of relief from his burdens. He reveals that his experience with tramadol diverged from his friend's; while his friend resorted to theft under its influence, he did not. He continued using tramadol despite disapproval from family and community, finding it as a way to cope with his parents' death. Tramadol use strained his romantic relationship, but his partner eventually showed understanding. It also led to legal issues, isolation, and regret. Ashamed, he has not disclosed his tramadol use to a healthcare professional who is close to the family. He had considered seeking rehabilitation and support services for his drug use, expressing dissatisfaction with his current situation. He emphasised that his participation in the research reflects a desire for help, and he is open to sharing any assistance he receives with others. He identified financial constraints as a primary barrier to accessing rehabilitation and support services, noting that unlike some individuals who come from affluent backgrounds, he lacked the necessary funds for such treatment.	• Personal autonomy. ▪ External factors. • Peer influence and social network dynamics. **Socio-cultural, environmental and knowledge factors contributing to continuous non-medical use of tramadol.** ▪ Knowledge and cognitive factors influencing continuous non-medical use of tramadol. ▪ Positive subjective effects. • Physical strength. • Euphoria ▪ Socio-cultural and environmental factors contributing to continuous non-medical use of tramadol. ▪ Cultural factors. • Cultural expectations. ▪ Emotional and environmental factors. • Coping mechanism. • Availability and accessibility. **Multifaceted consequences of non-medical use of tramadol** ♦ Individuality and profound impacts on overall well-being and life outcomes. ▪ Socio-economic and emotional consequences. ▪ Behavioural and legal consequences. ▪ Social and interpersonal consequences. ▪ Economic burden of use. ▪ Emotional consequences. **The Complex framework of the rehabilitation process and its role in facilitating recovery from the non-medical use of tramadol.** ▪ Pre-rehabilitation attitudes and motivations. ▪ Contemplation and readiness for change and treatment. ♦ The rehabilitation journey: approaches, challenges and facilitators. ▪ Challenges of rehabilitation access and success • Practical and systemic barriers.

		▪ Facilitators of rehabilitation access and recovery. • Social and relational factors.
003	He began using tramadol at the age of 27, obtaining it from drug stores or licensed chemical shops. He takes tramadol orally, typically mixing it with a drink. Taking ten 500mg tablets over five days meant that he had reduced his intake of the drug. He was drawn to tramadol out of a desire to understand its effects and potential benefits for him. His curiosity led him to try it in a pub during a period of depression, triggered by the stress of unemployment following graduation and the responsibilities of having a child. Lacking support from well-off family members and facing constant pressure and demands for the child's welfare, the participant struggled with sleepless nights, leading to his tramadol use. He continues to use tramadol for its calming effect, particularly to alleviate anxiety and stress from various life pressures. Despite recognising the risks, especially in hazardous situations like construction work, he justifies its use for personal relief, not intending to harm others. Tramadol provides an escape from reality, easing the burdens of worry and family responsibilities stemming from a low-income background. The drug helps him cope with demands from younger siblings and his own feelings of anxiety and depression. He shared the severe negative impact of tramadol use on various aspects of his life. After taking tramadol, he lost a significant carpentry contract because of his inability to remember a conversation with a contractor. The drug-induced aggressiveness led him into an altercation, which resulted in police involvement, a prison sentence, and personal remorse. Additionally, his relationships suffered; friends distanced themselves from him due to the perception that people who used tramadol are “violent” or "bad". To cope with pressures, he uses the drug as a means of relief, but recognises the societal stigma around it. He goes to great lengths to hide his use from his family, including relocating and lying about the reasons for his altered states. He only uses the drug when he's alone, ensuring those close to him remain unaware. The participant expresses deep regret for starting tramadol, wishing he had never begun and revealing the extent to which it has altered his relationships and personal identity. The participant also regrets how tramadol use derailed his dreams of a military career, causing deep pain and uncertainty about his future.	**Precursors and influences of the non-medical use of tramadol.** ♦ Patterns and characteristics of the non-medical use of tramadol. ▪ Age at onset. ▪ Patterns of use and dosage. ♦ Introduction and initiation pathways to the non-medical use of tramadol. ▪ Intrapersonal factors. • Personal autonomy. ▪ External factors. • Social determinants. **Socio-cultural, environmental and knowledge factors contributing to continuous non-medical use of tramadol.** ♦ Knowledge and cognitive factors influencing continuous non-medical use of tramadol. ▪ Positive subjective effects. • Euphoria ♦ Socio-cultural and environmental factors contributing to continuous non-medical use of tramadol. ▪ Emotional and environmental factors. • Coping mechanism. • Availability and accessibility. **Multifaceted consequences of non-medical use of tramadol** ♦ Socio-economic consequences. ▪ Personal and professional advancement. ▪ Behavioural and legal consequences. ▪ Social and interpersonal consequences. ▪ Emotional consequences. **The complex framework of the rehabilitation process and its role in facilitating recovery from the non-medical use of tramadol.** ♦ Pre-rehabilitation attitudes and motivations. ▪ Contemplation and readiness for change and treatment.

	The participant frequently considers seeking rehabilitation for their tramadol use. He is eager to attend rehabilitation to overcome his drug use and return to a normal life. The participant identifies financial constraints and a lack of awareness as primary barriers to accessing rehabilitation for use, calling for more awareness and education on rehabilitation services and the subsidisation of costs. He mentions that rehabilitation services are scarce and seldom advertised, making it challenging to seek help. Additionally, societal stigma complicates open discussions about addiction, further hindering access to support. He expresses a strong desire for rehabilitation and recognises the importance of education on the effects of tramadol to improve the situation.	♦ The rehabilitation journey: approaches, challenges and facilitators. ▪ Challenges of rehabilitation access and success. • Practical and systemic barriers. ▪ Facilitators of rehabilitation access and recovery. • Structural and systemic barriers.
004	The participant began using tramadol at 29 years old, obtaining it from a `ghetto' at Tinka, Alabaa. He uses it orally, mixing it with a drink, and taking around four 120mg tablets daily. He was first introduced to tramadol while in school after initially smoking weed. His friends suggested tramadol could enhance his mood during an outing at a pub, where they covertly mixed it with his drink. Unaware of this initially, he later learned from his friends that the drink contained tramadol. The participant continues to use tramadol primarily to cope with unemployment and the accompanying stress and idleness. While aware of its ability to enhance sexual performance, it is not his main reason for use. Tramadol helps him temporarily forget his problems and the stress of joblessness. It also provides him energy for physical labour like masonry. He also continues to use tramadol because he enjoys the mood it induces. Despite regretting his initial use, the lack of employment and economic support drives him to persist in using it as a means to manage frustration and idleness. The non-medical use has affected his employment, as his unpredictable behaviour when he has used tramadol has led to job loss. Additionally, his tramadol use has resulted in criminal behaviour, including pickpocketing and fights, culminating in a three-month prison sentence. He acknowledges that tramadol makes him quick-tempered and prone to overreacting to minor issues. To fund his tramadol use, he has resorted to theft. His parents paid for his release from prison, and he tends to isolate himself from family when using tramadol.	**Precursors and influences of the non-medical use of tramadol.** ♦ Patterns and characteristics of the non-medical use of tramadol. ▪ Age at onset. ▪ Patterns of use and dosage. ♦ Introduction and initiation pathways to the non-medical use of tramadol. ▪ Intrapersonal factors. • Prior substance use. ▪ External actors • Peer influence and social network dynamics. **Socio-cultural, environmental and knowledge factors contributing to continuous non-medical use of tramadol.** ♦ Knowledge and cognitive factors influencing continuous non-medical use of tramadol. ▪ Positive subjective effects. • Euphoria • Physical strength. ♦ Socio-cultural and environmental factors contributing to continuous non-medical use of tramadol. ▪ Emotional and environmental factors. • Coping mechanism. • Availability and accessibility.

	He is aware of rehabilitation and support services for tramadol use and has considered using them, expressing a strong desire for change. However, financial constraints, primarily due to unemployment, hinders his access to these services, as they require payment. He acknowledges the calming effect of tramadol and the value of talking to others for support. Although he has heard about rehabilitation services through the media, he lacks specific information about their locations and how to access them.	**Multifaceted consequences of non-medical use of tramadol.** ♦ Socio-economic and emotional consequences. ▪ Personal and professional advancement. ▪ Behavioural and legal consequences. ▪ Social and interpersonal consequences. ▪ Economic burden of use. ▪ Emotional consequences. **The Complex framework of the rehabilitation process and its role in facilitating recovery from the non-medical use of tramadol.** ♦ Pre-rehabilitation attitudes and motivations. ▪ Contemplation and readiness for change and treatment. ♦ The rehabilitation journey: approaches, challenges and facilitators. ▪ Challenges of rehabilitation access and success. • Practical and systemic barriers.
005	The participant was first introduced to tramadol at age 20 during a hostel party at university, where his roommate suggested it would make him happy and enhance his enjoyment of the event. Initially taking half of a 225 mg tablet, he experienced altered sensations and a desire for alcohol and cigarettes, which he felt synergised with the drug. Pleased with the effects, he consumed the other half of the tablet. The drug led to physical reactions like itchiness and an inability to eat solid foods, alongside a heightened desire for soft drinks and cigarettes. Tramadol significantly enhanced his stamina for physical activities, including manual labour and sexual activities, to the point of not feeling fatigue or being able to ejaculate until the drug's effects wore off. He recalls a time in his third year of university when his roommate suggested that tramadol could aid in memorising and recalling study materials for an exam, an assertion he later realised was incorrect. He continued to use tramadol for the euphoria and the feeling that everything was okay that it created for him. He used tramadol primarily while at university, where access to the drug was easier compared to	**Precursors and influences of the non-medical use of tramadol.** ♦ Patterns and characteristics of the non-medical use of tramadol. ▪ Age at onset ▪ Patterns of use and dosage ♦ Introduction and initiation pathways to the non-medical use of tramadol. ▪ External factors. • Peer influence and social network dynamics. **Socio-cultural, environmental and knowledge factors contributing to continuous non-medical use of tramadol.** ♦ Knowledge and cognitive factors influencing continuous non-medical use of tramadol. ▪ Positive subjective effects. • Academic outcomes • Euphoria • Physical strength. • Sexual experiences. ♦ Socio-cultural and environmental factors

	being at home. At home, the only source was the `ghetto', as no one in his immediate environment provided it. Tramadol use significantly impacted the participant's life, leading to mood changes, irritability, and altered social interactions. It affected his speech, making communication difficult and often resulting in anger. His academic life suffered, as he skipped classes and exams, ultimately graduating with lower grades. His use of the drug led to an arrest and strained family relationships, with frequent visits to the `ghetto' causing loss of trust among family members. The participant also experienced career setbacks, hindering job prospects and interview performances. Consequently, his younger sister found employment before him, despite his being the older sibling. The participant reports a lack of awareness as a barrier to accessing rehabilitation and support. He also had a personal mindset of self-reliance, feeling responsible for overcoming tramadol use independently. He pointed out that outreach should be executed in a way that demonstrates an understanding of the individual's situation, making the communication more relatable and effective, and avoiding perceptions of insincerity or disregard. He also suggests that having experts in addiction science who possess in-depth knowledge about the subject provide education would be a significant facilitator in accessing treatment.	contributing to continuous non-medical use of tramadol. ▪ Emotional and environmental factors • Availability and accessibility. **Multifaceted consequences of non-medical use of tramadol** ♦ Socio-economic and emotional consequences. ▪ Personal and professional advancement. ▪ Social and interpersonal consequences. ▪ Behavioural and legal consequences. **The complex framework of the rehabilitation process and its role in facilitating recovery from the non-medical use of tramadol.** ♦ The rehabilitation journey: approaches, challenges and facilitators. ▪ Challenges of rehabilitation access and success. • Psychological and emotional barriers. • Practical and systemic barriers. ▪ Facilitators of rehabilitation access and recovery. • Structural and systemic enablers.
006	The participant started using tramadol at age 17 after a new acquaintance suggested that the tablets could prevent fatigue and enhance endurance in football, particularly in a demanding position like playing number 6. Intrigued by this claim, the participant decided to try tramadol without being directly offered it by his friend. The participant's continued use of tramadol was driven by the initial feelings of happiness and sleepiness it induced, alongside its ability to enhance sexual performance and endurance in activities like football, which garnered positive feedback. The drug also boosted his confidence, leading to physical changes like ear piercings and tattoos. His belief that drug use was linked to being cool and masculine, alongside its easy accessibility and economic benefits from selling tramadol and other	**Precursors and influences of the non-medical use of tramadol.** ♦ Patterns and characteristics of the non-medical use of tramadol. ▪ Age at onset. ▪ Patterns of use and dosage. ♦ Introduction and initiation pathways to the non-medical use of tramadol. ▪ External factors. • Peer influence and social network dynamics. **Socio-cultural, environmental and knowledge factors contributing to continuous non-medical use of tramadol.** ♦ Knowledge and cognitive factors influencing

	drugs, further motivated his continued use. Additionally, his fearlessness and confrontational behaviour while on the drug, and association with other drug users, contributed to his persistent use. Tramadol use led to severe consequences for the participant, including physical health problems requiring costly private hospital treatment, which drained his family's finances. Emotionally, he experienced deep regret and sadness, leading to moments of tearful reflection on his altered appearance and behaviour. The need for secrecy and shame around his use resulted in lying to his mother and coach, especially as physical symptoms like lip darkening raised suspicions. His life was significantly disrupted, affecting his education, increasing aggression towards family, and pushing him into criminal behaviours like theft and pickpocketing. He shared that his tramadol supplier who also used the drug had been shot and killed during an armed robbery. The drug changed his demeanour, making him quick-tempered and violent, and instilled a sense of fearlessness and invincibility, even towards authorities. These behavioural changes extended to his appearance and lifestyle, adopting a rebellious 'ghetto' style, getting tattoos, and piercing his ears. Additionally, tramadol use drove him to risky behaviours, such as buying and illegally licensing a gun. The stigma from his tramadol use led to a noticeable shift in how his community perceived him, losing the admiration and affection he once enjoyed. The participant's mother initially sought treatment for his tramadol and weed (marijuana) use through pastors, who anointed the substances, but this method only increased his usage. Sceptical at first, he eventually enrolled at a rehabilitation facility on a teacher's recommendation, where he found a welcoming environment, engaged in various activities, and experienced physical and mental improvements, including weight gain, and no longer hearing voices. His treatment included detoxification via intravenous water. Appreciative of the program, he was willing to commit to long-term treatment. He valued family contact whilst in rehabilitation and participated in activities like goal setting and reading books by former drug using persons, aiding in his recovery. This positive rehabilitation experience enhanced his self-esteem and aspirations to associate with respected societal figures.	continuous non-medical use of tramadol. ▪ Positive subjective effects. • Sexual experiences. • Physical strength. • Euphoria ♦ Socio-cultural and environmental factors contributing to continuous non-medical use of tramadol. ▪ Cultural factors • Cultural acceptance ▪ Emotional and environmental factors • Availability and accessibility. • Economic motivations. **Multifaceted consequences of non-medical use of tramadol** ♦ Individuality and profound impacts on overall well-being and life outcomes. ♦ Socio-economic consequences. ▪ Personal and professional impact. ▪ Vulnerability and victimisation. ▪ Social and interpersonal consequences. ▪ Behavioural and legal consequences. ▪ Economic burden of use. ▪ Emotional consequences. **The Complex framework of the rehabilitation process and its role in facilitating recovery from the non-medical use of tramadol.** ♦ Pre-rehabilitation attitudes and motivations. ▪ Contemplation and readiness for change and treatment. ▪ Influences on the decision to seek treatment. • Internal motivations for change. • External motivations for change. ♦ The rehabilitation journey: approaches, challenges and facilitators. ▪ Treatment approaches. • Alternative treatment. • Residential rehabilitation. ▪ Challenges of rehabilitation access and

		success. • Psychological and emotional barriers. • Practical and systemic barriers. • Barriers to success. Facilitators of rehabilitation access and recovery. • Social and relational factors. • Structural and systemic enablers. ♦ Outcomes of rehabilitation and sustained recovery beyond treatment setting. ▪ Positive feedback and personal and social outcomes. • Recovery and holistic well-being. • Personal and social transformation.
007	The participant started using tramadol at 16 years old, taking up to four tablets a day, influenced by being in the company of friends who used the drug. Curiosity and peer influence played a role, as she would ask for a tablet to try when she saw her friends using it. She buys it from her neighbourhood. She continued using tramadol despite her friends telling her about unusual behaviours while under its influence, which she initially dismissed as lies. Reasons for her continued use included feeling emboldened particularly in intimate situations with her boyfriend or when meeting new people. The drug gave her a sense of boldness, allowing her to act without shyness or reservations. The participant's life was heavily affected by her tramadol use. She was hospitalised multiple times for illnesses related to her drug use, with her mother bearing the cost of her medical treatment. Her education suffered as she frequently skipped school to spend time in the ghetto. Physically, tramadol weakened her, hampering her ability to play football, which she had previously enjoyed. The drug also caused relationship problems, leading to conflicts with her baby's father and eventually the breakdown of their relationship. Legally, she faced issues due to tramadol, including an arrest during a ghetto police raid, resulting in a four-day detention and a bail payment made through her mother's and friends' contributions.	**Precursors and influences of the non-medical use of tramadol.** ♦ Patterns and characteristics of the non-medical use of tramadol. ▪ Age at onset. ▪ Patterns of use and dosage. ♦ Introduction and Initiation pathways to the non-medical use of tramadol. ▪ Intrapersonal factors • Personal autonomy. ▪ External factors • Peer influence and social network dynamics. • Social determinants. **Socio-cultural, environmental and knowledge factors contributing to continuous non-medical use of tramadol.** ♦ Knowledge and cognitive factors influencing continuous non-medical use of tramadol. ▪ Denial ▪ Positive subjective effects. • Euphoria • Physical strength. • Courage ♦ Socio-cultural and environmental factors

	Socially, her tramadol use led to a rift with her non-using friends, who became distant and unwelcoming, often resulting in arguments when they suggested she quit using the drug. The participant mentioned that as part of seeking treatment for tramadol use, there have been instances where people have taken her to church, where she receives preaching as a form of intervention. She also mentioned initially dismissing the effects of her drug use, expressing that non-admittance meant she was not sick and did not require treatment. She expressed a subsequent desire to stop using tramadol and other substances. Despite thinking about rehabilitation, she has not been able to pursue it due to the absence of support in her journey to recovery.	contributing to continuous non-medical use of tramadol. ▪ Emotional and environmental factors. • Availability and accessibility. **Multifaceted Consequences of non-medical use of tramadol.** ♦ Socio-economic and emotional consequences. ▪ Social and interpersonal consequences. ▪ Behavioural and legal consequences. ▪ Personal and professional impact. ▪ Economic burden of use. ▪ Emotional consequences. **The Complex framework of the rehabilitation process and its role in facilitating recovery from the non-medical use of tramadol.** ♦ Pre-rehabilitation attitudes and motivations. ▪ Contemplation and readiness for change and treatment. ▪ Influences on the decision to seek treatment. • Internal motivations for change. • External motivations for change. ♦ The rehabilitation journey: approaches, challenges and facilitators. ▪ Treatment approaches. • Alternative treatment. ▪ Challenges of rehabilitation access and success. • Psychological and emotional barriers. • Practical and systemic barriers.
008	The participant first used tramadol at around 16 years old, initially introduced to it by a friend. The dosage he took was 250 mg. His introduction to the drug occurred in the context of going to do galamsey (small-scale mining). He continued using tramadol because it gave him the courage to engage in the dangerous work of small-scale mining (galamsey). Initially hesitant, he found that after using tramadol, he was able to perform tasks like going under the earth to mine, which he wouldn't believe he	**Precursors and influences of the non-medical use of tramadol.** ♦ Patterns and characteristics of the non-medical use of tramadol ▪ Age at onset ▪ Patterns of use and dosage ♦ Introduction and initiation pathways to the non-medical use of tramadol. ▪ External factors • Peer influence and social network

	had done until he saw the physical evidence on his body. The drug made him feel capable of lifting heavy objects and performing physically demanding activities that he otherwise could not do. At the time, he had not trained as a plumber and was living as a “street boy” in Accra, hustling to survive, including working as a porter and doing commercial vehicle related work. Tramadol use profoundly affected his life, marked by the struggle to quit and deep emotional pain. His drug use, influenced by bad company, estranged him from friends and family, particularly his mother, and disrupted his academic pursuits. Physically, tramadol led to self-harm, including serious injuries like a neck wound and a broken tooth, often only realised after sobering up. His experience highlights the severe consequences of tramadol on his relationships and health. The participant was motivated to seek treatment for tramadol use by reflecting on the successes of his peers and a desire to disprove negative expectations linked to his drug use. He is very happy with his decision to seek help, feeling joy and gratitude for the chance to change his life and for the strength granted by God to do so. He is in residential rehabilitation, following a doctor's recommendation after discussing his situation with his uncle. In rehabilitation, he learns through listening to others read, as he cannot read or write himself. He acknowledges financial barriers to rehabilitation access and was previously unaware of such facilities. He's motivated by family support, particularly from his mother, and plans to pursue technical education to utilise his hands-on skills in plumbing and mining, where formal qualifications are required. In rehabilitation, the participant saw significant improvement in his life, gaining a sense of community and accepting his past. Once focused only on his close circle and tramadol, he now engages in plumbing work at the facility and realises the harm tramadol caused. This understanding helped him complete an apprenticeship. He feels mentally uplifted, envisioning a positive future and feeling grateful, especially after a classmate, who previously avoided him due to his lifestyle, acknowledged his progress.	dynamics. **Socio-cultural, environmental and knowledge factors contributing to continuous non-medical use of tramadol.** ♦ Knowledge and cognitive factors Influencing continuous non-medical use of tramadol. ▪ Positive subjective effects • Physical strength. • Euphoria • Courage ♦ Socio-cultural and environmental factors contributing to continuous non-medical use of tramadol. ▪ Emotional and environmental factors • Availability and accessibility • Coping mechanism **Multifaceted consequences of non-medical use of tramadol.** ♦ Individuality and profound impacts on overall well-being and life outcomes. ♦ Socio-economic and emotional consequences. ▪ Personal and professional impact. ▪ Social and interpersonal consequences. ▪ Emotional consequences. **The complex framework of the rehabilitation process and its role in facilitating recovery from the non-medical use of tramadol.** ♦ Pre-rehabilitation attitudes and motivations. ▪ Contemplation and readiness for change and treatment. ▪ Influences on the decision to seek treatment. • Internal motivations for change. • External motivations for change. ♦ The rehabilitation journey: approaches, challenges and facilitators. ▪ Treatment approaches. • Residential rehabilitation. ▪ Challenges of rehabilitation access and success • Practical and systemic barriers.

		• Barriers to success. ▪ Facilitators of Rehabilitation access and recovery. • Structural and systemic enablers. • Social and relational factors. ♦ Outcomes of rehabilitation and sustained recovery beyond treatment setting ▪ Positive feedback and personal and social outcomes • Recovery and holistic well-being. • Professional and economic advancement. • Personal and social transformation.
009	The participant began using tramadol at 12 years old, consuming it orally with tea, at times taking up to two sachets a day, which amounted to 20 tablets of 120 and 200 mg. He started using tramadol on his own, without being taught by anyone. His curiosity about the drug and observing older guys in his neighbourhood using it motivated him to try it himself. He describes these individuals as neighbours and senior brother-like figures, noting that his residence was near a wholesale point for tramadol in Kumasi. He continued using tramadol primarily for sexual enhancement and improved physical performance. His initial experience with the drug made him feel `high', acknowledging that effects vary among individuals and that he often overdosed. Discussing the cost, he noted that tramadol has become expensive, increasing from 50 pesewas to around 15-20 cedis per sachet, a significant rise compared to when he began using it. He also mentioned selling tramadol himself, even during his school days. The participant acknowledged that his friends, with whom he sometimes got into fights, also used tramadol. Tramadol use negatively impacted his schooling and work, leading him to quit school and become less productive. He introduced other students to drugs, causing problems and eventually distancing himself from school due to complaints. The drug increased his aggression, resulting in	**Precursors and influences of the non-medical use of tramadol.** ♦ Patterns and characteristics of the non-medical use of tramadol. ▪ Age at onset. ▪ Patterns of use and dosage. ♦ Introduction and initiation pathways to the non-medical use of tramadol. ▪ Intrapersonal factors. • Personal autonomy. • Prior substance use. ▪ External factors. • Peer influence and social network dynamics • Social determinants. **Socio-cultural, environmental and knowledge factors contributing to continuous non-medical use of tramadol.** ♦ Knowledge and cognitive factors influencing continuous non-medical use of tramadol. ▪ Positive subjective effects. • Physical strength. • Sexual experiences. • Euphoria ♦ Socio-cultural and environmental factors

	frequent neighbourhood fights with injuries and subsequent trouble with law enforcement. Emotionally, it caused regret and strained relationships with friends and family, especially his sister, due to the shame brought to their reputable family. However, their relationship had since improved. The participant highlights affordability as a major barrier to rehabilitation access. He contrasts his previous rehabilitation experiences, which felt more psychiatric and less focused on substance use recovery, with his current facility. Previously, his rehabilitation admissions were forced and involved minimal activities beyond basic routines and medication. In contrast, his current rehabilitation programme offers educational sessions about addiction and the 12 steps, providing a more comprehensive understanding of recovery. He also suggests that more energetic activities like table tennis or football could improve the rehabilitation experience. He learned about the rehabilitation facility through a friend from secondary school, now a medical doctor, whom he previously approached for financial assistance for tramadol. After expressing his readiness to discontinue use, this friend connected him with a psychiatric department contact, who provided the rehabilitation facility's details. He then conveyed his sincere intention to stop using tramadol to his father, using the provided contact to pursue treatment. Initially reluctant to discontinue tramadol despite its impact on his respected family and advice from his well-liked community, he eventually decided to enrol on his own accord, feeling ready to change. Prior to this, he had been to multiple rehabilitation centres, including notable ones in Accra, and Kumasi. In rehabilitation, the participant was supported by a peer with a similar but less severe substance use background, aiding his successful completion of the programme. His active participation in daily activities and routines significantly improved his mental and emotional well-being. Volunteering as an assistant to the facility manager has been fulfilling, contributing to his positive view of staying in the rehabilitation facility. He acknowledges the transformative impact of rehab on his life, feeling healed and content with his decision to seek treatment.	contributing to continuous non-medical use of tramadol. ▪ Emotional and environmental factors. • Availability and accessibility. • Economic motivations. **Multifaceted consequences of non-medical use of tramadol** ♦ Individuality and profound impacts on overall-wellbeing and life outcomes. ♦ Socio-economic consequences. ▪ Personal and professional impact. ▪ Social and interpersonal consequences. ▪ Behavioural and legal consequences. ▪ Emotional consequences. **The complex framework of the rehabilitation process and its role in facilitating recovery from the non-medical use of tramadol.** ♦ Pre-rehabilitation attitudes and motivations. ▪ Contemplation and readiness for change and treatment. ▪ Influences on the decision to seek treatment. • Internal motivations for change. ♦ The rehabilitation journey: approaches, barriers and facilitators ▪ Treatment approaches. • Residential rehabilitation. ▪ Barriers to rehabilitation access and success. • Psychological and emotional barriers. • Practical and systemic barriers. • Barriers to success. ▪ Facilitators of rehabilitation access and recovery. • Structural and systemic enablers • Social and relational factors

		♦ Outcomes of rehabilitation and sustained recovery beyond treatment setting. ▪ Positive feedback and personal and social outcomes. • Recovery and holistic well-being. ▪ Post-rehabilitation outcomes and challenges.
010	The participant started using tramadol at age 13, purchasing it from a `ghetto' at where she lives and consuming it with an energy drink, taking no more than 250mg or two tablets daily. Her initial use was driven by curiosity and a desire to experience its effects, influenced by seeing her friends use it. Upon trying tramadol, she found that she liked it and subsequently became addicted. The participant used tramadol to escape problems and stress, giving her a sense of elation. She recognised its intended use for post-surgery pain. Unlike others who felt it boosted their work capacity, it weakened her physically acknowledging that it works differently for everybody. She highlighted tramadol's ability to help people cope with personal and familial stress. Tramadol use led to financial difficulties, with her income primarily spent on the drug. It has strained her family relationships due to her dishonesty about her use and noticeable behavioural changes like quietness and argumentativeness. Professionally, tramadol affects her work as a hairdressing apprentice, causing dizziness and lethargy, especially on Mondays following weekend use. Her drug use makes her withdrawn and indifferent to others. She is aware of rehabilitation and support services for drug use, having learned about them from televised interviews of girls from `ghettos' sharing their drug use stories. Her hesitation to seek treatment stems from not knowing where to find such facilities and concerns about confidentiality. She fears being recorded or publicised if she goes to a	**Precursors and influences of the non-medical use of tramadol.** ♦ Patterns and characteristics of the non-medical use of tramadol ▪ Age at onset ▪ Patterns of use and dosage ♦ Introduction and initiation pathways to the non-medical use of tramadol. ▪ Intrapersonal factors • Personal autonomy ▪ External factors • Peer influence and peer dynamics • Social determnants **Socio-cultural, environmental and knowledge factors contributing to continuous non-medical use of tramadol.** ♦ Knowledge and cognitive factors influencing continuous non-medical use of tramadol. ▪ Positive Subjective Effects • Euphoria • Physical strength. ♦ Socio-cultural and environmental factors contributing to continuous non-medical use of tramadol. ▪ Emotional and environmental Factors • Coping mechanism • Availability and accessibility **Multifaceted consequences of non-medical use of tramadol** ♦ Individuality and profound impacts on overall

	rehabilitation centre, as seen on TV. The participant suggests that assurance of confidentiality could encourage her to pursue treatment.	well-being and life outcomes ♦ Socio-economic and emotional consequences ▪ Personal and professional impact. ▪ Social and interpersonal consequences. ▪ Behavioural and legal consequences. **The Complex framework of the rehabilitation process and its role in facilitating recovery from the non-medical use of tramadol.** ▪ Barriers to rehabilitation access and success • Psychological and emotional barriers • Practical and systemic barriers ♦ Facilitators of rehabilitation access and recovery. • Structural and systemic enablers
011	The participant started using tramadol at 13, buying it from a` ghetto' in her area of residence and a pharmacy, and consuming two 120 mg tablets daily. She was introduced to tramadol a week after using Diazepam-10, when acquaintances took her to Zongo, where she saw boys using various substances. Her curiosity about these substances led her to learn their names and about their use from the individuals present. She continued using tramadol as it made her feel happy and elated, more sociable, have courage to disobey authority leading to continuous use and experimentation with other substances like cigarettes and weed. Despite providing energy, it caused severe headaches. The cost of tramadol according to her had increased, now ranging from 12 to 15 cedis per sachet, compared to the previous 10 cedis. Tramadol use caused serious health issues, including heart problems and stomach pain, leading to expensive hospital treatments. It negatively impacted her academics, making her drop out of school and spend time in the `ghetto'. Her work as an apprentice suffered, and she behaved disrespectfully towards superiors under the drug's influence. Tramadol strained her relationships with her family, causing her parents' distress	**Precursors and influences of the non-medical use of tramadol.** ♦ Patterns and characteristics of the non-medical use of tramadol ▪ Age at onset ▪ Patterns of use and dosage ♦ Introduction and initiation pathways to the non-medical use of tramadol. ▪ Intrapersonal factors • Prior substance use ▪ External factors • Peer influence and peer dynamics • Social determinants **Socio-cultural, environmental and knowledge factors contributing to continuous non-medical use of tramadol.** ♦ Knowledge and cognitive factors influencing continuous non-medical use of tramadol. ▪ Positive subjective effects • Euphoria • Courage • Physical strength

	and impacting her relationship with her siblings. She experienced police arrests related to her use and getting into fights, and while she still has friends, they discuss her drug use behind her back without confronting her and for this reason she distances herself from them. She is open to using support and rehabilitation services to discontinue tramadol use and is even willing to appear on television for help. However, she is unsure where to find these services and cannot afford them. Encouraged by a friend, she joined the research, hoping it might benefit her future. Despite her desire to stop using tramadol, she feels lost about getting the necessary help.	♦ Socio-cultural and environmental factors contributing to continuous non-medical use of tramadol. ▪ Emotional and environmental factors • Availability and accessibility **Multifaceted consequences of non-medical use of tramadol.** ♦ Socio-economic and emotional consequences. ▪ Personal and professional impact. ▪ Economic burden of use. ▪ Behavioural and legal consequences. ▪ Emotional consequences ▪ Social and interpersonal consequences **The complex framework of the rehabilitation process and its role in facilitating recovery from the non-medical use of tramadol.** ♦ Pre-rehabilitation attitude and motivation ▪ Contemplation and readiness for change and treatment ♦ The rehabilitation journey: approaches, barriers and facilitators ▪ Treatment approaches • Alternative treatment ▪ Barriers to rehabilitation access and success. • Psychological and emotional barriers. • Practical and systemic barriers. ♦ Facilitators of rehabilitation access and recovery ▪ Social and relational factors
012	The participant started using tramadol at 26, buying it from vendors in Tema and from individuals selling drinks, painkillers, and aphrodisiacs. He took it orally with energy drinks or alcohol, starting with 50mg tablets. Seeking a stronger effect than what alcohol and cigarettes offered due to high tolerance for other drugs, he was introduced to tramadol by a friend	**Precursors and influences of the non-medical use of tramadol.** ♦ Patterns and characteristics of the non-medical use of tramadol ▪ Age at onset ▪ Patterns of use and dosage ♦ Introduction and initiation pathways to the

	and used it to enhance his party experience. Tramadol was not available at the party and was sourced from town. He continued using tramadol post-rehab, partly rationalising that its damage would be less than that of `crack' cocaine because of its prescription status. He used it to manage increased tolerance to `crack' and for sleep. Additionally, tramadol helped him cope with feelings of guilt, loss, and physical limitations from a past injury. The participant's tramadol use significantly impacted his life, leading to substantial financial strain as he spent all his money on drugs, neglecting necessities like clothes and food. He even sold personal items to fund his drug use. This behaviour resulted in legal troubles, including spending time in jail until his family arranged bail. His tramadol use also negatively affected his personal relationships, including with his child, whom he has been unable to see regularly, feeling like an absentee father. Academically, his drug use caused him to change schools multiple times and hindered his IT education, as he missed exams and didn't keep up with evolving technology. Professionally, his addiction led to being sacked from a family business for financial misconduct and failing to complete an apprenticeship due to relapse. His tramadol use also resulted in harmful interactions with women and a lack of commitment in romantic relationships. Additionally, he faced conflicts with authorities, including being caught in police raids at ghettos, leading to injuries and arrests. He acknowledged tramadol use as a burdensome addiction, akin to a disease requiring constant 'curing' through drug use, reflecting on the lack of enjoyment in drug use and how it became a necessity rather than a choice. His primary motivation for seeking treatment is his son, fearing the impact of his addiction on their relationship and his son's future perception of him. He expressed regret over his worsening addiction and its potential severe consequences. Having been to rehabilitation multiple times, he emphasised the importance and difficulty of the detoxification process, viewing it as crucial for recovery. His past rehabilitation experiences include several months in rehabilitation, with one of his rehabilitation experiences cut short by COVID-19 and family needs.	non-medical use of tramadol. ▪ Intrapersonal factors • Prior substance use ▪ External factors • Peer influence and social network dynamics • Social determinants **Socio-cultural, environmental and knowledge factors contributing to continuous non-medical use of tramadol.** ♦ Knowledge and cognitive factors influencing continuous non-medical use of tramadol. ▪ Perceived less harm associated with tramadol. ▪ Positive subjective effects • Euphoria ♦ Socio-cultural and environmental factors contributing to continuous non-medical use of tramadol. ▪ Emotional and environmental factors • Availability and accessibility • Coping mechanism **Multifaceted consequences of non-medical use of tramadol.** ♦ Psychosocial and economic consequences ▪ Personal and professional impact. ▪ Social and interpersonal consequences. ▪ Vulnerability and victimisation. ▪ Behavioural and legal consequences. ▪ Economic burden of use. ▪ Emotional consequences. **The complex framework of the rehabilitation process and its role in facilitating recovery from the non-medical use of tramadol.** ♦ Pre-rehabilitation attitudes and motivations ▪ Contemplation and readiness for change and treatment. ▪ Influences on the decision to seek treatment.

	The participant is currently engaged in a residential rehabilitation for tramadol use, initially lacking willpower for recovery. He highlighted the need for external support meetings and suggested recreational activities to enhance rehabilitation experiences. He accessed rehabilitation through personal recommendations and emphasised the importance of family support, despite relapses and tensions. His motivation to stay sober includes maintaining family relationships and being responsible for his child. He found rehabilitation beneficial for understanding his relapse patterns and gaining access to literature and resources unavailable at home. He engaged in reading and practical activities like attempting to repair a jukebox. The programme's psychiatric support and counselling, along with assignments, significantly contributed to his mental and emotional well-being.	• Internal motivation for change • External motivations for change ♦ The rehabilitation journey: approaches, barriers and facilitators. ▪ Treatment approaches • Residential rehabilitation ▪ Barriers to rehabilitation access and success • Practical and systemic barriers • Barriers to success ▪ Facilitators to access and recovery • Personal and behavioural facilitators • Social and relational factors • Structural and systemic enablers ♦ Outcomes of rehabilitation and sustained recovery beyond treatment setting. ▪ Positive feedback, personal and social outcomes. • Personal and social transformation • Recovery and holistic well-being ▪ Post-rehabilitation outcomes and challenges.
013	The participant started using tramadol at age 24, initially buying it in bulk from Nigeria and selling it to others. He took tramadol orally with energy drinks or Nescafe, consuming five sachets a day, each containing ten 250 mg tablets. He turned to tramadol because the tolerance level for his other drug use was high, and he needed something stronger to feel the desired effects. His introduction to tramadol occurred during his travels to Togo to seek greener pastures, where he befriended someone from	**Precursors and influences of the non-medical use of tramadol.** ♦ Patterns and characteristics of the non-medical use of tramadol ▪ Age at onset ▪ Patterns of use and dosage ♦ Introduction and initiation pathways to the non-medical use of tramadol. ▪ Intrapersonal factors

	Benin who introduced him to the drug. He describes feeling unsupported in life, with no one to share his problems with at the time. He continued using tramadol for the boldness and courage it provided, especially for actions he would not normally undertake. He was influenced by a friend's suggestion that it would enhance his boldness and improve his sexual experiences. His continued use was also facilitated by easy access to the drug, as he was involved in selling it in bulk, making it readily available for his personal use. This business venture, started due to a lack of job opportunities and a desire for income, led to a steady supply of tramadol, reinforcing his continued use. Tramadol use severely impacted his life, leading to financial struggles, strained family relationships, feelings of hopelessness and neglect of responsibilities. His addiction drove him to steal and face legal issues and paying legal fees. He abandoned legitimate work for tramadol sales, distancing himself from friends and family due to a false sense of superiority. Despite multiple police remands, he often found help through divine intervention or family support. The participant regrets his actions under tramadol's influence and advocates for a compassionate, non-stigmatising approach to treating drug addiction, recognising it as a chronic disease. The participant's decision to seek rehabilitation for tramadol use was influenced by self-realisation and comparison of his life to that of others. He saw that younger people he had helped were progressing in life while he was stagnating due to his addiction. This led to a feeling of foolishness and the recognition that he needed help. Ultimately, he attributes his entry into rehabilitation to divine intervention and family support. He had misconceptions about rehabilitation, initially thinking it involved a machine to detoxify his body. He learned about rehabilitation from a fellow tramadol using friend and had once considered being jailed to quit using but this idea was dismissed as he had not committed a crime. Upon entering rehabilitation, he realised it was different from his expectations. He emphasises the need for financial support and awareness for rehabilitation programmes and describes tasks like retrieving those who leave rehab to return to the ghetto. He spent a transformative year in a rehabilitation programme, extending his stay to fully commit to recovery. He realised success depends on personal	• Prior substance use ▪ External factors • Peer influence and social network dynamics • Social determinants **Socio-cultural, environmental and knowledge factors contributing to continuous non-medical use of tramadol.** ♦ Knowledge and cognitive factors influencing continuous non-medical use of tramadol. ▪ Perceived less harm. ▪ Positive subjective effects • Euphoria • Physical strength • Courage ♦ Socio-cultural and environmental factors contributing to continuous non-medical use of tramadol. ▪ Emotional and environmental factors • Availability and accessibility ▪ Social factors • Enablers **Multifaceted consequences of non-medical use of tramadol** ♦ Socio-economic and emotional consequences ▪ Economic burden of use ▪ Personal and professional impact ▪ Social and interpersonal consequences ▪ Behavioural and legal consequences ▪ Emotional consequences **The Complex framework of the rehabilitation process and its role in facilitating recovery from the non-medical use of tramadol.** ♦ Pre-rehabilitation attitudes and motivations ▪ Contemplation and readiness for change and treatment. ▪ Influences on the decision to seek treatment. • Internal motivations for

	commitment to change, learning to humble himself and avoid negative influences. He highly values and recommends the rehabilitation programme, acknowledging its critical role in overcoming addiction. His recovery was also supported by a god-fearing benefactor, who understood and forgave his past actions, contributing significantly to his rehabilitation journey. Rehabilitation profoundly changed the participant's life, teaching him the importance of humility, open-mindedness, and reliance on a higher power for overcoming addiction. Lessons from books by recovering addicts were instrumental. The experience improved their family dynamics, especially with their children, and strengthened their faith, helping them resist post-rehabilitation temptations. Rehabilitation reshaped their outlook, focusing him on long-term impacts and the well-being of others.	change • External motivations for change ♦ The rehabilitation journey: approaches, barriers and facilitators. ▪ Treatment approaches • Residential rehabilitation ▪ Barriers to rehabilitation access and success. • Psychological and emotional barriers • Practical and systemic barriers • Barriers to success ▪ Facilitators of rehabilitation access and recovery • Structural and systemic enablers • Social and relational factors • Personal and behavioural facilitators ♦ Outcomes of rehabilitation and sustained recovery beyond treatment setting ▪ Positive feedback, personal and social outcomes • Recovery and holistic well-being • Personal and social transformation. ▪ Post-rehabilitation outcomes and challenges.
014	The participant began using tramadol at 48 years old, influenced by friends who also used it. Initially taking six to five 50 mg tablets daily, she was introduced to tramadol after stopping cocaine use. Relapse occurred upon returning home after a seven-month period due to continued influence from friends used tramadol. Consequently, the participant now chooses to distance herself from friends who encourage	**Precursors and influences of the non-medical use of tramadol.** ♦ Patterns and characteristics of the non-medical use of tramadol ▪ Age at onset ▪ Patterns of use and dosage ♦ Introduction and Initiation pathways to the non-

	drug use. She used to buy tramadol in a ghetto in area she lived in the past. The participant continued using tramadol as it was perceived as better than cocaine. Unlike cocaine, tramadol allowed her to maintain personal hygiene, eat, sleep, and appear tidy. Particularly, it enabled her to sleep for extended hours. The switch from cocaine to tramadol was motivated by these perceived benefits. Additionally, tramadol provided the physical strength necessary for work, especially in laundry services she provided. This practical benefit was significant enough that clients would sometimes pay for her tramadol, knowing it increased her work capacity. The drug was readily available in her vicinity, with prices varying between 10 and 12 cedis. Tramadol addiction devastated the participant's life, causing financial collapse from selling personal items for drug money and altering her appearance. This addiction led to a divorce and strained relationships with children and extended family, who avoided supporting or associating with her. The drug use also caused health issues, including severe heart palpitations during conflicts, further alienating her from family and impacting their well-being. The participant expressed happiness and gratitude for being healed of addiction, feeling human again after a period of feeling disconnected. The decision to seek treatment was influenced by severe health issues like breathing difficulty, inability to eat or sleep, and the realisation that continuing drug use could lead to death. The participant underwent rehabilitation at House St Francis Clinic twice, where she experienced detoxification and engaged in prayer and learning, leading to a transformative process in their life. Initially reluctant to enter rehabilitation due to a fear of tramadol withdrawal and its potential lethality, the participant often fled from enrolment opportunities. Despite knowing the dangers of tramadol, she found it hard to contemplate life without it. However, through prayer and a change in mindset, she eventually embraced rehabilitation and completed the programme successfully. She now advocates for rehabilitation services, recognising the fatal risks associated with continued tramadol use and aware of numerous deaths from its use. In rehabilitation, the participant improved her health with vitamins and fruits and engaged in various activities and listening to	medical use of tramadol. ▪ Intrapersonal factors • Prior substance use ▪ External factors • Peer influence and social network dynamics • Social determinants **Socio-cultural, environmental and knowledge factors contributing to continuous non-medical use of tramadol.** ♦ Knowledge and cognitive factors Influencing continuous non-medical use of tramadol. ▪ Positive subjective effects • Physical strength. • Euphoria • Courage ♦ Socio-cultural and environmental factors contributing to continuous non-medical use of tramadol. ▪ Emotional and environmental factors • Availability and accessibility • Coping mechanism **Multifaceted consequences of non-medical use of tramadol** ♦ Individuality and profound impacts on overall well-being and life outcomes ♦ Socio-economic consequences ▪ Vulnerability and victimisation ▪ Social and interpersonal consequences ▪ Behavioural and legal consequences ▪ Economic burden of use. **The Complex framework of the rehabilitation process and its role in facilitating recovery from the non-medical use of tramadol.** ♦ Pre-rehabilitation attitude and motivations ▪ Influences on the decision to seek treatment. • Internal motivations for change

	music. She learned about addiction's effects on relationships and behaviour, particularly the risk of theft for drug money. Rehabilitation transformed her lifestyle, teaching personal hygiene and cleanliness. However, despite progress, she relapsed due to peer influence after leaving rehabilitation. She now avoids anger to prevent relapse triggers, using laughter as a coping mechanism.	• External motivations for change ♦ The rehabilitation journey: approaches, barriers and facilitators ▪ Treatment approaches Residential rehabilitation ▪ Barriers to rehabilitation access and success • Psychological and emotional barriers • Practical and systemic barriers • Barriers to success ▪ Facilitators of rehabilitation access and recovery • Social and relational factors • Personal and behavioural facilitators ♦ Outcomes of rehabilitation and sustained recovery beyond treatment setting. ▪ Positive feedback, personal and social outcomes • Recovery and holistic well-being. • Personal and social transformation ▪ Post-rehabilitation outcomes and challenges
015	The participant began using tramadol at 18, purchasing it from vendors selling painkillers and aphrodisiacs. She chewed up to 30 tablets daily of whaterver dosage strengths were available to her. Her substance use started with drinking pito (alcohol), a cultural alcoholic beverage, from a young age. After secondary school, her alcohol consumption caused family conflicts due to its scent and her religious background. A friend introduced her to tramadol, indicating that it was odourless and would not be detected like alcohol.	**Precursors and influences of the non-medical use of tramadol.** ♦ Patterns and characteristics of the non-medical use of tramadol ▪ Age at onset ▪ Patterns of use and dosage ♦ Introduction and initiation pathways to the non-medical use of tramadol. ▪ Intrapersonal factors

	She continued using tramadol because it made her feel bold and able to do things she would not normally do, including sleeping on the streets and engaging in solitary sexual activities. The drug provided a sense of happiness and an escape from fears and inhibitions. This behaviour escalated after a traumatic experience involving her newborn child with deformities, leading them to seek tramadol in the ghetto to forget their pain. They found tramadol easily accessible, often purchasing it from "Gawo" vendors selling aphrodisiacs and painkillers, as pharmacies would not sell it without a prescription. The participant was willing to travel significant distances to obtain tramadol, underscoring its importance in her life. Tramadol addiction profoundly impacted the participant's life, leading to financial mismanagement, severe illness, and healthcare costs from hospitalisation. It caused the loss of a baby due to use during pregnancy, resulting in emotional trauma and further drug use for coping. The addiction impaired their education and career prospects, contributing to joblessness and appearance issues. It also resulted in the dissolution of her marriage, strained relationships with her children, and nearly led to suicide, underscoring the devastating effects of the addiction on multiple aspects of their life. The participant after multiple attempts of trying to seek treatment through various mediums, including visiting a native doctor for traditional medicine. A critical health crisis and a friend's death due to drug use motivated her to seek rehabilitation. She felt both relieved and sad about this decision, recognising her sister's tireless efforts to find help. Grateful for their sister's support and driven by a desire for change, they embraced rehab as an opportunity for a fresh start and to overcome their addiction. The participant discussed the financial challenges of accessing tramadol treatment, emphasising the need for government support, especially for women. Initially unaware of the nature of rehabilitation, she reported finding it effective once admitted. Her siblings' persistent attempts to help, including unconventional methods, eventually led to successful rehabilitation. The participant stressed the importance of recognising one's addiction and desire to change as key to benefiting from rehabilitation, despite their siblings' frustration over previous failed attempts. Rehabilitation was transformative for the	• Prior substance use ▪ External factors • Peer influence and social network dynamics • Social determinants **Socio-cultural, environmental and knowledge factors contributing to continuous non-medical use of tramadol.** ♦ Knowledge and cognitive factors influencing continuous non-medical use of tramadol. ▪ Positive subjective effects • Euphoria • Courage ♦ Socio-cultural and environmental factors contributing to continuous non-medical use of tramadol. ▪ Emotional and environmental factors • Availability and accessibility • Coping mechanism **Multifaceted consequences of non-medical use of tramadol** ♦ Individuality and profound impacts on overall well-being and life outcomes ♦ Socio-economic and emotional consequences ▪ Economic burden of use ▪ Personal and professional impact ▪ Social and interpersonal consequences ▪ Vulnerability and victimisation ▪ Behavioural and legal consequences ▪ Emotional consequences **The Complex framework of the rehabilitation process and its role in facilitating recovery from the non-medical use of tramadol.** ♦ Pre-rehabilitation attitudes and motivations ▪ Influences on the decision to seek treatment. • External motivations for change

	participant, leading to a teaching job and renewed educational aspirations. It greatly improved their emotional and mental well-being, teaching them to cope with emotional challenges without resorting to substances. The participant reconnected with her children after a long separation and learned the importance of self-care and discipline. She realised that rehabilitation not only addressed her addiction but also facilitated a significant positive change in her personality and lifestyle. The structured routine in rehab taught her self-care and discipline, contrasting her previous life of neglecting basic hygiene and personal needs due to tramadol use.	• Internal motivations for ♦ The rehabilitation journey: approaches, barriers and facilitators ▪ Treatment approaches • Alternative treatment • Residential rehabilitation ▪ Barriers to rehabilitation access and success • Practical and systemic barriers • Barriers to success ▪ Facilitators of rehabilitation and recovery • Social and relational factors ♦ Outcomes of rehabilitation and sustained recovery beyond treatment setting. ▪ Positive feedback, personal and social outcomes • Recovery and holistic wellbeing • Professional and economic advancement • Personal and social transformation
016	The participant began using tramadol at 17 years old, obtaining it from drug stores, markets, and individuals involved in the tramadol business. She took up to 15 sachets a day, using various dosages including 25 and 50 mg. Her journey to tramadol use started with alcohol; due to the behaviour it induced and her living in an area where tramadol was accessible. She continued using tramadol for the euphoria it provided and to enhance work performance. Her increasing dependence led to her using various substances, including tramadol, codeine, and ecstasy, to escape negative experiences and memories. The affordability and easy availability of tramadol made it her preferred choice. Despite her	**Precursors and influences of the non-medical use of tramadol.** ♦ Patterns and characteristics of the non-medical use of tramadol. ▪ Age at onset ▪ Patterns of use and dosage ♦ Introduction and Initiation Pathways to the Non-medical use of Tramadol. ▪ Intrapersonal factors • Prior substance use ▪ External factors • Peer influence and social network

	employer's initial tolerance of her drug use for productivity, her escalating addiction ultimately hindered her apprenticeship completion. The participant's tramadol addiction led to sexual assaults, health complications including a lost pregnancy and surgery, and disrupted education. Her addiction-driven behaviours like stealing strained family relationships and resulted in social isolation. Legal issues arose, but a judge showed empathy for her addiction-driven actions. The stigma of addiction caused further social ostracization and emotional distress. She experienced challenging withdrawals from tramadol use, undergoing detox with drips and other treatments to ease withdrawal pain, and found the recovery process difficult. She realised the importance of readiness in recovery, noting that those who are ready for treatment benefit more than those who are not. She felt liberated by her decision to seek treatment, appreciating the normalcy and appreciation they now experience in daily life. Reflecting on their choice, she felt good about deciding to stop using tramadol, a decision she learned in rehab was crucial for successful recovery. Her experiences, including hitting rock bottom, led to a profound desire for change, motivated by love for their family and child. This desire, coupled with prayer and family support, played a key role in their journey to rehab and recovery. The participant emphasised the challenge of accessing rehabilitation due to financial constraints, especially for those from impoverished backgrounds. She contrasted free rehabilitation centres, which often lack resources and proper care, with paid facilities that offer better support and treatment. According to her, awareness of rehabilitation options is high among those struggling with addiction, but the cost is a significant barrier. The need for financial support to make rehabilitation accessible to all, regardless of economic status, was highlighted as crucial for successful recovery. She highlighted the key role of personal commitment and openness in successful rehabilitation from tramadol use and stressed that a serious and willing attitude towards rehabilitation is essential for recovery and preventing relapse. Additionally, she mentioned challenges in sustaining family support, as her siblings initially attempted to help but eventually became weary, delaying access to rehabilitation.	dynamics **Socio-cultural, environmental and knowledge factors contributing to continuous non-medical use of tramadol.** ♦ Knowledge and cognitive factors Influencing continuous non-medical use of tramadol. ▪ Positive subjective effects • Physical strength. • Euphoria ♦ Socio-cultural and environmental factors contributing to continuous non-medical use of tramadol. ▪ Emotional and environmental factors • Availability and accessibility • Coping mechanism ▪ Social factors • Enablers **Multifaceted consequences of non-medical use of tramadol** ♦ Individuality and profound impacts on overall well-being and life outcomes ♦ Socio-economic consequences ▪ Personal and professional impact ▪ Vulnerability and victimisation ▪ Social and interpersonal consequences ▪ Behavioural and legal consequences ▪ Emotional consequences. **The Complex framework of the rehabilitation process and its role in facilitating recovery from the non-medical use of tramadol.** ♦ Pre-rehabilitation attitudes and motivations. ▪ Contemplation and readiness for change and treatment. ▪ Influences on the decision to seek treatment. • External motivations for change ♦ The rehabilitation journey: approaches, barriers and facilitators

	She highly recommends rehabilitation, crediting facilities like Pantang Hospital for their recovery from tramadol addiction. She highlights the programme's structured routines, educational resources, and activities that uncovered talents and taught life skills. The rehabilitation experience transformed her mindset, enabling her to control drug cravings and lead a disciplined life. Her recovery inspired her to work in rehabilitation, helping others overcome addiction. The participant emphasises the importance of admitting the problem and the effectiveness of comprehensive rehabilitation programmes in facilitating lasting recovery.	▪ Treatment approaches • Residential rehabilitation ▪ Barriers to rehabilitation access and success • Psychological and emotional barriers • Practical and systemic barriers • Barriers to success ▪ Facilitators of rehabilitation access and recovery • Structural and systemic enablers • Social and relational factors • Personal and behavioural facilitators ♦ Outcomes of rehabilitation and sustained recovery beyond treatment setting. ▪ Positive feedback, personal and social outcomes • Personal and social transformation • Recovery and holistic well-being

Appendix 19: Patterns and characteristics of the non-medical use of tramadol

Participant	Age of onset (approx.)	Place of purchase	Mode of intake	How often and how many	Dosage strength (mg)
001	15	Ghetto (Tinka), Alabaa and provision store	Oral (mixed with the energy drink).	Every blessed day. 2-Seven tablets of the 120 mg in a day	Started with 50 currently using 120.
002	13	Ghetto (Tinka), Alabaa	Oral (mixed with a normal drink.	Every day. 1-Three tablets in a day.	Started with 50 currently using 250.
003	27	Drug store/Licensed chemical shop	Oral (mixed it with some drink)	2-Ten tablets in 5 days which meant they had minimised using it.	Started with 120 currently using 500.
004	29	Ghetto (Tinka), Alabaa	Oral (mixed with some drink).	1-Around 4 a day.	120
005	20	Ghetto	Oral (mixed with a sugary drink.	Everyday	225

Participant	Age of onset (approx.)	Place of purchase	Mode of intake	How often and how many	Dosage strength (mg)
006	17	Ghetto (Tinka), Alabaa	Oral (mixed with mashed kenkey	2- Fifteen tablets a day	250-50 and 120
007	16	Ghetto, Kotwi	_____	1-Four tablets a day every day.	120
008	16	Drug store/Licensed chemical shop	Oral (I use porridge or an energy drink)	1-I could take 4 of the 250 mg a day.	250
009	12	Ghetto, Alabaa	Oral (taken with my tea)	I could take 2 sachets a day, which is 20 tablets.	120 and 200
010	13	Ghetto, Atasemanso	Oral (taken with an energy drink).	Not more than two tablets every day	250
011	13	Ghetto, Atasemanso and Pharmacy	_____	Two tablets of 120 mg a day	120
012	26	Ghetto, Tema and abokyi (people who carry and sell drinks and other painkillers and aphrodisiacs)	Oral (taken with alcohol and energy drinks (But mostly energy drinks)	Not every day, but they used it when they did not have enough money to buy cocaine.	50

Participant	Age of onset (approx.)	Place of purchase	Mode of intake	How often and how many	Dosage strength (mg)
012	26	Ghetto, Tema and abokyi (people who carry and sell drinks and other painkillers and aphrodisiacs)	Oral (taken with alcohol and energy drinks (But mostly energy drinks)	Not every day, but they used it when they did not have enough money to buy cocaine.	50
013	24	Bought it in bulk from Nigeria and sold it to others.	Oral (taken with energy drinks or Nescafe)	Five sachets in a day, with each sachet containing ten tablets.	250
014	48	Ghetto, Sraha	Oral	Six or five tablets every day	50
015	18	Gawo- people who sell aphrodisiacs and other painkillers, moving from one place to another.	Oral (Chewing tablets and drinking a small amount of water	Up to 30 tablets a day	Took them without checking what the dosage was.
016	17	Drug stores, markets, and people involved in tramadol business houses.	Oral	15 sachets a day	25, 50 and whatever dosages are available to them.