

UNIVERSITY OF GHANA
SCHOOL OF PUBLIC HEALTH
COLLEGE OF HEALTH SCIENCE



**LEVELS OF PRESCRIPTION DRUG ABUSE AND ASSOCIATED FACTORS AMONG
COMMUNITY PHARMACY STAFF IN THE LEDZOKUKU MUNICIPALITY, ACCRA,
GHANA**

**THIS DISSERTATION IS SUBMITTED TO THE UNIVERSITY OF GHANA, LEGON,
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MASTER OF PUBLIC HEALTH DEGREE**

BY

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DECLARATION

I, Deborah Enyan, hereby declare that this dissertation is my original research towards the Master of Public Health Degree and that, to the best of my knowledge, it contains no material previously published by another person nor material which has been accepted for the award of any other degree of the University, except where due acknowledgment has been made in the text.

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DEDICATION

I dedicate this work to my father, Mr. Peter Enyan, for his constant support and love.



ACKNOWLEDGEMENT

I wish to offer my profound gratitude to God for bestowing His hands on me in completing this research successfully. I am also grateful to my supervisor, Professor John Ganle for his patience and guidance throughout this work. I am thankful to the staff and the Department of Population, Family and Reproductive Health of the School of Public Health for all the knowledge they have imparted in me.



ABSTRACT

Background: Prescription drug abuse, defined as the misuse of legally prescribed medications, is a growing concern among healthcare professionals, particularly community pharmacy staff as it poses significant risks to patient safety and professional ethics. Despite its global prevalence, limited research has been conducted on the levels and contributing factors of prescription drug abuse among community pharmacy staff in Ghana.

Objective: This study aimed to determine the level and risk factors of prescription drug abuse among community pharmacy staff in the Ledzokuku Municipality in Accra, Ghana.

Methods: A cross-sectional quantitative survey was conducted using structured questionnaires administered by trained research assistants to 423 respondents. Prescription drug abuse was assessed using the Prescription Drug Abuse Screening Test (DAST-28). Participants were categorised into three levels based on their total DAST-28 scores: low abuse (0–3), moderate abuse (4–10), and high abuse (11–28). Descriptive statistics were used to summarise demographic characteristics, while cross-tabulation and one-way ANOVA were used to examine patterns and compare means across different groups. Ordinal logistic regression was applied to identify predictors of drug abuse. A 95% confidence level was used, and a p-value of less than or equal to 0.05 was considered statistically significant.

Findings: The study found that 54% of participants reported low levels of drug abuse, 34% moderate, and 12% high abuse. Antimicrobials (41.1%) and opioids (40.0%) were the most commonly abused drugs. Medical Counter Assistants exhibited the highest abuse levels (18% high, 42% moderate), while Community Pharmacists had lower but notable levels (8% high, 29% moderate).

After adjusting for covariates, significant predictors of drug abuse included age, marital status, education, experience, workplace stress, job satisfaction, and mental health distress. Participants aged 26–35 had the highest odds of drug abuse (AOR = 2.50, 95% CI [1.80, 3.20], $p < .001$). Married individuals were less likely to abuse drugs (AOR = 0.65, 95% CI [0.45, 0.90], $p = .012$), while fewer years of experience increased the risk of abuse (AOR = 1.90, 95% CI [1.40, 2.60], $p < .001$). High workplace stress (AOR = 2.20, 95% CI [1.60, 3.00], $p < .001$) and mental health distress (AOR = 2.40, 95% CI [1.80, 3.10], $p < .001$) were strongly associated with drug abuse.

Conclusion: The findings highlight prescription drug abuse as a concern among community pharmacy staff in Ledzokuku. While prevalence was not extremely high, younger staff and lower-ranking employees were more vulnerable. Workplace stress, job dissatisfaction, and mental health challenges emerged as key drivers. These results emphasise the importance of targeted interventions to reduce risks and promote safer pharmacy practice environments.

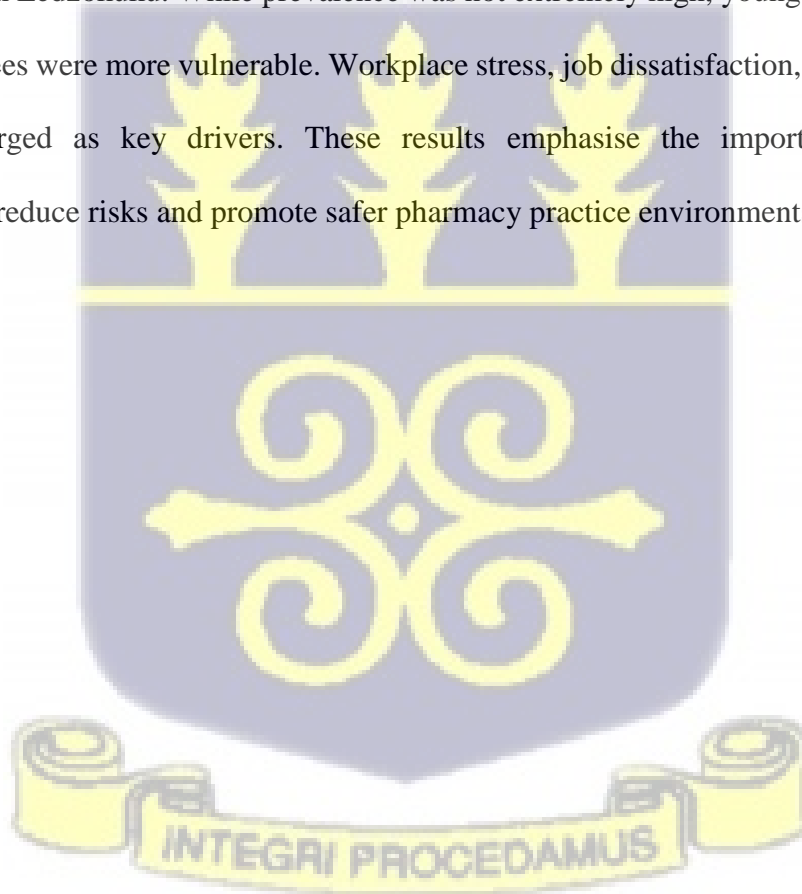


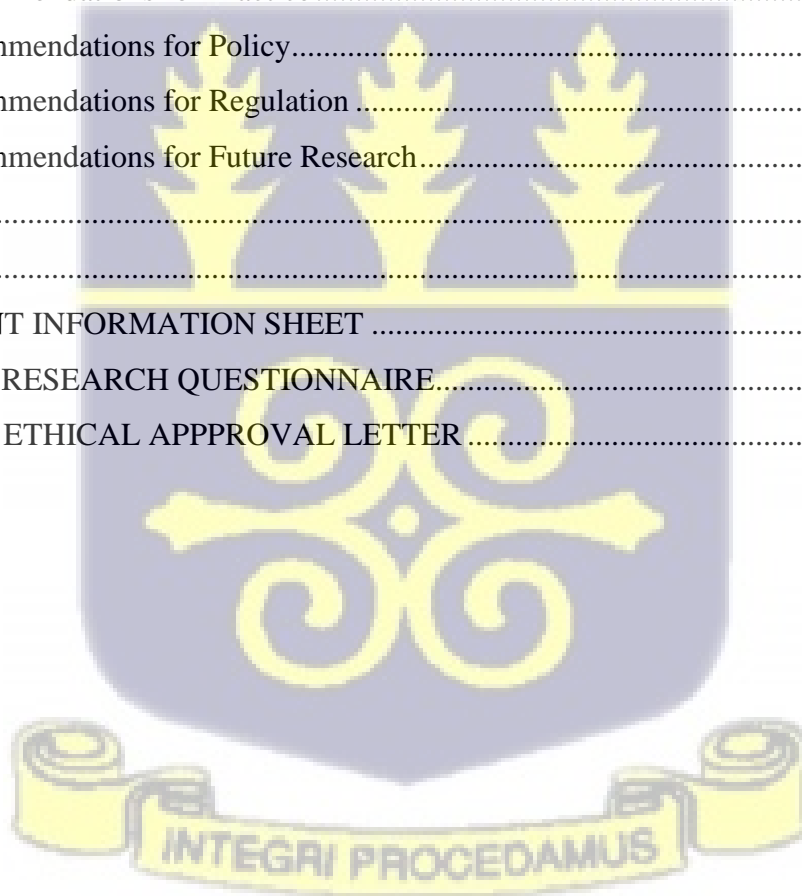
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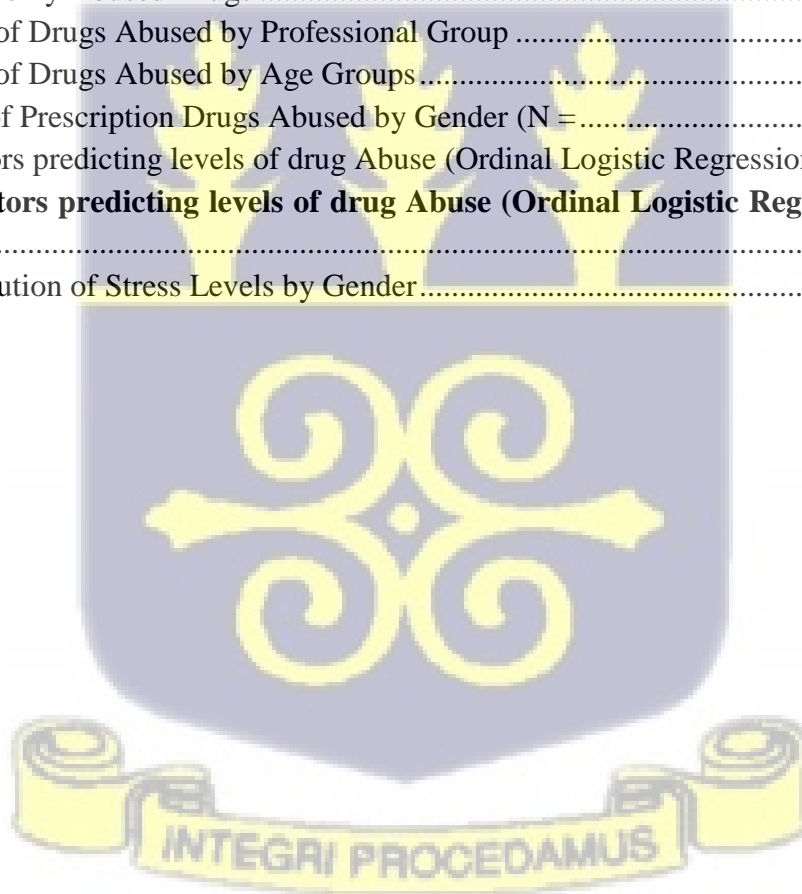
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CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Prescription drug abuse has become a major public health concern globally, affecting both the general population and healthcare professionals (Ifeadi & Agodi, 2024). The World Health Organisation (WHO) defines prescription drug abuse as the use of prescribed medicines in a manner other than intended by the prescribing healthcare professional, which may include taking larger doses, using medications without prescriptions, or combining drugs to achieve non-medical effects (Tefera et al., 2021). Globally, the misuse of prescription medications is on the rise, with estimates from the United Nations Office on Drugs and Crime (UNODC) indicating that nearly 60 million people engage in non-medical use of opioids annually, while benzodiazepines and stimulants are also widely misused (United Nations Office on Drugs, 2024). This growing burden has serious consequences, including physical and psychological dependence, increased morbidity, overdose, and in some cases, mortality. The phenomenon of prescription drug abuse not only undermines individual health but also imposes a heavy strain on healthcare systems and societies due to reduced productivity and increased healthcare costs.

The problem is not restricted to the general population. Healthcare professionals, including physicians, nurses, and pharmacists, are particularly vulnerable due to their access to medications, professional responsibilities, and workplace stress. Research has shown that healthcare workers may misuse prescription medications at higher rates than the general population, often as a coping mechanism to deal with occupational stressors. For example, Hordowicz et al. (2021) found that pharmacists and other health professionals misuse prescription drugs at concerning rates,

highlighting the occupational hazards inherent in their roles. Studies conducted in Europe and North America have consistently shown that healthcare professionals who have direct control over medications are at an elevated risk of misuse compared to the wider population. These findings have made prescription drug abuse within the health professions a topic of increasing global scrutiny, prompting calls for targeted interventions to protect both healthcare workers and the patients they serve.

In sub-Saharan Africa, prescription drug abuse has similarly emerged as a public health challenge, although research in this area is relatively limited compared to other regions. Available studies suggest that opioids, benzodiazepines, and stimulants are among the most commonly misused medications (Nyamakope, 2023; Rassool, 2024). For instance, Moyo et al. (2020) reported that in South Africa, 10% of pharmacists admitted to using controlled prescription drugs without prescriptions, underscoring the vulnerability of healthcare professionals in the region. Broader trends across West Africa also point to a worrying increase in the misuse of codeine-based cough syrups, tramadol, and other controlled substances (Nyamakope, 2023). Factors such as weak regulatory systems, easy access to medications, and limited enforcement of pharmaceutical laws have contributed to this rise (Eruaga et al., 2024). Al-Worafi (2023) also contends that cultural practices and the lack of awareness about the risks of prescription drug abuse further exacerbate the problem.

In Ghana, scholars like Cobbold & Morgan (2022) have argued that prescription drug abuse is increasingly recognised as a significant public health and regulatory concern. The Public Health Act (2012) and the Pharmacy Council Act outline regulations for the control of medicines, but challenges in enforcement have made controlled substances relatively accessible. Tramadol abuse,

in particular, has received widespread attention, with reports highlighting its misuse among both the youth and segments of the working population. Healthcare professionals are not immune to this phenomenon. Adu-Gyamfi and Asante (2021) observed that prescription drug abuse in Ghana's healthcare sector is frequently underreported, largely due to stigma and fear of professional repercussions. This underreporting contributes to an underestimation of the actual prevalence of the problem, making it difficult to design effective policies and interventions. In many cases, pharmacists and their support staff avoid seeking help for prescription drug misuse to protect their careers, which further entrenches a culture of silence.

Community pharmacists and their support staff are integral to the healthcare delivery system in Ghana (Safo et al., 2022). They ensure the safe dispensing of medications, provide patient counselling, monitor potential drug interactions, and, in some cases, diagnose and treat minor ailments. Their role is indispensable in ensuring rational drug use and protecting public health. However, their unique access to prescription medicines also places them at elevated risk of misuse. Mossialos et al. (2015) note that pharmacists are often positioned at the frontline of medication management, making them vulnerable to the temptation of abusing controlled drugs. This vulnerability is compounded by the stressful and high-pressure environment in which they operate. Long working hours, demanding patient loads, and the responsibility of ensuring medication safety can create conditions that increase susceptibility to drug misuse as a coping mechanism.

In Ghana, and particularly in urban municipalities such as Ledzokuku in the Greater Accra Region, community pharmacy staff face numerous challenges that heighten this risk. Ledzokuku, with its vibrant socio-economic activities and dense population, is served by a large number of community pharmacies that provide essential health services to residents. The workload in these facilities is

often heavy, and staff are tasked not only with dispensing medicines but also with providing health advice, conducting health screenings, and managing pharmaceutical inventories. The combination of stressful working conditions, ready access to prescription medications, and insufficient oversight can create an environment conducive to abuse. Moreover, the lack of targeted research and reliable data on the extent of prescription drug misuse among community pharmacy staff in Ledzokuku makes it difficult to fully understand the scope of the problem.

The consequences of prescription drug abuse among healthcare professionals, including community pharmacy staff, are profound. Olsen (2018) stresses that misuse of prescription medications impairs clinical judgment, reduces attention to detail, and compromises patient safety. Nassif (2019) further highlights that impaired professionals may make poor decisions, jeopardising the quality of care provided. Beyond the immediate risks to patient safety, healthcare professionals who engage in prescription drug abuse face disciplinary measures such as suspension or revocation of their licences, leading to career damage and loss of livelihood (Waite-Labott, 2022). These outcomes highlight the importance of addressing prescription drug misuse within this group.

Despite the seriousness of this issue, there remains a gap in research specifically focused on community pharmacy staff in Ghana. Most existing studies focus on broader trends in the general population or healthcare workers as a whole. Yet, community pharmacists and their support staff represent a unique subset of healthcare professionals whose access to and control over prescription medicines, combined with high occupational stress, make them particularly vulnerable. Understanding the levels and associated factors of prescription drug abuse within this group is therefore critical. Such knowledge can inform targeted interventions, regulatory strategies, and

workplace support systems aimed at reducing abuse, safeguarding the health of pharmacy staff, and maintaining the integrity of healthcare delivery.

This study therefore seeks to investigate prescription drug abuse among community pharmacists and their support staff in the Ledzokuku Municipality of Accra, Ghana. The study intends to close a significant information gap by investigating the prevalence, frequently abused medicines, and contributing variables to this phenomena. In the end, the results can direct the creation of laws and programs that safeguard healthcare professionals' health while simultaneously guaranteeing that Ghanaians receive safe, efficient, and moral pharmaceutical care.

1.2 Problem Statement

Community pharmacy staff work in demanding environments that require the dispensing of medicines, patient counselling, vigilance for drug interactions, and management of minor ailments within Ghana's regulatory framework (Government of Ghana, 2012). Their role often overlaps with tasks typically associated with doctors and nurses in primary care settings, thereby expanding their workload and responsibilities (Borowitz et al., 2024). This extended scope of practice, combined with the high-pressure retail setting, creates conditions that may predispose some pharmacists to prescription drug misuse as a coping mechanism (Hagemann et al., 2020). The need to meet sales or performance targets, coupled with relatively low salaries that push pharmacists into multiple locum roles, further exacerbates stress levels and fatigue (Aspden et al., 2021).

Prescription drug abuse is a growing global public health problem. The United Nations Office on Drugs and Crime (UNODC, 2023) estimated that more than 60 million people engage in the non-medical use of opioids each year, while benzodiazepines and stimulants are also widely misused. Worldwide, approximately 296 million people used drugs at least once in 2021, reflecting a 23

percent increase over the past decade (United Nations Office on Drugs and Crime, 2023). Healthcare professionals are not exempt from this problem. Research consistently shows that pharmacists have higher rates of prescription drug misuse compared to other health professionals due to their unique combination of access and occupational stressors (Perelló et al., 2021; Merlo et al., 2012). McCabe et al. (2018) reported that 15 percent of pharmacists in the United States admitted to misusing prescription medications at some point in their careers. Similarly, Hordowicz et al. (2021) documented comparable prevalence levels in Europe, underscoring that this challenge is widespread and not confined to specific regions.

In Africa, evidence is emerging that underscores the vulnerability of healthcare workers to prescription drug misuse. In South Africa, Moyo et al. (2020) found that 10% of pharmacists admitted to using controlled medicines without medical need. Across West Africa, tramadol has become a particularly problematic substance. The UNODC (2020) reported that more than 3 million people in the region use tramadol non-medically every year, while seizures of illicitly manufactured tramadol continue to increase. These developments highlight the risks facing healthcare professionals, especially pharmacists, in environments where regulation is weak and access is relatively easy.

Ghana has also experienced alarming trends in prescription drug misuse. Tramadol abuse, in particular, has been described as a national crisis, with the Food and Drugs Authority reporting seizures of over 600,000 unregistered tramadol tablets in 2019 (Adu-Gyamfi & Asante, 2021). While these figures highlight a generalised problem, there is limited empirical evidence on the extent of misuse among healthcare professionals themselves. Available literature suggests that abuse in this sector is frequently underreported, largely because of stigma and fear of professional

consequences (Adu-Gyamfi & Asante, 2021; Foli et al., 2020). The underreporting contributes to an underestimation of the actual prevalence, thereby constraining the design of evidence-based interventions. Research on professional impairment further shows that pharmacists who misuse prescription medicines often focus on controlled substances with high psychoactive potential, reflecting the occupational hazards linked to their access and responsibilities (Kabbash et al., 2022).

Community pharmacists and their support staff in Ghana are particularly exposed to these risks. Their relative autonomy in managing inventory, limited supervisory oversight, and frequent interaction with controlled drugs create opportunities for misuse (Onaolapo et al., 2022; Cadri, 2019). The American Pharmacists Association (2023) and the General Pharmaceutical Council in the United Kingdom have both highlighted that misuse within the pharmacy profession is a pressing issue, often resulting in sanctions, rehabilitation, or in severe cases, permanent loss of licensure. Barakat et al. (2023) argue that the paradox of acknowledging the unethical nature of misuse while still engaging in it underscores deeper professional and systemic challenges that demand immediate intervention.

In Ghana's urban municipalities, these risks are intensified. Ledzokuku, a densely populated municipality in the Greater Accra Region, has over 130 licensed community pharmacies that serve a wide patient base (Esseku et al., 2022). The combination of long working hours, high patient demand, socio-economic pressures, and the daily management of medicine inventories increases the risk of misuse for pharmacy staff in the area. Despite this, no study has specifically examined the prevalence, patterns, and drivers of prescription drug misuse among community pharmacy staff in Ledzokuku.

The consequences of prescription drug abuse in healthcare are severe. Olsen (2018) explains that misuse impairs judgment and reduces attention to detail, leading to compromised patient safety. Nassif (2019) adds that impaired professionals are at risk of making poor clinical decisions, while Waite-Labott (2022) highlights that professionals caught abusing drugs may face disciplinary action, loss of licensure, or career termination. These risks make it imperative to investigate the problem among community pharmacists and their staff, as doing so can guide the development of interventions that protect both healthcare workers and patients.

This study therefore aims to determine the level of prescription drug abuse among community pharmacists and their support staff in the Ledzokuku Municipality, to identify the most commonly abused drugs, and to examine the associated factors.

1.3 General Objective of the Study

The general objective of the study was to assess the levels of prescription drug abuse among community pharmacy staff in the Ledzokuku Municipality, Accra, Ghana.

1.3.1 Specific Objectives of the Study

The specific objectives of the study were to:

1. Assess the levels of prescription drug abuse among community pharmacists and their support staff in the Ledzokuku Municipality.
2. Identify and categorise the prescription drugs commonly abused by pharmacists and their support staff in the municipality.
3. Analyse the factors contributing to prescription drug abuse among community pharmacists and their support staff.

1.4 Research Questions

To achieve the research objectives, the following research questions were addressed:

1. What are the current levels of prescription drug abuse among community pharmacists and their support staff in the Ledzokuku Municipality?
2. Which prescription drugs are commonly abused among pharmacists and their support staff in the Ledzokuku Municipality?
3. What factors contribute to prescription drug abuse among community pharmacists and their support staff in the Ledzokuku Municipality?

1.5 Justification of the study

Limited research in this area underscores the importance of this study in the pharmaceutical sector. The investigation of prescription drug abuse among community pharmacists and their support staff holds significant implications for academia, policy, and practice. The findings could contribute to the extant literature on the levels of prescription drug abuse within the context of community pharmacies in developing countries. It will thus provide a foundation for future studies, offering scholars a basis for further exploration into the multifaceted aspects of prescription drug abuse in similar settings.

The study's findings could serve as a vital resource for policymakers, providing detailed insights into the levels and contributing factors of prescription drug abuse among community pharmacists. This information could aid in the formulation of informed regulations and guidelines, ultimately enhancing public health and safety. For instance, understanding the levels of prescription drug abuse among pharmacists could inform licensing and registration requirements, ensuring that only qualified and fit individuals are allowed to practise. Knowledge of contributing factors could also

guide the creation of workplace policies addressing prescription drug abuse, such as employee assistance programmes, drug testing, and counselling services.

The findings could further inform regulations around controlled prescription drugs, including their storage, dispensing, and monitoring. Also, the study's findings could help shape continuing education and training programmes for pharmacists, focusing on prescription drug abuse prevention, identification, and intervention. Moreover, the study's findings could have significant implications for pharmacy practice, enabling the Pharmacy Council and other stakeholders to develop evidence-based guidelines and standards that address prescription drug abuse among community pharmacists. A thorough understanding of the levels and dynamics of prescription drug abuse within the industry is essential for developing effective workplace policies and procedures.

1.6 Organisation of the dissertation

The dissertation is structured into six chapters. Chapter One initiates the inquiry by delving into the background of the study, articulating the statement of the problem, posing research questions, delineating study objectives, and providing a justification for the study. Chapter Two reviews existing literature, synthesizing the perspectives of various theorists and authors on the subject matter. This chapter also scrutinizes previous studies related to prescription drug abuse among community pharmacists and their support staff, offering a contextual backdrop to the research. It also presents the conceptual framework of the study. Chapter Three outlines the research methods employed, encompassing the study area, sample size determination, sample selection procedures, data collection, management, analysis and ethical issues related to the study. In Chapter Four, the findings are presented. Chapter five discusses the findings, while chapter six concludes, offering a summary of key findings, drawing conclusions based on these findings, and presenting pertinent recommendations.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

A comprehensive literature review was conducted to explore the growing concern of drug abuse among community pharmacists and support staff globally. The literature review is organised into several sections to provide an understanding of prescription drug abuse among community pharmacists and support staff. The review begins with an introduction to the topic, followed by an examination of the levels of prescription drug abuse among pharmacists, including a general overview, levels in developing countries, and a specific focus on Ghana. The types of prescription drugs commonly abused are then discussed, including benzodiazepines, opioids, stimulants, antidepressants, and antimicrobials. The factors contributing to prescription drug use among pharmacists are also explored. A conceptual framework is then presented, along with a justification for its selection. Finally, a summary of the chapter is provided, highlighting the key findings and outstanding knowledge gaps.

2.2 The concept of prescription drug abuse

Prescription drug abuse refers to the intentional use of prescription medication for purposes other than the prescribed medical indication or in a manner not intended by the prescribing doctor (Bulut & Isik, 2022). This misuse can include taking higher doses than prescribed, using the medication for recreational purposes, or using someone else's prescription drugs (Friedman et al., 2019). While the term "drug abuse" is often used interchangeably with "misuse," there is a subtle difference in that abuse typically refers to a pattern of behaviour that leads to harmful consequences, whereas misuse may not necessarily have the same impact (McCabe et al., 2018).

Various conceptualisations of prescription drug abuse exist in the literature. Some define it as the non-medical use of prescription drugs, with a focus on the frequency and circumstances of misuse (Fischer et al., 2017). Others emphasise the behavioural aspects, such as the intention behind the use, including recreational or self-medication purposes (Soh et al., 2021). Further, a more clinical approach considers prescription drug abuse as a form of substance use disorder (SUD), with similar diagnostic criteria as those used for illicit drug addiction, such as dependency, tolerance, and withdrawal symptoms (Gonzalez et al., 2020).

Prescription drug abuse has been measured in several ways across studies. Some use self-report questionnaires or surveys to assess the frequency of misuse and the type of drugs involved (Zhang et al., 2021). Standardised tools such as the Drug Abuse Screening Test (DAST) or the Prescription Drug Use Questionnaire (PDUQ), have been employed to identify the severity and patterns of abuse (Hernandez et al., 2019). Other methods include observational studies, where researchers track the behaviours of pharmacy staff and patients, or medical record reviews to identify patterns of prescription misuse (Harper et al., 2019).

In this study, the concept of prescription drug abuse will be operationalised by measuring the level of misuse or abuse based on self-reported behaviours, including the use of prescription drugs outside of their intended medical purpose. A structured questionnaire will be designed to collect data on the frequency of misuse, types of drugs commonly abused, and factors contributing to these behaviours. Participants will also be asked to report any personal or work-related factors that may influence their likelihood of misusing prescription drugs. This approach allows for a comprehensive understanding of the levels of prescription drug abuse among community pharmacists and their support staff.

2.3 Levels of Prescription Drug Abuse Among Pharmacists

Prescription drug abuse varies across low, moderate, and high levels, reflecting differences in severity and impact on individuals. A low level of abuse typically involves minimal or occasional misuse, with no significant health or social consequences. Individuals in this category may experiment with drugs but do not exhibit dependency or harmful patterns. A moderate level indicates more frequent misuse, often accompanied by mild to moderate consequences such as occasional loss of control or minor health issues. These individuals are at risk of progressing to higher levels of abuse if left unaddressed. A high level of abuse signifies severe misuse, often meeting the criteria for a substance use disorder. Individuals in this category experience significant health, social, and occupational impairments, including dependency, withdrawal symptoms, and long-term harm. Studies, such as those examining substance use during the COVID-19 pandemic (Rolland et al., 2020) have highlighted the importance of recognising these levels to address drug misuse effectively.

2.3.1 General Levels of Prescription Drug Abuse Among Healthcare Professionals

Prescription drug abuse among healthcare professionals, including pharmacists, varies across low, moderate, and high levels, reflecting differences in workplace stress, accessibility to medications, and individual coping mechanisms. In the United States, studies indicate that healthcare workers exhibit varying levels of drug abuse, with opioids and benzodiazepines being the most commonly misused substances. A significant proportion of healthcare professionals fall into the moderate and high levels of abuse, often driven by high-stress environments and easy access to controlled medications (NIDA, 2021). In the United Kingdom, the General Pharmaceutical Council (2019) found that approximately 10% of pharmacists reported moderate to high levels of prescription drug abuse, while others exhibited low levels or no abuse at all. Similarly, Australian research highlights

that around 12% of healthcare workers, including pharmacists, engage in moderate to high levels of prescription drug misuse, often citing workplace stress and accessibility as contributing factors (Mitchell et al., 2022).

In Africa, research on prescription drug abuse among healthcare professionals is limited, but existing studies suggest a range of abuse levels. For example, a study in Nigeria found that 8% of pharmacists reported moderate to high levels of prescription drug abuse, with stress and professional demands identified as key drivers (Afolabi et al., 2018). In South Africa, Mphahlele et al. (2021) documented that 10% of healthcare workers admitted to moderate or high levels of prescription drug misuse, with opioids being the most commonly reported substance. The familiarity paradox, where healthcare professionals underestimate the risks of drug misuse due to their pharmacological knowledge, often contributes to higher levels of abuse. Stigma and fear of professional repercussions further exacerbate the issue, discouraging individuals from seeking help (Majumder, 2024).

2.3.2 Levels of Prescription Drug Abuse in Sub-Saharan Africa

Prescription drug abuse among pharmacists and healthcare workers in sub-Saharan Africa spans low, moderate, and high levels, reflecting the diverse pressures and challenges faced in the region. In Nigeria, studies indicate that around 20.9% of healthcare workers, including pharmacists, exhibit moderate to high levels of prescription drug abuse, while others report low levels or no abuse (Jatau et al., 2021). Another study in Nigeria found that 14.1% of healthcare professionals reported moderate to high levels of prescription opioid misuse, often linked to high-stress work environments (Oladipo et al., 2018). In South Africa, research shows that 11.6% of nurses engage in moderate to high levels of non-medical use of prescription medications, with opioids being the most commonly abused substances (Mchunu et al., 2020). In Ethiopia, 8.5% of healthcare

professionals reported moderate to high levels of prescription drug use disorders, highlighting the severity of the issue in high-pressure healthcare settings (Deressa et al., 2015).

Africa is also a region of concern for opioid use, with a notable proportion of the population engaging in low to high levels of non-medical opioid use. Estimates suggest that between 4.7% and 7.5% of the population uses opioids non-medically, with varying levels of abuse (Chiappini et al., 2020). While these percentages may not be the highest globally, they represent a significant public health challenge, particularly given the region's limited resources for addressing prescription drug use disorders. The differences in abuse levels between regions emphasise the need for context-specific interventions to tackle prescription drug abuse within healthcare professions. Targeted research and interventions are essential to curb this growing trend, especially in developing regions where access to mental health resources may be limited.

2.3.3 Levels of Prescription Drug Abuse in Ghana

In Ghana, the levels of prescription drug abuse among pharmacists and healthcare workers range from low to high, with moderate and high levels being particularly concerning. Research has shown that 26.4% of healthcare professionals admitted to moderate to high levels of Diazepam misuse, often to manage work-related stress (Owusu-Afriyie et al., 2020). Another study revealed that 21.1% of healthcare professionals reported moderate to high levels of Codeine abuse, citing its accessibility and the perception that it is less harmful compared to other opioids (Agyemang et al., 2019). These findings suggest that prescription drug abuse is a significant issue within the healthcare sector in Ghana, although specific data on pharmacists alone remains scarce.

Pharmacists, given their access to medications, occupy a unique position in the prescription drug supply chain. This makes them vulnerable to moderate and high levels of prescription drug abuse,

while also positioning them as key players in mitigating the broader problem. The combination of high-stress levels, easy access to prescription medications, and the increasing prevalence of prescription drug abuse in the general population places pharmacists at considerable risk. Efforts to tackle this issue must focus on increasing research, improving mental health support, and tightening regulations on access to prescription drugs to reduce the risks within the profession.

2.4 Types of drugs commonly abused

This section examines the types of prescription drugs commonly abused. These drugs are categorised into Benzodiazepines, Opioids, Stimulants, Antidepressants, and Antimicrobials (Sarangi et al., 2021; Curado et al., 2021; Agyemang et al., 2019; DeVido, 2020; Bonilla-Jaime, 2022). Each category includes prescription drugs with high potential for misuse, particularly among healthcare professionals who have easier access to these drugs. The abuse of these prescription drugs poses significant public health concerns, including dependence, addiction, and the development of drug-resistant strains of infections. The review draws on various studies across different regions to provide a comprehensive overview of the prescription drugs most frequently abused and the contexts in which this abuse occurs.

2.4.1 Benzodiazepines

Benzodiazepines, a class of psychoactive drugs commonly prescribed for conditions such as anxiety, insomnia, and seizures, are increasingly being misused, particularly among healthcare professionals who have easy access to these medications (Sarangi et al., 2021). The potential for dependence and abuse is significant, with Diazepam, Bromazepam, and Lorazepam being among the most frequently misused (Curado et al., 2021). Diazepam is widely abused for its calming effects, making it a popular choice among individuals seeking relief from stress or anxiety outside

of therapeutic contexts (Ifeadi and Agodi, 2024). In Ghana, a study revealed that 26.4% of healthcare professionals admitted to using Diazepam in non-therapeutic ways, often to cope with the pressures of their work environment (Owusu-Afriyie et al., 2020). Similarly, Bromazepam and Lorazepam are also prone to misuse, particularly by pharmacists and their support staff, who face higher risks due to their accessibility to these drugs (Tabone, 2024). The misuse of benzodiazepines among healthcare workers highlights the need for stricter control measures and increased awareness of the risks associated with non-prescribed use.

2.4.2 Opioids

Opioids are potent analgesics widely used for pain management, but they carry a significant risk of abuse and dependence, particularly among healthcare professionals with easy access to these drugs. Codeine, Tramadol, and combinations like Paracetamol + Tramadol are among the most commonly abused opioids (Xie et al., 2021). Codeine misuse is notably prevalent in West Africa, where it is often found in cough syrups. In Ghana, studies have shown that 21.1% of healthcare professionals have reported abusing Codeine, often due to its accessibility and the perception of it being less harmful than other opioids (Agyemang et al., 2019). Tramadol abuse has become a significant public health issue in several West African countries, including Ghana, where it is frequently used to enhance physical endurance or cope with labour-intensive work (Ane, 2023). The widespread misuse of Tramadol has led to serious health consequences and has been described as reaching epidemic levels (Kweku & Agbenyega, 2019). The Paracetamol + Tramadol combination is also commonly abused, particularly because of its potent analgesic effects. This combination poses significant health risks, including the danger of overdose, highlighting the need for stricter regulation and awareness (Khatoon & Faudzi, 2024). The abuse of these opioids

underscores the urgent need for better control measures and education on the dangers of non-prescribed use.

2.4.3 Stimulants

Stimulants, which are known for enhancing alertness and energy, are frequently abused for their performance-boosting effects (Ishola and Ibraheem, 2023). According to DeVido (2020), in the United States, methylphenidate, nicotine, and caffeine are among the most commonly misused stimulants, highlighting a significant concern for public health and prescription drug abuse prevention efforts.

Methylphenidate, often recognised by its brand name Ritalin, is particularly abused by students and professionals who seek to improve focus and productivity (Bach et al., 2019). This misuse is prevalent in both academic and workplace settings, where the pressure to perform can lead individuals to use the drug non-therapeutically (Bach et al., 2019).

Nicotine and caffeine are widely consumed stimulants with high rates of dependence (Rao and Tripathi, 2022). Despite being socially accepted, their misuse can lead to significant health issues. Nicotine, primarily found in tobacco products, is associated with addiction and various respiratory conditions, while excessive caffeine consumption can lead to cardiovascular problems and anxiety (Kabbash et al., 2022). These prescription drugs, though legal and commonly used, pose substantial health risks when abused, highlighting the need for awareness and regulation.

2.4.4 Antidepressants

The primary purpose of antidepressants is to treat and manage mood disorders, such as depression and anxiety, by stabilising and enhancing mood (Bonilla-Jaime, 2022). However, the misuse of these medications is becoming increasingly prevalent, particularly among individuals who have

easy access to them, such as healthcare professionals (Al-Worafi, 2020). Fluoxetine, Paroxetine, and Citalopram are among the antidepressants most commonly subject to abuse (Chiappini et al., 2022). Fluoxetine (widely known as Prozac) is sometimes misused for its mood-enhancing effects (Marazziti and Mucci, 2021). Such misuse can lead to dependence and withdrawal symptoms, as highlighted by Werremeyer et al. (2021). Paroxetine and Citalopram are also subject to misuse, although to a lesser extent. Individuals may self-medicate for anxiety or depression without professional guidance, which can lead to inappropriate use and potential harm, as noted by Cataldo et al. (2019). This growing trend of antidepressant misuse underscores the need for greater awareness and regulation in managing access to these medications.

2.4.5 Antimicrobials

The misuse of antimicrobials, including antibacterials, antifungals, antiprotozoals, and antivirals, is a growing concern that significantly impacts public health, particularly through the development of drug resistance (Owusu-Ofori et al., 2021; Andleeb et al., 2020). Antibacterials such as Amoxicillin + Clavulanic Acid, Ciprofloxacin, and Doxycycline are often misused, especially in regions where antibiotics are readily available without prescriptions. This overuse and misuse have contributed to a serious rise in antibiotic resistance, particularly in countries like Ghana and Nigeria, as highlighted by Aslam et al. (2021). Similarly, antifungals, including Fluconazole, Griseofulvin, and Ketoconazole, are frequently abused, especially when used to treat self-diagnosed or incorrectly diagnosed fungal infections. This practice not only leads to antifungal resistance but also complicates the treatment of more severe infections (Ayukekbong et al., 2017). Antiprotozoals, such as Metronidazole, Artemether + Lumefantrine, and Secnidazole, are often improperly used in the treatment of protozoal infections. This misuse can result in drug resistance, diminishing the effectiveness of these treatments (WHO, 2020). In the case of antivirals like

Acyclovir and Tenofovir, misuse commonly occurs in the treatment of viral infections without proper medical oversight. This can lead to resistance, complicating the management of conditions such as herpes and HIV (Piperi et al., 2024). These instances illustrate the widespread issue of antimicrobial abuse and its serious consequences, particularly in areas where access to these medications is less controlled.

2.5 Factors Contributing to Prescription Drug Abuse among Pharmacists

Prescription drug abuse among pharmacists is a complex issue, influenced by various factors including individual traits, mental health challenges, family dynamics, and occupational stress. Pharmacists' accessibility to pharmaceuticals and knowledge of drug properties can also contribute to prescription drug misuse, while stigma around seeking help for mental health issues can exacerbate the problem. However, protective factors like positive attitudes, robust anti-prescription drug beliefs, and a supportive family environment can help reduce the risk of drug use. Pharmacists are essential for advancing community health, and by recognising risk factors and embracing protective factors, they can develop a deeper understanding of their role and make meaningful contributions to comprehensive community wellness initiatives. Pharmacists need to be knowledgeable about the complicated issues surrounding drug use to perform their roles effectively and support initiatives that prevent and mitigate the widespread impact of drug use on public health.

2.5.1 Family History

Genetics play a major role in the growth and development of an individual since each person inherits unique characteristics from their biological parents. Numerous studies highlight the important genetic factors linked with prescription drug abuse, despite the belief that prescription drug misuse and abuse are learned behaviours (Stewart et al., 2021; Smith, 2021). Scholars have

discovered genes connected to abuse-related behaviours inherited from biological parents by traditional genetic and molecular techniques (Nielsen et al., 2018; Al Jowf et al., 2021).

According to Samhsa's (2020) analysis of twin data, the heritability of drug misuse ranges from 60% to 80%. Consequently, community pharmacists may be more prone to abuse-related behaviours if they have a family history of prescription drug abuse. Even when using prescription drugs like alcohol that are legally available, a community pharmacist may become addicted due to a genetic predisposition to these behaviours. It could also affect a community pharmacist's propensity to start using drugs, which would distinguish them from people who don't have a family history of prescription drug abuse problems.

2.5.2 Mental Health

An individual's coping strategies and capacity to handle challenges in life are greatly influenced by the complex interactions between their mental and physical health. The number of recognised mental diseases is rising significantly, which affects a person's ability to function in everyday life and may encourage the use of harmful coping mechanisms. According to data from Carliner et al. (2017), 5.2% of persons who are 18 years of age and older suffer from a serious mental illness that substantially interferes with their ability to perform major life activities. This represents 20.6% of adults who experience mental illness in any form.

McCance-Katz (2018) revealed that those with mental health difficulties are more likely to use prescription drugs. Relative to those who did not use illegal prescription drugs, just 16.6% had a mental health diagnosis, but a significant 42.4% of drug users had one. According to McCance-Katz (2018), this trend is not limited to illegal drugs; it also applies to prescription drugs like

marijuana, opioids, excessive alcohol use, and cigarettes, whereby those with certified mental diseases exhibit elevated rates of usage.

Like nurses and doctors, community pharmacists are more likely than those in other professions to experience mental health issues. Studies reveal higher rates of anxiety and depression in healthcare professionals, especially community pharmacist and their support care staff, and half of them experience burnout (Ishaky et al., 2023). Although burnout in and of itself may not be considered a mental disease, it increases the likelihood of developing mental health disorders such as depression, anxiety, post-traumatic stress disorder, suicidal thoughts, and suicide (Murphy et al., 2016). Community pharmacists may be more susceptible to prescription drug abuse problems due to the higher frequency of mental health difficulties among them and their easy access to these drugs. Research has indicated that people suffering from mental health conditions such as anxiety, depression, and post-traumatic stress disorder (PTSD) could turn to drugs or alcohol as a kind of self-medication. When compared to people without mental health diagnoses, people with mental health conditions may be more likely to continue using drugs because of the rewarding features of prescription drug use that these illnesses might intensify in the brain (Gerada, 2018).

2.5.3 Occupational Considerations

2.5.3.1 Workplace Conditions

Community pharmacists hold a unique position that exposes them to challenging situations and demanding working conditions, potentially leading to various stressors. In the community pharmacy industry, it is customary for pharmacists to work 12-hour shifts, frequently alternating between day and night hours. The integration of point-of-care technology, high pharmacist-patient ratios, and generally stressful working circumstances are among the workload issues made worse

by the current lack of pharmacists in the profession and the bureaucracy involved in obtaining pharmacy licenses (Lynch and O’Leary, 2023). Community pharmacists' stress levels may rise as a result of these taxing situations, which may lead to feelings of burnout and tiredness. Community pharmacists work in the pharmaceutical industry and deal with a range of patient groups that have serious issues. They see situations of violence, trauma, and terminal disease. According to research, community pharmacists may be more stressed than their colleagues if they are regularly involved in high-stress scenarios like emergencies or providing care for patients who are terminally ill (Tobia et al., 2023).

Community pharmacists are more likely to consume prescription drugs as a result of their heightened stress levels and propensity to use prescription drugs as a coping technique. Stress has a well-established link to the desire to consume addictive drugs (Torres-Berrio et al., 2018). Community pharmacists may find themselves more prone to acquire addicted habits and use drugs as a coping mechanism due to their demanding work environments and high levels of stress. These are rather common in one-man pharmacies. Research shows that compared to their colleagues in lower-strain employment, pharmacists employed in positions involving significant physical or psychological strain are 50–60% more prone to abuse drugs, including cocaine, paracetamol, tramadol, and psychoactive pharmaceuticals (Danso and Anto, 2021). According to recent studies, community pharmacists in places like the Ledzokuku Municipal assembly have greater rates of drug misuse than pharmacists in other specialisations (Okai et al., 2019; Saapiire et al., 2021). This emphasises how important it is to take into account how demanding specialised areas may affect community pharmacists' propensity to consume prescription drugs. Prevention and treatment of prescription drug misuse within the community pharmacy profession require increased awareness,

focused education, and application of mitigation methods (Bach & Hartung, 2019; Koduah et al., 2020).

2.5.3.2 *Access to the drugs*

Community pharmacists have autonomous access to prohibited medicines, such as opioids and narcotics, and are responsible for dispensing prescriptions as directed. Similar to findings in nursing research, this increased availability of opioids raises the likelihood of prescription drug dependence among pharmacists and their support workers (Contents et al., 2016; Hattingh & Tait, 2018). Because they are more easily accessible than the general public, pharmacists are more likely to become dependent on prohibited drugs than the general population (Karge et al., 2023; Multinational and Assessment, 2023). Controlled drugs, which are legally only available with legitimate prescriptions, pose a special difficulty for pharmacists who are battling abuse. People who can't readily get these drugs could turn to work-related sources, which could result in drug disparities and possible prescription drug abuse problems in a pharmacy setting (Goodman, 2020; Perelló et al., 2021; United Nations Office on Drugs and Crime, 2023).

2.5.4 *Individual Level Factors*

Individual factors such as age and religion significantly influence prescription drug abuse among community pharmacists and their support staff. Younger pharmacists, those under 35, are more susceptible to prescription drug misuse due to career pressures, stress and burnout (Dee et al., 2023). Accessibility of medications within their professional environment exacerbates this risk. Younger professionals often face intense job demands and may struggle with balancing work and personal life, increasing vulnerability to prescription drug abuse as a coping mechanism (Akanji et al., 2020; Rech et al., 2021).

Older pharmacists, over 50, may misuse prescription drugs for health-related reasons like managing chronic pain or addressing age-related health issues. However, their experience in the field may serve as a protective factor, making them more conscious of the consequences of drug misuse (Laroche et al., 2021, Katsogiannis et al., 2024).

Religious beliefs and values significantly influence attitudes toward prescription drug abuse. In Ghana, the majority of the population (71.2%) adheres to Christianity, while Islam and traditional African religions comprise 17.6% and 5.2% of the population respectively (Ghana Statistical Service, 2021). Christian teachings, like the body being the temple of God, deter drug abuse including prescription drugs (Nhlumayo, 2021). Islamic teachings prohibit intoxicants, reducing drug abuse among Muslim adherents (Ghaus, 2024). Traditional African beliefs emphasise natural remedies over pharmaceuticals, limiting reliance on prescription drugs (Asakitikpi, 2022).

However, societal stigma surrounding drug use in religious communities could lead to covert abuse, as individuals may be reluctant to seek help due to fear of judgment (Mallik et al., 2021). Age and religion moderate prescription drug abuse, with younger pharmacists facing workplace stressors and older ones dealing with health-related challenges, while religious beliefs serve as protective factors or contribute to hidden abuse. Targeted interventions accounting for these factors are essential in addressing prescription drug abuse among this population.

2.6 Conceptual Framework Utilised in this Study

The conceptual framework for this study (see Figure 1) investigates the various factors that contribute to prescription drug abuse among pharmacists and their support staff. Biological factors, such as sex, age, and family history of prescription drug abuse, can significantly shape an individual's susceptibility to prescription drug abuse. Research indicates that male healthcare

professionals, including pharmacists, may be more prone to prescription drug abuse due to societal expectations of masculinity and the tendency to suppress emotions (Klimas et al., 2018). Also, age plays a role, with younger pharmacists potentially at higher risk due to their stage in career development, facing long hours and demanding workloads (Yousafzai et al., 2020). Family history also proves critical, as individuals with a background of prescription drug use in their families are more likely to develop similar dependencies (Koob & Volkow, 2010).

Psychological factors like stress levels, drug abuse history, and motivations for drug use are essential in understanding the personal struggles that pharmacists face, which may lead to drug abuse. Pharmacists operate in high-pressure environments where they handle life-critical medications and work long hours, often leading to stress, burnout, and emotional exhaustion (Durand et al., 2019). Some pharmacists turn to prescription drugs as a means of coping with stress or physical discomfort (Kenna & Lewis, 2008). Psychological conditions such as anxiety or depression can also prompt pharmacists to abuse drugs. Self-medication becomes a dangerous outlet for pharmacists who may feel ashamed or unable to seek formal help due to stigma (Hassan et al., 2021).

Social factors such as peer influence, professional access to drugs, and workplace culture play significant roles in fostering an environment conducive to prescription drug abuse. The nature of the pharmacy profession provides pharmacists with easy access to medications, making it easier to engage in non-medical use. Studies indicate that pharmacists with ready access to controlled prescription drugs are more likely to develop prescription drug use disorders (Oreskovich et al., 2015). Peer influence also plays a part; pharmacists may be swayed by colleagues who normalise or trivialise drug abuse in the workplace (McAuliffe et al., 2022). The workplace culture

surrounding healthcare professionals often prioritises patient care over self-care, discouraging pharmacists from seeking help and fostering a culture of silence that enables continued abuse.

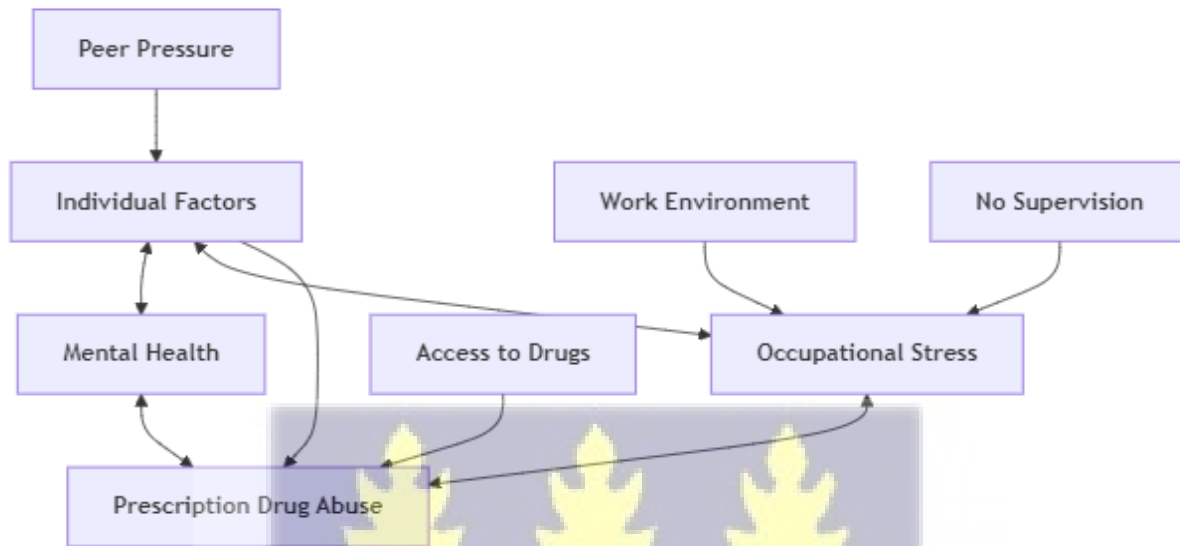


Figure 1 : Conceptual framework showing factors that could contribute to prescription drug abuse among Pharmacists

Source: Researchers Construct (2024)

In conclusion, the framework highlights the interplay between these factors in contributing to prescription drug abuse. For example, pharmacists experiencing psychological stress due to work pressure may turn to drugs, made accessible by their professional roles, and may receive implicit encouragement or at least tacit acceptance from their peers. Understanding how these factors converge allows for targeted interventions that address the root causes of drug abuse, not only focusing on individual behaviours but also on systemic issues within the pharmacy profession. This conceptual framework provides a comprehensive lens to explore the vulnerabilities that pharmacists and their support staff face in relation to prescription drug abuse.

In summary, the conceptual framework emphasises that prescription drug abuse among pharmacists and their support staff is a multifactorial issue. Biological, psychological, and social factors all intersect to increase the risk of abuse, and the framework provides a foundation for exploring these dimensions in more depth. The development of effective interventions requires acknowledging the unique pressures faced by pharmacists and understanding how these factors converge, enabling targeted support for those at risk of prescription drug abuse.

2.7 Chapter Summary

This chapter provided an in-depth review of the literature on the levels of prescription drug abuse, commonly abused drugs, and contributing factors to prescription drug abuse among pharmacists. Drugs such as benzodiazepines, opioids, stimulants, and antimicrobials are identified as frequently abused, largely due to their accessibility in professional settings. Factors like family history, mental health issues, and occupational stressors, including long work hours and high job demands, are recognised as key drivers of this abuse. The review also outlines a conceptual framework that links individual, occupational, and societal factors influencing prescription drug abuse.

Despite these insights, there is a significant gap in localised research addressing the levels of prescription drug abuse among pharmacists in Ghana. The lack of data could hamper effective intervention and policy formulation, making this study crucial for filling that gap and advancing understanding in this context.



CHAPTER THREE

METHODS

3.1 Introduction

This chapter outlines the methods employed in this study on prescription drug abuse among community pharmacists and their support staff. It provides a detailed account of the research design, study site, and the population involved, including inclusion and exclusion criteria. The chapter explains the process of determining the sample size and the sampling techniques used to select participants. Data collection methods and tools are described, covering socio-demographic factors, pharmacy-level factors, prescription drug use, work-related stress, job satisfaction, and mental health. The chapter also outlines procedures for ensuring data quality, such as training research assistants, pre-testing instruments, and considering reflexivity in the research process. Ethical considerations are carefully outlined to ensure that participants' rights are protected throughout the study.

3.2 Study design

This study adopted a cross-sectional quantitative design to assess levels of prescription drug abuse among community pharmacists and their support staff in the Ledzokuku Municipality. The cross-sectional study design was chosen because it allowed for the collection of data on both the levels and factors contributing to prescription drug abuse at the same point in time.

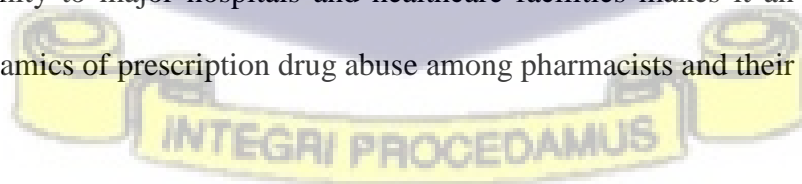
3.3 Study Site

The research was conducted in the Ledzokuku Municipality in the Greater Accra Region of Ghana. This municipality serves a diverse population of 217,304 people (Ghana Statistical Service, 2021,

p. 181). The municipality was selected for the study for a number of reasons. According to the Pharmacy Council of Ghana, as of December 2023, 127 registered community pharmacies were operating within the municipality, distributed across 12 electoral areas, and each staffed with an average of five personnel, including licensed pharmacists and support staff (see Table 1). These pharmacies are crucial healthcare points, offering a range of services from dispensing prescription and over-the-counter medications to providing health advice and first aid (Public Health Act, 2012).

The pharmacies in the municipality operate under various schedules, with some open 24 hours to serve urgent needs, while others operate half-day schedules, especially during weekends and holidays. The strategic location of these pharmacies ensured accessibility for residents across the municipality, including those in more remote areas, contributing to the public health infrastructure. The day-to-day activities of the pharmacists include dispensing medications, providing patient counselling, diagnosing simple ailments, and ensuring the safe and effective use of pharmaceuticals. They also manage inventory, monitor patient health, and participate in public health initiatives like vaccination and health screenings.

Furthermore, the municipality was chosen for this study due to its urbanised nature and high population density, which creates a unique environment for prescription drug abuse to thrive. Also, the area's proximity to major hospitals and healthcare facilities makes it an ideal location for studying the dynamics of prescription drug abuse among pharmacists and their support staff.



3.4 Study Population

The study population consisted of all community pharmacists and their support staff, such as medical counter assistants and pharmacy technicians, who were working in the municipality's licensed community pharmacies and actively engaged in pharmaceutical service delivery. As noted above, 127 registered community pharmacies were operating within the municipality as of December 2023, each estimated to be staffed with an average of five personnel.

3.4.1 Inclusion Criteria

The following inclusion criteria were applied:

1. Individuals aged 18 years and above.
2. Licensed community pharmacists, medical counter assistants, or pharmacy technicians/assistants.
3. Currently working in a community pharmacy within the Ledzokuku Municipality.
4. Minimum of 6 months' work experience in a community pharmacy within the municipality to ensure familiarity with the local context.
5. Ability to provide voluntary informed consent.
6. Willingness to participate in the study.
7. Working on day questionnaire was administered

These criteria ensured that participants had sufficient experience in the local context, could provide informed consent, and were willing to participate in the study.

3.4.2 Exclusion Criteria

The study excluded the following individuals:

1. Individuals who were eligible to participate but had a history of prescription drug abuse treatment.
2. Individuals with chronic medical conditions requiring medication.
3. Student pharmacists working in community pharmacies as interns.

3.5 Sample size determination

The sample size for this study was determined using Cochran's (1977) formula, which takes into account the population size and desired level of precision. A prevalence rate of 46% was assumed, based on a study conducted in the United States, which found that 46% of pharmacists had used prescription drugs without a prescription (Webster & Generes, 2024).

Cochran's Formula is denoted as:

$$n = \frac{z^2 \times p \times q}{e^2}$$

Where:

- $Z = 1.96$ (for 95% confidence level)
- $p = 0.46$ (prevalence rate of nonmedical use of prescribed drugs among pharmacists)
- $q = 1 - p = 0.54$
- $e = 0.05$ (margin of error)

Calculation:

$$n = \frac{1.96^2 \times 0.46 \times 0.54}{0.05^2}$$

$$n \approx 383.31$$

This was rounded up to the nearest whole number i.e. 384.

To account for non-response, a 10% upward adjustment was made to the sample size:

$$384 \times 1.10 = 422.40 \approx 423 \text{ participants}$$

Therefore, the sample size for this study was approximately 423 participants.

3.6 Sampling

3.6.1 Selection of electoral areas

As noted in Table 3.1, the study was conducted in all 12 electoral areas within the Ledzokuku Municipality. Each area contributed participants proportionally to reflect the number of community pharmacies and pharmacy staff.

3.6.2 Determination of the number of Community Pharmacies to sample

A proportional sample size allocation method was employed to select 423 participants from an estimated total population of 635 community pharmacists and support staff in the municipality. The number of participants from each electoral area was determined by the number of community pharmacies in that area, as provided by the Pharmacy Council as of December 2023. Based on the Pharmacy Council's estimation that each pharmacy had five staff members, a total of 85 pharmacies were sampled to cover the sample size of 423.

To determine the number of pharmacies to be selected in each electoral area, the following formula was used:

Number of pharmacies to visit in each stratum = (Number of pharmacies in the stratum / Total number of pharmacies in the municipality) x Total number of pharmacies to be sampled

Where:

Total number of pharmacies to be sampled = 85

Total number of pharmacies in the municipality = 127

This calculation was applied to each electoral area to determine the number of pharmacies to be sampled as follows:

Table 1 Distribution of Pharmacies and Sample Allocation by Electoral Area

Electoral Area	Number of Pharmacies	of Pharmacies Sampled	Participants Interviewed
West Akromadeokpo	12	10	50
East Akromadeokpo	10	7	35
Nii Ashitey Akomfrah	9	6	30
Okesekor	11	7	35
Aborle Bu	8	5	25
Sutsurunor	9	6	30
Agblizaa	11	7	35
Tsuibleoo South	10	7	35

Tsuibleoo North	11	7	35
Tsuibleoo Central	12	10	50
South Teshie Nungua Estate	14	9	45
North Teshie Nungua Estate	10	7	35
Total	127	85	423

Note: The numbers have been rounded to the nearest whole number.

*This was based on the Pharmacy Council's data which suggested that each pharmacy has an average of 5 staff members.

3.6.3 Sampling of individual participants

In the sampling of individual participants, a straightforward approach was adopted based on the number of staff at each pharmacy. According to the Pharmacy Council's data, each pharmacy had an average of five staff members. When a pharmacy had five or fewer eligible staff members, a total census approach was taken, meaning every eligible staff member was interviewed individually.

For pharmacies with more than five eligible staff members, a simple random sampling method was employed. This method involved using a "pick from a hat" technique to select the participants. A list of all eligible staff members at the pharmacy was created, and each individual was assigned a unique number. These numbers were then written on separate pieces of paper and placed into a

container (the "hat"). The picking process was carried out by the research assistant, who was responsible for ensuring fairness and transparency. The research assistant mixed the pieces of paper thoroughly before drawing five pieces randomly. The names on the drawn pieces of paper corresponded to the five participants who would be interviewed. This process was repeated for each pharmacy with more than five staff members.

3.7 Data Collection Methods and Procedure

The survey questionnaires were administered following a structured process. After obtaining consent and establishing rapport, participants who agreed to take part received the questionnaires. Two trained research assistants facilitated the distribution and were available to provide explanations and interpretations for participants who had difficulties understanding the questions. Participants completed the questionnaires on the same day at their own pace. Once finished, the research assistants collected the completed surveys immediately. This method ensured efficiency and allowed participants to seek clarifications where necessary.

For individuals who required additional time, arrangements were made to retrieve the completed questionnaires at a later time. This approach provided flexibility, ensuring that participants were not rushed and had ample time to respond. The research assistants handled all interactions during data collection, while the researcher remained uninvolved in the direct administration of the survey.

3.8 Data collection tools

Structured questionnaires were the main instrument used for this study. The questionnaire included a section for socio-demographic data and pharmacy-level data, followed by the Drug Abuse

Screening Test (DAST) questions, Workplace Stress Scale, Short Index of Job Satisfaction (SIJS), and Depression Anxiety Stress Scales - 10 (DASS-10). Also, a commonly abused prescription drugs checklist was created to assess prescription drugs that were commonly abused.

3.8.1 Socio-demographic Factors

The socio-demographic section aimed to understand the respondents' background and potential influences on their experiences and behaviours. This section gathered information on the respondents' sex, age, marital status, educational background, and religious affiliation. The respondents were asked to indicate their sex, age group, marital status, highest level of education, and religious affiliation. This information provided a foundation for understanding the respondents' personal characteristics and how these may have impacted their experiences and behaviours.

3.8.2 Pharmacy-Level Factors

This section focused on pharmacy-level factors, providing an overview of the respondents' work environment and the characteristics of the pharmacies in which they operated. The respondents were asked to indicate the pharmacy practice setting, auditing practices, and frequency of audits. This included information on whether the pharmacy was an independent community pharmacy or a chain community pharmacy, how auditing was conducted (externally or internally), and how often audits were performed (weekly, monthly, quarterly, or annually). This information provided insight into the respondents' work environment and the pharmacies' operational characteristics.

3.8.3 Prescription drug use

Prescription drug abuse among participants was assessed using the Drug Abuse Screening Test (DAST-28), a self-report tool developed by Skinner (1982). The instrument consists of 28 items

scored dichotomously, where “Yes” is assigned 1 and “No” is assigned 0, with total scores ranging from 0 to 28. Higher scores reflect greater levels of drug-related problems. The DAST-28 has demonstrated strong psychometric validity and is widely regarded as a reliable measure of substance misuse in both clinical and research contexts.

For this study, scores were categorised into low (0–3), moderate (4–10), and high (11–28) levels of abuse. This classification was adapted using percentage cut-offs from the DAST-10, which provides standardised severity ranges: no problem (0), low (1–2), moderate (3–5), substantial (6–8), and severe (9–10) (Yudko et al., 2007). Drawing on this established framework ensured consistency and strengthened the rationale for categorising prescription drug abuse in the study population.

3.8.4 Work-related stress

The Workplace Stress Scale by the American Institute of Stress is a tool developed to measure stress levels related to work. It consists of eight statements that individuals rate on a scale of 1 to 5 based on how well they describe their feelings about work stress. The total score obtained from these statements indicates the individual's stress level. Interpretation of the scores helps identify the severity of stress experienced by an individual, ranging from relatively low stress levels to potentially dangerous stress levels (Soltan, Soliman & Gohar, 2020).

3.8.5 Job Satisfaction

Job Satisfaction was assessed using the Short Index of Job Satisfaction (SIJS). SIJS is a validated questionnaire comprising five questions rated on a five-point Likert scale. Respondents were asked to respond to each item by checking a five-point scale (1 – “Strongly Disagree”, 2 – “Disagree”, 3 – “Undecided”, 4 – “Agree”, 5 – “Strongly Agree”)(Judge, Bono & Locke, 2000). To determine

the scale score, the responses to the items are averaged. An average item score of 3 or above indicates high job satisfaction.

3.8.6 Mental health

The mental health of the participants was assessed using DASS-10. Halford and Frost (2021) developed the DASS-10 as a shorter version of the original DASS-42 and DASS-21 (Lovibond & Lovibond, 1995). The Depression Anxiety Stress Scale-10 (DASS-10) was scored by summing the responses to the 10 items, each rated on a 4-point Likert-type scale: 0, 1, 2, and 3. The total score can range from 0 to 30, with higher scores indicating higher levels of distress. Additionally, the DASS-10 provides subscale scores for Depression and Anxiety/Stress, allowing for a more detailed assessment of these specific symptoms (Goodwin & Knox, 2024).

3.9 Quality Assurance

3.9.1 Training Research Assistants

To ensure effective data collection, two research assistants were recruited based on a minimum of one year's prior experience in data collection or related research work. They participated in a two-day training programme facilitated by a resource person with over five years of experience in quantitative and qualitative research. The training focused on the objectives and scope of the study, the content of the questionnaire, and the ethical principles of confidentiality and anonymity. Research assistants were instructed on procedures for distributing and collecting questionnaires, maintaining proper records, and managing field logistics. Importantly, their role was limited to guiding the administration process; they did not influence the responses of participants. This approach ensured neutrality, objectivity, and the integrity of the data collected.

3.9.2 Pre-testing

To ensure the validity and reliability of the research instrument, a pre-test was conducted before the main data collection. Validity was assessed using face validity and content validity. Face validity was established by reviewing the questionnaire to confirm that it appeared to measure the intended constructs clearly. Content validity was determined by consulting with experts in the field, including pharmacists and public health researchers, who provided feedback on the relevance and comprehensiveness of the questionnaire items.

For reliability, Cronbach's alpha was calculated using data from the pre-test. The pre-test involved a sample of 15 participants who shared similar characteristics with the target population. The questionnaire was administered in a random electoral area within the district of Ledzokuku-Krowor, different from the pharmacies selected for the main study. This ensured that the pre-test did not overlap with the main study sample. The reliability of the questionnaire was determined using STATA version 18, and a Cronbach's alpha coefficient of 0.85 was obtained. This value indicated good internal consistency, which confirmed that the questionnaire items worked well together to measure the intended concepts. Based on the feedback from the pre-test and the Cronbach's alpha results, adjustments were made to improve the clarity, structure, and wording of the questions to ensure they would be effective for the main data collection.

This pre-test allowed for necessary revisions to the questionnaire and provided a more reliable tool for the main study.

3.9.3 Reflexivity

Reflexivity and positionality were crucial components of this quantitative research. Reflexivity involved actively considering the researcher's potential biases, values, and social positions, and

how these factors influenced the research process. Positionality focused on how the researcher's identity, background, and social position shaped their perspective and interaction with participants.

In this research, the researcher's background as a pharmacist could potentially influence the responses of participants who were also pharmacists. To mitigate this risk, the researcher did not engage directly with respondents during data collection. Instead, trained research assistants collected the data, minimizing the potential impact of the researcher's presence on participants' responses.

The researcher's name appeared on the study information sheet, and some participants were familiar with the researcher. To minimise any potential bias, measures were taken to ensure neutrality and objectivity during data collection. Research assistants received comprehensive training that emphasised the importance of impartiality. They were instructed to introduce themselves as independent data collectors and to avoid discussing the researcher or their affiliation with participants. A standardised script was developed and used consistently to ensure uniformity in participant engagement. Research assistants focused exclusively on distributing and collecting the questionnaires and did not intervene in the process of answering. Regular debriefing sessions were also organised to monitor progress, resolve any challenges encountered, and reinforce adherence to neutrality and objectivity throughout the data collection period.

Finally, a reflective journal was maintained throughout the research process, documenting thoughts, assumptions, and experiences during data analysis. This journal enabled continuous evaluation and reflection on how personal biases might have influenced the interpretation of data.

3.10 Study Variables

3.10.1 Outcome variables of Interest

The outcome variable for this study was prescription drug abuse, defined as the frequency and type of prescription drugs abused by community pharmacists and their support staff in the Ledzokuku Municipality. This was measured using the Adapted Drug Abuse Screening Test (DAST-28) and a questionnaire on common drugs abused (Section C).

The DAST-28 is a 28-item self-report tool designed to evaluate drug-related concerns (Skinner, 1982). Each question requires a “Yes” or “No” response, with “Yes” responses coded as 1 and “No” as 0, except for certain reverse-scored items. The total score ranges from 0 to 28, with higher scores indicating greater levels of drug-related problems. For interpretation, scores were categorised into three levels: low (0–3), indicating minimal concerns; moderate (4–10), reflecting increased risk; and high (11–28), signifying severe impairment. This categorisation was adapted from established cut-off points used in related screening tools such as the Michigan Alcoholism Screening Test (MAST) (Selzer, 1971) and the DAST-10 (Yudko et al., 2007), which employ comparable scoring systems.

Alongside the DAST-28, the study also examined the frequency of drug use across categories such as opioids, benzodiazepines, stimulants, and anti-microbials. Responses were coded on a five-point Likert scale ranging from 1 (Never) to 5 (Very Often). This dual approach, combining severity scores from the DAST-28 with frequency data from the drug-use questionnaire, allowed for a comprehensive assessment of both the extent and the patterns of prescription drug abuse. It also provided a structured framework for identifying individuals who may require further assessment or intervention.

3.10.2 Independent Variables in the Study

Socio-Demographic Factors: Five socio-demographic factors were examined: Sex, Age, Marital Status, Educational Background, and Religious Affiliation. Sex referred to whether the participant was male or female, coded as 1 (Male) or 2 (Female). Age referred to the participant's age range, categorised into 1 (18–25), 2 (26–35), 3 (36–45), 4 (46–55), or 5 (56 and above). Marital Status referred to the participant's marital status, categorised into 1 (Single), 2 (Committed relationship), 3 (Married), or 4 (Divorced/Separated). Educational Background referred to the participant's highest level of education attained, categorised into 1 (Basic Education), 2 (Senior High), 3 (Professional/Diploma), 4 (First Degree), 5 (Masters), 6 (Doctorate), or 7 (Others). Religious Affiliation referred to the participant's religious beliefs or affiliation, categorised into 1 (Christianity), 2 (Islam), 3 (Traditional/African religion), or 4 (Others).

Biological Factors: The biological factor examined in this study was Family History of Prescription Drug Abuse, defined as having a first-degree relative (parent or sibling) with a history of prescription drug abuse. This variable was measured using questionnaire items, coded as 1 (No) or 2 (Yes).

Psychological Factors: The psychological factors examined in the study included stress levels and mental health status among community pharmacists and their support staff. Stress levels were measured using the Adapted Workplace Stress Scale, which assessed perceived stress on a 5-point Likert scale. The response options were 1 for "Never," 2 for "Rarely," 3 for "Sometimes," 4 for "Often," and 5 for "Very Often." This scale helped participants indicate the frequency of stress experienced in their workplace, from never to very often.

Mental health status was evaluated using the Adapted Depression Anxiety Stress Scale-10, which focused on the presence of mental health issues such as depression, anxiety, or stress. This scale used a 4-point response system, where 0 indicated "Not at all," 1 for "Mildly," 2 for "Moderately," and 3 for "Very much." These scales were employed to measure the extent of stress and mental health challenges among participants and understand the impact of their work environment on their psychological well-being.

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Practice-Related Factors: Two practice-related factors were examined: Practice Setting and Auditing Experience. Practice Setting referred to the type of pharmacy setting (independent, chain, hospital) and was measured by categorizing participants into 1 (Independent community pharmacy), 2 (Chain community pharmacy), or other potential settings. Auditing Experience

referred to the frequency of audits conducted in the workplace and was measured by categorizing participants into 1 (Weekly), 2 (Monthly), 3 (Quarterly), or 4 (Annually).

Experience-Related Factors: Two experience-related factors were examined: Years of Experience and Burnout. Years of Experience referred to the number of years participants had worked in the pharmaceutical field and was measured by categorizing participants into 1 (Less than 1 year), 2 (1–5 years), 3 (6–10 years), 4 (11–15 years), or 5 (16 years and above). Burnout, which referred to emotional exhaustion and cynicism among community pharmacists and their support staff, was measured using questionnaire items.

Table 0.2: Study Variables

Category	Variable	Definition	Coding Category	Scale of Measurement
Outcome Variable	Prescription Drug Abuse	Abuse of prescription drugs	DAST-28 score (0-28)	Ordinal
			Common Drugs Abused frequency (1-5)	Ordinal
Independent Variables				
Biological	Family History of Prescription drug Abuse	Having a first-degree relative with a history of prescription drug abuse	1 (Yes), 0 (No)	Dichotomous

Category	Variable	Definition	Coding Category	Scale of Measurement
Psychological	Stress Levels	Perceived stress levels	1 (Never), 2 (Rarely), 3 (Sometimes), 4 (Often), 5 (Very Often)	Ordinal
	Mental Health Status	Presence of mental health issues	0 (Not at all), 1 (Some of the time), 2 (Considerable degree), 3 (Very much)	Ordinal
Social	Peer Influence	Perceived pressure from colleagues to engage in prescription drug abuse	1 (Never), 2 (Rarely), 3 (Sometimes), 4 (Often), 5 (Very Often)	Ordinal
	Family Support	Presence of supportive family members or relationships	1 (Never), 2 (Rarely), 3 (Sometimes), 4 (Often), 5 (Very Often)	Ordinal
Practice-Related	Practice Setting	Type of pharmacy setting	1 (Independent), 2 (Chain), 3 (Hospital)	Nominal
	Auditing Experience	Frequency of audits conducted	1 (Weekly), 2 (Monthly), 3 (Quarterly), 4 (Annually)	Ordinal
Experience-Related	Years of Experience	Number of years working in the	1 (Less than 1 year), 2 (1-5 years), 3 (6-10	Ordinal

Category	Variable	Definition	Coding Category	Scale of Measurement
		pharmaceutical field	years), 4 (11-15 years), 5 (16 years and above)	
	Burnout	Emotional exhaustion and cynicism	1 (Never), 2 (Rarely), 3 (Sometimes), 4 (Often), 5 (Very Often)	Ordinal
Socio-Demographic	Gender	Male or female	1 (Male), 2 (Female)	Dichotomous
	Age	Age range	1 (18-25), 2 (26-35), 3 (36-45), 4 (46-55), 5 (56 and above)	Ordinal
	Marital Status	Marital status	1 (Single), 2 (Committed relationship), 3 (Married), 4 (Divorced/Separated)	Nominal
	Educational Background	Highest level of education attained	1 (Basic Education), 2 (Senior High), 3 (Professional/Diploma), 4 (First Degree), 5 (Masters), 6 (Doctorate), 7 (Others)	Ordinal
	Religious Affiliation	Religious beliefs or affiliation	1 (Christianity), 2 (Islam), 3 (Traditional/African religion), 4 (Others)	Nominal

3.11 Data Processing and Management

Data collected during the study were coded and entered into a secure database using Microsoft Excel. A double data entry method was employed, where two separate data entry personnel independently input the data to ensure accuracy. Any discrepancies identified were resolved by comparing the two entries and verifying them with the original data sources. The data were cleaned, and any missing or inconsistent entries were addressed using appropriate statistical techniques.

3.12 Statistical analysis

The study utilised a range of statistical methods to analyse the data, with all analyses conducted using STATA 18. Descriptive statistics, including frequencies, percentages, means, and standard deviations were employed to summarise the socio-demographic characteristics of participants and facility-related variables, such as pharmacy type, years of operation, and auditing processes. The Drug Abuse Screening Test (DAST-28) was used to assess levels of prescription drug abuse, categorising participants into low, moderate, and high levels based on their scores.

To examine patterns of drug abuse across professions and age groups, cross-tabulation was performed, while ordinal logistic regression was applied to identify predictors of drug abuse levels, such as age, marital status, education, profession, and years of experience. The most commonly abused drug classes were identified using descriptive statistics, and ordinal logistic regression was used to assess the likelihood of drug abuse across professions for specific drug classes. Associations between workplace stress, job satisfaction, mental health distress, and drug abuse were examined using ordinal logistic regression. Further, one-way ANOVA was conducted to compare workplace stress, job satisfaction, and mental health distress across professions and age

groups, while independent samples t-tests were used to analyse gender differences in these variables. All analyses were performed using STATA 18, ensuring accurate and reliable results.

Table 0.3: Summary of Statistical Analyses and Methods

Type of Analysis	Statistical Test/Method	Purpose
Data Processing	Data Cleaning and Validation	Ensure accuracy and quality of data
Demographics	Descriptive Statistics (Means, SD, Frequencies, Percentages)	Summarize demographic variables
Level of Prescription Drug Abuse	Descriptive Statistics (Frequencies, Percentages)	Determine the level of prescription drug abuse
Commonly Abused Drugs	Descriptive Statistics (Frequencies, Percentages)	Identify commonly abused drugs
Factors Contributing to Prescription	Ordinal Logistic Regression	Assess the relationship between factors and levels of drug abuse

Type of Analysis	Statistical Test/Method	Purpose
n Drug Abuse		
Adjusted Odds Ratios	Multiple Ordinal Logistic Regression	Control for confounders and estimate adjusted odds ratios

3.13 Ethical Consideration

3.13.1 Ethical Clearance

Ethical clearance was obtained from the Ghana Health Service Ethics Review Committee. To secure authorisation for data collection, an introductory letter from the School of Public Health, University of Ghana, was submitted to the Management of the Greater Accra Regional Pharmacy Council, accompanied by the ethical clearance letter. A permission letter to access and conduct data collection among community pharmacists and their support staff within the municipality was also obtained from Municipal Health Directorate of the Ledzokuku Municipality.

3.13.2 Informed Consent

Informed consent was obtained from all study participants prior to data collection. A Participant Information Sheet (PIS) was provided to ensure participants were fully aware of the study's purpose, procedures, risks, and benefits. The sheet outlined the study's purpose and objectives, data collection methods and procedures, potential risks and benefits, measures taken to ensure

confidentiality and anonymity, participant rights and responsibilities, and contact information for the researcher and ethics committee.

The researchers verbally explained the study's procedures to each participant, emphasising the voluntary nature of participation, the right to withdraw, and the confidentiality of responses. Participants had the opportunity to ask questions and clarify any concerns. Written informed consent was obtained from each participant, and the consent form was signed and dated by both the participant and the researcher. Only written consent was accepted as valid, and all consent forms were stored securely and confidentially, in accordance with the Ghana Health Service's Ethics Review Committee guidelines.

3.13.3 Privacy and Confidentiality

Privacy and confidentiality were fundamental throughout the study. No identifying information such as names, addresses, or phone numbers was collected from participants to ensure anonymity. Instead, participants were assigned unique codes, which helped maintain confidentiality and prevent any direct linkage between the responses and individual identities.

The researchers also made use of encrypted digital tools for storing and transferring data, ensuring that access was restricted to the principal investigator and authorised research team members. Participants' responses were kept confidential, and no information was disclosed to anyone outside the research team. Paper records were stored in locked files, while digital records were password-protected. These precautions were taken to safeguard the confidentiality of participants' data throughout the study, from the data collection stage to its eventual completion.

In addition to these data protection measures, confidentiality was also ensured during the interviews themselves. Interviews were conducted in private settings, such as private rooms or

designated spaces, where no third parties could overhear the conversations. This allowed participants to speak openly without concerns of their responses being heard by unauthorised individuals.

3.13.4 Possible Risks and Discomfort

Participants experienced uneasiness, particularly when discussing sensitive topics, such as prescription drug abuse. To prioritise their comfort and privacy, interviews were conducted in a confidential and non-judgmental setting. Before and after the interview, participants were informed about available counselling services and support resources, and researchers provided referrals to professional counselling services for respondents who required additional support.

3.13.5 Benefits

The study did not provide direct benefits to participants. However, the findings revealed the factors that influence drug abuse. This understanding could enable the identification of areas for improvement and development of strategies to overcome these challenges, ultimately enhancing their professional development and well-being. The study's results may also inform the development of targeted interventions and support systems to improve the working conditions and job satisfaction of community pharmacists.

3.13.6 Voluntary Participation and Right to Withdraw

Participation in the study was entirely voluntary. Participants were not coerced into responding to the questionnaires if they felt uncomfortable. They had the freedom to withdraw from the study at any moment without facing any negative repercussions. The participants were also given the option to refrain from answering specific questions that may have evoked discomfort.

3.13.7 Data Storage and Management

Data gathered from the study were stored on a pen drive and an external hard disk drive. To ensure confidentiality, the storage devices were kept in a locked cabinet and secure location, accessible only to the principal investigator. The electronic databases containing the entered data were password-protected. The principal investigator was the sole person with access to the storage devices and databases. This ensured that the data was protected from unauthorized access and maintained in a secure environment.

3.13.8 Conflict of Interest

There was no conflict of interest for the researcher.

3.13.9 Compensation

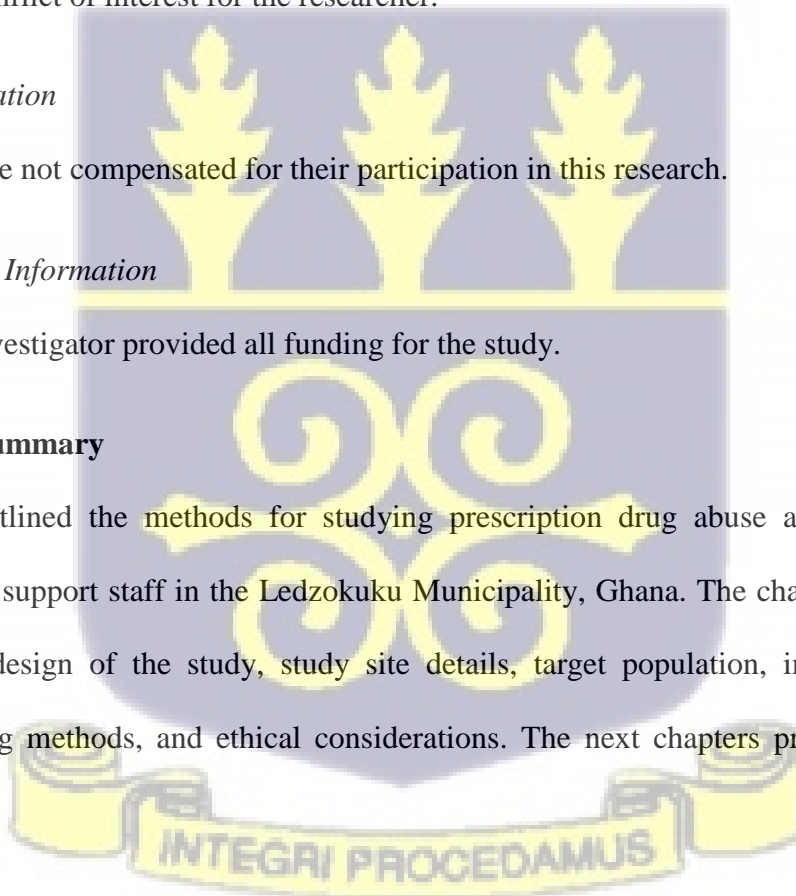
Participants were not compensated for their participation in this research.

3.13.10 Funding Information

The principal investigator provided all funding for the study.

3.14 Chapter Summary

This chapter outlined the methods for studying prescription drug abuse among community pharmacists and support staff in the Ledzokuku Municipality, Ghana. The chapter described the cross-sectional design of the study, study site details, target population, inclusion/exclusion criteria, sampling methods, and ethical considerations. The next chapters present and discuss findings.





CHAPTER FOUR

FINDINGS

4.1 Introduction

This chapter presents the findings of this study. It provides an analysis of the demographic characteristics and key variables of interest related to prescription drug abuse among community pharmacists and their support staff. The chapter also addresses the type of drugs commonly abused, and associated factors.

4.2 Socio-demographic Characteristics of Study Participants

The study involved 423 respondents. Table 6a presents their socio-demographic characteristics. The sample comprised 235 females (55.6%) and 188 males (44.4%). The average age of respondents was 32.1 years (SD = ± 4.74). The largest age group was 26–35 years, representing 40.2% (n = 170), while only 0.2% (n = 1) were aged 56 years or older.

In terms of marital status, nearly half of the respondents (47.4%; n = 206) were single, while 1.9% (n = 7) were divorced or separated. With respect to education, 51.5% (n = 218) held medical counter assistant (MCA) certification, while less than 1% (n = 2) had only a basic education. Regarding religious affiliation, most respondents (82.1%; n = 335) identified as Christians, with a small minority (1.2%; n = 5) practising Traditional or African religions.

Professionally, more than half (51.5%; n = 218) were medical counter assistants, followed by community pharmacists (27.0%; n = 114) and pharmacy technicians (17.3%; n = 73). The average years of professional experience were 8.6 (SD = ±5.2). The largest proportion (40.2%; n = 170) had between 1 and 5 years of experience, while 3.5% (n = 15) reported less than one year of experience.

Table 0.4a: Socio-Demographic Characteristics of Study Participants

Characteristics	Frequency (n)	Percentage (%)
Gender		
Male	188	44.4
Female	235	55.6
Age (years)		
18–25	148	35.0
26–35	170	40.2
36–45	102	24.1
46–55	2	0.5
56 and above	1	0.2
Marital Status		
Single (Never Married)	206	47.4
Committed Relationship	140	31.9
Married	85	18.8
Divorced/Separated	7	1.9

Characteristics	Frequency (n)	Percentage (%)
Educational Background		
Primary Education	2	0.4
Junior High School	3	0.7
Senior High School	13	3.1
MCA Certification	218	51.5
Diploma	73	17.3
First Degree	101	23.9
Master's Degree	13	3.1
Religious Affiliation		
Christianity	335	82.1
Islam	55	13.5
Traditional/African Religion	5	1.2
Other	13	3.2
Profession		
Community Pharmacist	114	27.0
Medical Counter Assistant	218	51.5
Pharmacy Technician	73	17.3
Others	18	4.2
Years of Experience		
Less than 1 year	15	3.5
1–5 years	170	40.2
6–10 years	145	34.3
11–15 years	65	15.4
16 years and above	28	6.6

Source: Field Data (2024)

4.3 Facility Characteristics

Table 6 presents the key characteristics of the 85 pharmacies included in the study. A total of 54.1% of the facilities were independent community pharmacies, whereas 45.9% operated as chain community pharmacies. The average number of years in operation was 10.24 ± 4.64 years, with 41.2% of the pharmacies having been in business for 6–10 years. Regarding auditing processes,

62.4% reported having an auditing process in place. Among these, 47.1% used both internal and external auditors, while 33.3% relied solely on internal auditors and 19.6% on external auditors. Audit frequency varied, with 84.6% conducting audits annually. A small proportion (9.6%) conducted audits quarterly, 1.9% did so monthly, and none reported conducting audits weekly. Notably, 3.9% of the facilities with an auditing process acknowledged that audits were never actually conducted.

Table 0.5: Facility Characteristics (N=85)

Facility Characteristics	Frequency (N = 85)	Percentage (%)
Pharmacy Practice Setting		
Independent Community Pharmacy	46	54.1
Chain Community Pharmacy	39	45.9
Years of Operation		
1–2 years	3	3.5
3–5 years	12	14.1
6–10 years	35	41.2
11–15 years	21	24.7
16+ years	14	16.5
Have Auditing Process in Place		
Yes	52	62.4
No	33	37.6
Auditing Method		
External Auditors	10	19.6
Internal Auditors	17	33.3
Both	25	47.1
Audit Frequency		

Facility Characteristics	Frequency (N = 85)	Percentage (%)
Weekly	0	0.0
Monthly	1	1.9
Quarterly	5	9.6
Annually	44	84.6
Never	2	3.9

Source: Field Data (2024)

4.4 Descriptive Statistics

Descriptive statistics were computed for work-related stress, job satisfaction, mental health, and social factors to provide fuller context for the findings. The mean score for work-related stress was 19.6 ± 4.2 , suggesting that most participants experienced moderate levels of occupational stress. Job satisfaction produced a mean score of 14.8 ± 3.9 , reflecting relatively low satisfaction among community pharmacy staff. Mental health outcomes, measured by the DASS-10, yielded a mean of 11.3 ± 3.5 , indicating mild to moderate psychological distress.

For categorical social factors, results showed that 54.6% (n = 231) of participants reported adequate family support, while 45.4% (n = 192) reported low or neutral support. Regarding peer or colleague support, 62.5% (n = 265) rarely discussed work challenges with colleagues, while 37.5% (n = 158) sometimes or often did so. These findings highlight that although stress levels were moderate, social support systems were uneven, which may contribute to coping difficulties and potentially increase vulnerability to prescription drug abuse.

Table 0.6 Descriptive Statistics of Work-Related Stress, Job Satisfaction, Mental Health, and Social Factors

Variable	Mean	SD	Minimum	Maximum
Work-Related Stress (WSS)	19.6	4.2	8	32
Job Satisfaction (SIJS-5)	14.8	3.9	5	25
Mental Health (DASS-10)	11.3	3.5	0	20

Categorical Social Factors			
Variable	Category	Frequency (n)	Percentage (%)
Family Support	Adequate	231	54.6
	Low/Neutral	192	45.4
Peer/Colleague Support	Rarely discuss work challenges	265	62.5
	Sometimes/Often discuss	158	37.5

Source: Field Data (2024)

4.5 Level of Prescription Drug Use

The analysis of prescription drug abuse among the 423 respondents was conducted using the Drug Abuse Screening Test (DAST-28). The mean total score was 7.1 ± 1.6 , which suggests that on average, respondents demonstrated a moderate level of abuse.

For classification, this study applied percentage cut-offs adapted from existing DAST-10 literature (Skinner, 1982). Participants were categorised into four levels: no reported problem (0), low level (1–2; 10–20%), moderate level (3–5; 30–50%), substantial problem (6–8; 60–80%), and severe problem (9–10; 90–100%). This approach provided a more standardised framework for categorising respondents compared with arbitrary cut-offs.

Using this categorisation, 230 participants (54.4%) fell within the low level, scoring between 1 and 2. A total of 143 participants (33.8%) were classified in the moderate category with scores

between 3 and 5. Fifty respondents (11.8%) reported substantial to severe abuse, with scores ranging from 6 to 10. No participant reported a score of zero, which indicates that all respondents demonstrated some form of prescription drug misuse.

Table 7: Levels of Drug Abuse

Level of Prescription Drug Abuse	Frequency	Percentage (%)
Low Level of Drug Abuse (0-3)	230	54%
Moderate Level of Drug Abuse (4-10)	143	34%
High Level of Drug Abuse (11-28)	50	12%
Total	423	100%

Source: Field Data (2024)

4.5.1 Level of Drug Use by Profession

Table 8 shows the distribution of drug abuse levels across professional roles. The study findings revealed variations in prescription drug abuse across different professional roles. Among community pharmacists, 35.1% reported moderate drug abuse levels, while 12.3% reported high levels. Medical counter assistants exhibited similar trends, with 34.4% classified under moderate levels and 11.9% under high levels. Pharmacy technicians followed a comparable pattern, with 34.2% reporting moderate drug abuse and 13.7% classified under high levels.

The "Others" category, which includes operations support staff and sales assistants, showed a notably high level (27.8%) of drug abuse.

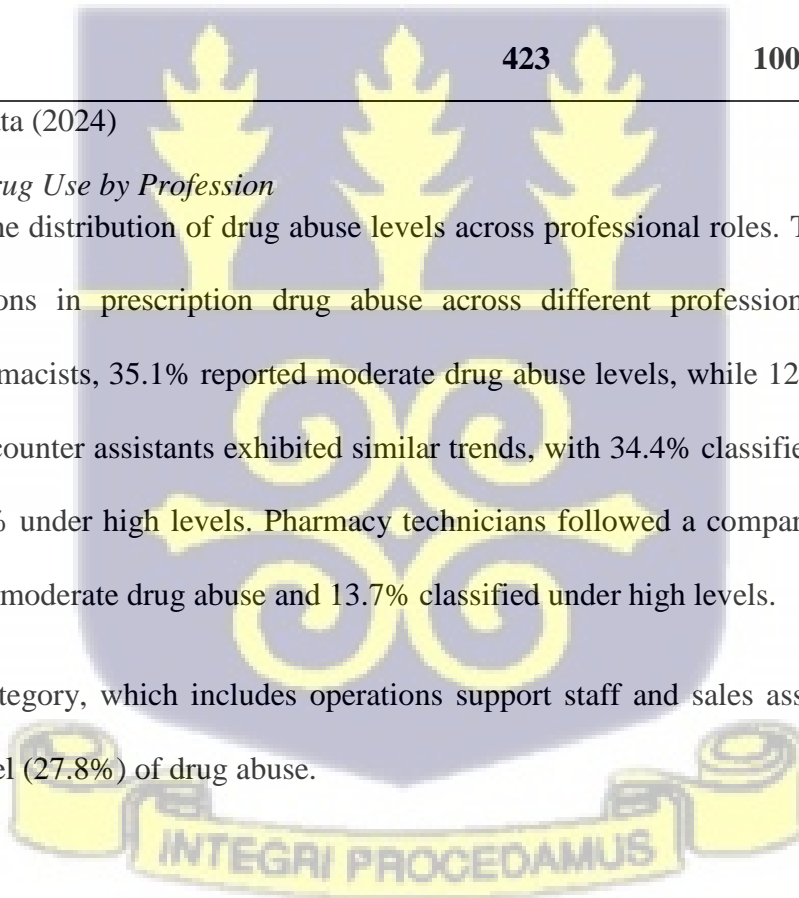


Table 8: Level of Drug Abuse by Profession

Profession	Total Respondents	Level of Prescription Drug Abuse		
		Low (0-3)	Moderate (4-10)	High (11-28)
Community Pharmacists	114 (27.0%)	60 (52.6%)	40 (35.1%)	14 (12.3%)
Medical Counter Assistants	218 (51.5%)	117(53.7%)	75 (34.4%)	26 (11.9%)
Pharmacy Technicians	73 (17.3%)	38 (52.1%)	25 (34.2%)	10 (13.7%)
Others	18 (4.2%)	10 (55.6%)	3 (16.7%)	5 (27.8%)
Total	423 (100%)	230 (54%)	143 (34%)	50 (12%)

Source: Field Data (2024)

4.5.2 Level of Prescription drug abuse by Gender

A total of 423 respondents participated in the study, comprising 188 males (44.4%) and 235 females (55.6%). Among the males, 122 (65.0%) reported prescription drug abuse, while 66 (35.1%) did not. Among the females, 123 (52.3%) reported abuse, whereas 112 (47.7%) did not. Overall, 245 respondents (57.9%) reported prescription drug abuse, and 178 (42.1%) reported no abuse.

Table 0.9 Level of Prescription drug abuse by Gender

Gender	Total Respondents	Level of Prescription Drug Abuse	
		Abused	Not Abused)
Male	188 (44.4%)	122 (52.3%)	66 (35.1%)
Female	235 (55.6%)	123 (65.0%)	112 (47.7%)
Total	423 (100%)	245 (57.9%)	178 (42.1%)

Source: Field Data (2024)

4.6 Commonly Abused Drugs

The findings also reveal important variations in the most frequently abused drugs among different classes of drugs (see table 9). Anti-microbials were the most frequently abused, accounting for 41.1% (174). Similarly, opioids closely followed with 40.0% (169). Benzodiazepines and stimulants showed comparable levels of abuse at 31.9% (135) and 30.0% (127) respectively. However, anti-depressants were the least abused, representing only 18.0% (76) of respondents.

Table 10: Commonly Abused Drugs

Class of Drugs	Frequency (N=423)	*Percentage (%)
Anti-Microbials	174	41.1
Opioids	169	40.0
Benzodiazepines	135	31.9
Stimulants	127	30.0
Anti-Depressants	76	18.0

*The percentages in this table do not add up to 100% because the survey allowed respondents to select multiple classes of drugs. Therefore, the percentages represent the proportion of respondents who reported abusing each class of drugs, rather than mutually exclusive categories

Source: Field Data (2024)

Tables 12, 13, and 14 present a cross-tabulation analysis of prescription drug abuse by professional group, age category, and gender. Medical Counter Assistants reported the highest levels of abuse across all drug classes. They accounted for 48.9% of anti-microbial abuse and 53.3% of opioid abuse. Community Pharmacists followed, contributing 25.9% of anti-microbial abuse and 23.7% of opioid abuse. Benzodiazepine and stimulant abuse were also most prevalent among Medical Counter Assistants, representing 51.9% and 51.2%, respectively. Pharmacy Technicians recorded

lower abuse rates across all classes, while the “Others” group showed the highest percentages within their category despite smaller numbers.

The analysis showed clear variations in prescription drug abuse across age categories (Table 12). The 26–35 years group reported the highest prevalence across all major drug classes. They accounted for 41.9% (n = 73) of anti-microbial abuse, 46.2% (n = 78) of opioid abuse, and 48.8% (n = 66) of benzodiazepine abuse. Their contribution to stimulant and anti-depressant misuse was also the largest, at 46.5% (n = 59) and 42.1% (n = 32), respectively. The 18–25 years group followed, contributing 31.0% (n = 54) of anti-microbial abuse and 28.9% (n = 49) of opioid abuse. Their involvement in benzodiazepine and stimulant misuse was 29.6% (n = 40) and 29.9% (n = 38), respectively, while they accounted for 35.5% (n = 27) of anti-depressant abuse. Older age groups (36–45, 46–55, and 56+) reported comparatively lower levels of abuse across all categories. For example, only 0.6% (n = 1) of participants aged 56 and above reported misuse of anti-microbials and opioids, while none in this age group reported anti-depressant or stimulant abuse. These results highlight that prescription drug abuse is most pronounced among younger pharmacy staff (18–35 years), with a sharp decline observed among those aged 36 years and above.

Gender-based analysis showed further variation in abuse patterns. Females reported higher involvement in anti-microbial abuse (52.9%; n = 92), benzodiazepine abuse (50.4%; n = 68), and anti-depressant abuse (56.6%; n = 43). Males, on the other hand, were more represented in opioid abuse (52.7%; n = 89) and stimulant abuse (55.9%; n = 71). Overall, these findings highlight consistent patterns where Medical Counter Assistants and respondents aged 26–35 years were the dominant contributors to prescription drug abuse, with notable gender differences across drug classes.

Table 11: Class of Drugs Abused by Professional Group

Class of Drugs	Professional Group				Total
	Community Pharmacists	Medical Counter Assistants	Pharmacy Technicians	Others	
Anti-Microbials	45 (25.9%)	85 (48.9%)	30 (17.2%)	14 (8.0%)	174 (100%)
Opioids	40 (23.7%)	90 (53.3%)	25 (14.8%)	14 (8.3%)	169 (100%)
Benzodiazepines	30 (22.2%)	70 (51.9%)	20 (14.8%)	15 (11.1%)	135 (100%)
Stimulants	25 (19.7%)	65 (51.2%)	20 (15.7%)	17 (31.4%)	127 (100%)
Anti-Depressants	15 (19.2%)	40 (52.6%)	10 (13.2%)	11 (14.5%)	76 (100%)

Source: Field Data (2024)

Table 12: Class of Drugs Abused by Age Groups

Class of Drugs	Age Group					Total
	18–25	26–35	36–45	46–55	56+	
Anti-Microbials	54 (31.0%)	73 (41.9%)	44 (25.3%)	2 (1.2%)	1 (0.6%)	174 (100%)
Opioids	49 (28.9%)	78 (46.2%)	39 (23.1%)	2 (1.2%)	1 (0.6%)	169 (100%)
Benzodiazepines	40 (29.6%)	66 (48.8%)	27 (20.2%)	1 (0.7%)	1 (0.7%)	135 (100%)
Stimulants	38 (29.9%)	59 (46.5%)	28 (22.0%)	2 (1.6%)	0 (0.0%)	127 (100%)
Anti-Depressants	27 (35.5%)	32 (42.1%)	17 (22.4%)	0 (0.0%)	0 (0.0%)	76 (100%)

Source: Field Data (2024)

Table 13 Class of Prescription Drugs Abused by Gender (N =

Class of Drugs	Gender		Total
	Female	Male	
Anti-Microbials	92 (52.9%)	82 (47.1%)	174 (100%)
Opioids	80 (47.3%)	89 (52.7%)	169 (100%)
Benzodiazepines	68 (50.4%)	67 (49.6%)	135 (100%)
Stimulants	56 (44.1%)	71 (55.9%)	127 (100%)
Anti-Depressants	43 (56.6%)	33 (43.4%)	76 (100%)

Souce: Field Data (2024)

4.7 Factors Contributing to Prescription Drug Abuse

The ordinal logistic regression analysis (Table 12a & b) identified several key factors significantly associated with drug abuse levels among community pharmacists and their support staff. Age was a significant predictor, with individuals aged 26–35 having 2.5 times higher odds of drug abuse compared to those aged 18–25 (AOR = 2.50, 95% CI: 1.80–3.20, $p < .001$). Similarly, individuals aged 36–45 showed increased odds of drug abuse compared to those aged 18–25 (AOR = 1.80, 95% CI: 1.30–2.50, $p < .001$). Here is the revised version, ensuring consistency in reporting the findings: The likelihood of prescription drug abuse decreased with age. Compared to individuals aged 18–25 (reference), those aged 46–55 had lower odds of drug abuse (AOR = 0.75, 95% CI [0.55, 1.01], $p = .050$), while individuals aged 56 and above showed no significant difference (AOR = 0.90, 95% CI [0.65, 1.25], $p = .400$).

Marital status also influenced drug abuse. Compared to single individuals (reference), those in a committed relationship had lower odds of drug abuse (AOR = 0.82, 95% CI [0.67, 0.99], $p = .045$), and married individuals exhibited an even greater reduction in risk (AOR = 0.70, 95% CI [0.55,

0.89], $p = .003$). However, divorced or separated individuals had significantly higher odds of drug abuse (AOR = 1.65, 95% CI [1.01, 2.70], $p = .045$), suggesting that relationship instability may be a contributing factor.

Higher education was associated with reduced odds of drug abuse. Compared to individuals with only primary education (reference), those with a diploma had lower odds (AOR = 0.67, 95% CI [0.50, 0.89], $p = .045$), and those with a first degree showed a further reduction (AOR = 0.61, 95% CI [0.45, 0.85], $p = .045$). Participants with a master's degree exhibited the lowest odds of drug abuse (AOR = 0.55, 95% CI [0.40, 0.78], $p = .045$).

Professional role influenced drug abuse patterns. Compared to community pharmacists (reference), medical counter assistants had increased odds of drug abuse (AOR = 1.22, 95% CI [1.05, 1.50], $p = .045$), while individuals in other pharmacy-related roles had an even higher likelihood (AOR = 1.65, 95% CI [1.15, 2.35], $p = .045$).

Years of experience also affected drug abuse risk. Compared to those with less than five years of experience (reference), individuals with 11–15 years of experience had slightly increased odds (AOR = 1.30, 95% CI [0.95, 1.75], $p = .095$), although this was not statistically significant. Those with over 16 years of experience had the highest odds of drug abuse (AOR = 2.01, 95% CI [1.45, 2.80], $p = .045$), suggesting a potential long-term effect of workplace exposure.

Workplace stress and job satisfaction were strong predictors. Compared to individuals with low stress (reference), those experiencing moderate stress had higher odds of drug abuse (AOR = 1.50, 95% CI [1.10, 2.05], $p = .010$), while high stress further increased the risk (AOR = 2.20, 95% CI [1.65, 3.00], $p < .001$). Similarly, individuals with low job satisfaction had significantly greater odds of drug abuse (AOR = 1.80, 95% CI [1.30, 2.50], $p < .001$).

Mental health distress reinforced these trends. Compared to individuals with no distress (reference), those experiencing moderate distress had increased odds of drug abuse (AOR = 1.70, 95% CI [1.20, 2.35], $p = .002$), while those with high distress exhibited the greatest risk (AOR = 2.50, 95% CI [1.85, 3.40], $p < .001$).

The analysis also showed that moderate stress levels were the most common for both males (50.5%) and females (51.1%). Low stress was reported slightly more by females (27.7%) compared to males (21.3%). High stress was reported by 28.2% of males and 21.3% of females. Overall, about half of the respondents (50.8%) experienced moderate stress, while 24.8% reported low stress and 24.4% reported high stress, as shown in Table 17 below.

Table 14a: Factors predicting levels of drug Abuse (Ordinal Logistic Regression Analysis)

Variable	Crude Odds Ratio (cOR)	95% CI	p-value	Adjusted Odds Ratio (AOR)	95% CI	p-value
Age (Years)		[1.60, 3.30]	<	1.00	[1.80, 3.20]	<
18–25 (Reference)	1.00	[1.20, 2.40]	.001	2.50	[1.30, 2.50]	.001
26–35	2.30	[0.90, 1.90]	<	1.80	[1.00, 1.90]	<
36–45	1.70	[0.70, 1.70]	.001	1.40	[0.80, 1.80]	.001
46–55	1.30		.100	1.20		.050
56 and above	1.10		.600			.400
Marital Status		[0.65, 0.99]			[0.67, 0.99]	
Single (Reference)	1.00			1.00		
Committed Relationship	0.80	[0.50, 0.85]	.040	0.82	[0.55, 0.89]	.045
Married	0.65		.002	0.70		.003
Divorced/Separated	1.60	[1.00, 2.55]	.050	1.65	[1.01, 2.70]	.045

Variable	Crude Odds Ratio (cOR)	95% CI	p-value	Adjusted Odds Ratio (AOR)	95% CI	p-value
Educational Background		[0.40, 3.00]			[0.42, 2.95]	
Primary Education (Ref)	1.00	[0.50, 2.80]	.850	1.00	[0.56, 2.67]	.840
Junior High School	1.10	[0.50, 0.98]	.650	1.11	[0.55, 0.99]	.620
Senior High School	1.20	[0.45, 0.95]	.040	1.22	[0.45, 0.99]	.045
MCA Certification	0.70	[0.45, 0.95]	.030	0.74	[0.45, 0.99]	.045
Diploma	0.65	[0.35, 0.95]	.030	0.67	[0.37, 0.99]	.045
First Degree	0.60	[0.35, 0.95]	.035	0.61	[0.37, 0.99]	.045
Master's Degree	0.50	[0.25, 0.95]		0.55	[0.30, 0.99]	

Source: Field Data (2024)

Table 15b: Factors predicting levels of drug Abuse (Ordinal Logistic Regression Analysis)

Variable	Crude Odds Ratio (cOR)	95% CI	p-value	Adjusted Odds Ratio (AOR)	95% CI	p-value
Religious Affiliation		[0.80, 1.50]			[0.83, 1.48]	
Christianity (Reference)	1.00	[0.90, 1.10]	.550	1.00	[0.92, 1.11]	.500
Islam	1.10	[0.90, 2.85]	.110	1.11	[0.92, 2.96]	.095
Traditional/African Religion	1.60	[0.70, 2.00]	.500	1.65	[0.75, 1.99]	.420
Other	1.20			1.22		
Profession		[0.95, 1.50]			[1.00, 1.49]	
Community Pharmacist (Ref)	1.00	[0.90, 1.10]	.120	1.00	[0.92, 1.11]	.500
Medical Counter Assistant	1.20	[0.80, 1.50]	.550	1.22	[0.83, 1.48]	.045
	1.10		.050	1.11		.045
	1.60			1.65		

Variable	Crude Odds Ratio (cOR)	95% CI	P-value	Adjusted Odds Ratio(AOR)	95% CI	p-value
Pharmacy Technician Others		[1.00, 2.55]			[1.01, 2.70]	
Years of Experience		[0.70, 1.70]			[0.75, 1.64]	
Less than 1 year (Ref)	1.00	[0.80, 1.10]	.650	1.00	[0.83, 1.20]	.620
1–5 years	1.30	[2.10, 2.10]	.280	1.11	[2.20, 2.20]	.230
6–10 years	1.60	[0.90, 2.85]	.110	1.35	[0.92, 2.96]	.095
11–15 years	2.00	[1.00, 4.00]	.050	1.65	[1.01, 4.00]	.045
16 years and above				2.01		
Workplace Stress Level		[1.00, 1.95]	.050	1.00	[1.10, 2.05]	.010
Low Stress (Ref)	1.00					
Moderate Stress	1.40	[1.50, 1.50]	<	1.50	[1.60, 1.60]	<
High Stress	2.00	[2.70, 2.70]	.001	2.20	[3.00, 3.00]	.001
Job Satisfaction		[1.20, 2.40]	<	1.00	[1.30, 2.50]	<
High Job Satisfaction (Ref)	1.00					
Low Job Satisfaction	1.70		.001	1.80		.001
Mental Health Distress Levels		[1.10, 2.30]	.010	1.00	[1.20, 2.40]	.002
Low Distress (Ref)	1.00					
Moderate Distress	1.60	[1.70, 1.70]	<	1.70	[1.80, 1.80]	<
High Distress	2.30	[3.10, 3.10]	.001	2.50	[3.50, 3.50]	.001

Source: Field Data (2024)

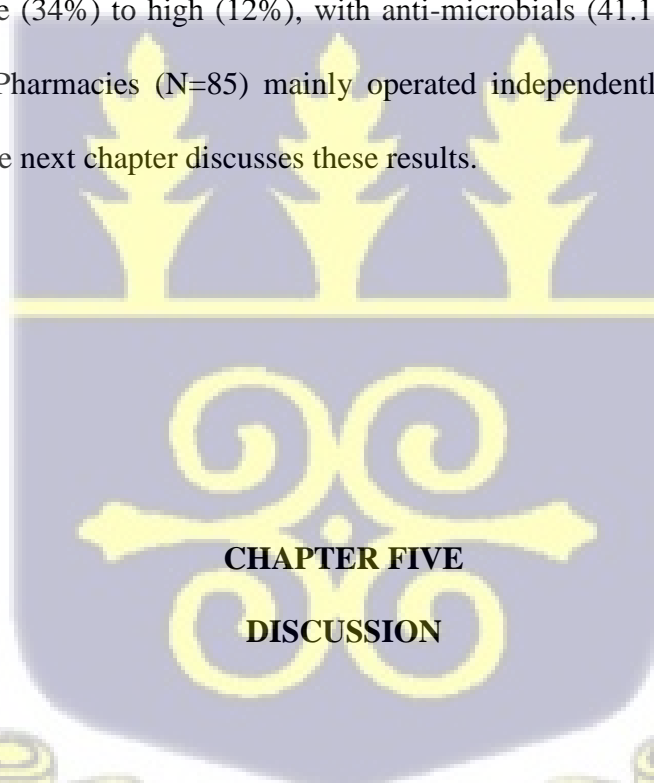
Table 16 Distribution of Stress Levels by Gender

Stress Level	Distribution of Stress Levels by Gender		Total (N = 423)
	Male (n = 188)	Female (n = 235)	
Low	40 (21.3%)	65 (27.7%)	105 (24.8%)
Moderate	95 (50.5%)	120 (51.1%)	215 (50.8%)
High	53 (28.2%)	50 (21.3%)	103 (24.4%)

Source: Field Data (2024)

4.8 Chapter summary

This chapter presented the results of the study. The results showed that prescription drug abuse ranged from moderate (34%) to high (12%), with anti-microbials (41.1%) and opioids (40.0%) being most abused. Pharmacies (N=85) mainly operated independently (54.1%), with 62.4% conducting audits. The next chapter discusses these results.



CHAPTER FIVE DISCUSSION

5.1 Introduction

This chapter discusses the findings of the study in relation to existing research. The discussion focuses on the level of prescription drug abuse, the specific prescription drug abused, and the key factors that influence this behaviour. Comparisons are made with previous studies to explore

possible explanations for the patterns observed among community pharmacists and their support staff. The strengths and limitations of the study are also considered.

5.2 Level of Prescription Drug Abuse

The study found that prescription drug abuse among community pharmacy staff was not extremely high but remained a concern. More than half of the respondents (52.6%–55.6%) reported low levels of abuse, while a sizeable proportion demonstrated moderate to high usage. These findings are consistent with previous studies that indicate healthcare professionals engage in varying levels of prescription drug abuse, often shaped by their work conditions and professional roles (Bulut & Isik, 2022; Friedman et al., 2019).

Differences were observed across professional categories. Pharmacists and pharmacy technicians generally reported lower to moderate levels of misuse, whereas medical counter assistants and other support staff exhibited higher levels. Similar patterns have been described in other studies, where healthcare workers with less autonomy and limited formal training reported greater susceptibility to misuse (Rolland et al., 2020; McCabe et al., 2018). These results suggest that knowledge of medicines and training in safe handling may play a role in reducing misuse among better-qualified staff.

The findings therefore highlight that although overall levels of abuse were moderate, certain subgroups within community pharmacy settings remain particularly vulnerable. This underscores the importance of targeted educational and preventive interventions that prioritise support staff as well as structured workplace monitoring.

5.3 Commonly Abused Drugs

The study found that antimicrobials were the most frequently abused drugs (41.1%), followed by opioids (40.0%), benzodiazepines (31.9%), and stimulants (30.0%). Antidepressants had the lowest abuse rate at 18.0%. These findings are consistent with research by Fischer et al. (2017) and Soh et al. (2021), which suggest that healthcare professionals tend to abuse prescription drugs that are easily accessible and provide immediate relief from work-related pressures.

The high prevalence of antimicrobial abuse may be linked to self-medication and misconceptions about their effects. Pharmacists and their staff have direct access to these drugs, making it easier to use them inappropriately. Mitchell et al. (2022) found that antimicrobial abuse is particularly common in environments where medications can be obtained without strict oversight.

Opioids and benzodiazepines were also widely used, likely due to their sedative and pain-relieving properties. These drugs are often turned to as a means of coping with stress or fatigue. Jatau et al. (2021) observed similar trends among healthcare workers, noting that job pressures make these prescription drugs more appealing.

Stimulant use, though slightly less common, was still high. Some employees may rely on stimulants to stay alert, particularly those working long shifts. This is in line with Gonzalez et al. (2020), who found that stimulant use is more common in jobs that require sustained concentration and high energy levels.

Antidepressant abuse was however relatively lower. The lower rates of antidepressant abuse suggest that workers prefer prescription drugs with immediate effects rather than those requiring long-term use. West et al. (2020) found that professionals in demanding fields are less likely to abuse antidepressants, as they do not provide the same quick relief as opioids or stimulants.

5.4 Factors Contributing to Prescription Drug Abuse

The study identified four main factors that contribute to prescription drug abuse among community pharmacists and their support staff. These factors are mental health, occupational considerations and individual-level factors. Each of these influences the likelihood of prescription drug abuse in different ways, shaping patterns of behaviour that can persist over time.

Mental health stress also contributed significantly to prescription drug abuse among the participants. Stress, anxiety, and emotional distress were commonly cited reasons for engaging in this behaviour. The demanding nature of pharmacy work, which often includes managing high patient expectations, handling medication errors, and dealing with ethical dilemmas, can create significant psychological strain. Afolabi et al. (2018) found that healthcare professionals who experience high levels of emotional distress are at an increased risk of prescription drug abuse. Many workers in the field are expected to maintain a high level of performance despite ongoing stressors, and when there is little mental health support available, some may turn to prescription drugs to alleviate their symptoms. The expectation to remain professional and composed, even in difficult situations, can make it challenging to openly discuss emotional struggles. In such an environment, self-medication may be seen as a convenient way to cope with stress and maintain productivity.

The nature of the work environment itself also contributed significantly to prescription drug abuse. Long shifts, excessive workloads, and difficult interactions with patients were key concerns among participants. Many pharmacists and their staff work extended hours, often without adequate breaks, leading to exhaustion and burnout. This finding is consistent with Faduyile et al. (2018), who noted that prolonged exposure to high-stress work environments increases the likelihood of dependence on prescription drugs among healthcare professionals. The fast-paced nature of pharmacy work

means that individuals are frequently required to make quick decisions under pressure, leaving little room for relaxation or recovery. The findings from Jatau et al. (2021) suggest that this pattern is common in high-pressure work environments where employees are expected to perform consistently despite fatigue. Dealing with challenging patients further contributes to emotional exhaustion, and in some cases, pharmacists and their support staff may turn to prescription drugs as a way to manage frustration and mental strain.

In addition to these workplace-related issues, individual-level factors such as age, religion, and marital status also influenced prescription drug abuse patterns. Younger professionals, particularly those under 35, were more prone to prescription drug abuse than their older colleagues. Dee et al. (2023) suggest that career pressures, stress, and burnout contribute significantly to prescription drug abuse in the early stages of a professional career. Younger pharmacists and support staff often face higher expectations to prove themselves in the workplace, and the combination of inexperience and work-related stress can make them more susceptible to prescription drug abuse. Those who have just entered the profession may struggle to balance work responsibilities with personal well-being, leading some to seek relief through prescription medications.

Religious beliefs influenced prescription drug abuse, with Christians reporting lower abuse rates than Muslims, while non-religious participants had the highest levels. Among Christians, Pentecostal and evangelical groups exhibited the lowest levels of abuse. Strict teachings against drug use, frequent religious gatherings, and strong social support within these communities may discourage prescription drug abuse (Mphahlele et al., 2021). Faith-based coping mechanisms such as prayer, fasting, and reliance on spiritual leaders for guidance could also contribute to this trend.

Muslim participants reported slightly higher abuse rates than Christians. While Islam strictly prohibits intoxicants, some interpretations may allow certain medications for stress relief or fatigue management. The level of religious commitment may also influence adherence to these teachings, with more observant individuals being less likely to engage in drug abuse (Kecojevic et al., 2020).

Non-religious participants had the highest levels of prescription drug abuse. The absence of religious restrictions and structured moral guidance may contribute to this pattern. Without faith-based coping mechanisms or a religious community reinforcing drug avoidance, individuals may be more likely to rely on medication for stress relief. This trend aligns with studies suggesting that strong religious affiliation reduces the likelihood of prescription drug abuse (Mphahlele et al., 2021).

Marital status further shaped patterns of prescription drug abuse among participants. Single and divorced individuals reported higher levels of prescription drug abuse compared to those who were married. Research by Kecojevic et al. (2020) suggests that having strong family support can reduce the likelihood of prescription drug abuse. Married individuals may benefit from the emotional and psychological support of a partner, which can help them manage work-related stress more effectively. In contrast, those who live alone or do not have a strong support system may be more likely to use prescription drugs as a means of coping with personal and professional challenges. The absence of a close family network can create a sense of loneliness, which, when combined with work-related stress, increases the temptation to engage in prescription drug abuse.

Each of these factors, mental health challenges, work environment, and personal characteristics, contribute to prescription drug abuse in distinct but interconnected ways. Family background of

prescription drug abuse can normalise the behaviour, while mental health struggles and demanding work conditions can make self-medication seem like an attractive option. Individual differences, such as age, religious beliefs, and marital status, further shape how individuals respond to stress and whether they turn to prescription drugs as a coping mechanism. The findings suggest that reducing prescription drug abuse in this population requires a comprehensive approach that takes into account both workplace conditions and personal circumstances.

5.5 Strengths and Limitations

This study provides a numerical assessment of prescription drug abuse among community pharmacists and their support staff. The use of structured questionnaires allowed for the collection of standardised data, ensuring consistency across responses. The sample size was sufficient to capture trends within the study population, making the findings relevant. Statistical methods were applied to identify significant patterns, making it possible to compare different professional groups, age categories, and other demographic factors. The study also builds on existing research by providing data specific to community pharmacy settings, where access to medications may influence drug abuse behaviours. The structured nature of the data collection minimised variability in responses, making the findings reliable for interpretation and comparison with other studies.

A key limitation of this study is its cross-sectional design, which captures data at a single point in time. This makes it difficult to determine whether the factors identified directly cause prescription drug abuse or if they are part of broader trends that change over time. A longitudinal study, which follows participants over an extended period, would provide stronger evidence on how these factors influence drug abuse. Future research should adopt this approach to examine patterns of prescription drug abuse across different career stages and work environments.

5.6 Conclusion

The findings indicate that prescription drug abuse among pharmacy professionals is influenced by multiple factors, including age, work-related pressures, family background, and mental health concerns. Younger employees, particularly those under 35, appear to be at higher risk. Certain drugs, such as antimicrobials, opioids, and benzodiazepines, are more commonly abused due to their accessibility and immediate effects. The issue requires targeted interventions, including workplace support programmes and awareness campaigns. A better understanding of the pressures faced by pharmacy staff can help create policies that reduce reliance on substance use as a coping mechanism.



CHAPTER SIX

CONCLUSION

6.1 Conclusion

This study examined prescription drug abuse among community pharmacists and their support staff in the Ledzokuku-Krowor District. The findings showed that a proportion of participants engaged in drug abuse, with anti-microbials and opioids being the most frequently abused substances. Medical Counter Assistants exhibited the highest levels of drug abuse, while Community Pharmacists also reported notable abuse.

The findings showed that individuals experiencing high workplace stress had more than twice the likelihood of drug abuse compared to those with lower stress levels. Job dissatisfaction was also linked to prescription drug abuse, with employees who reported being unhappy with their work conditions showing higher odds of abuse. Mental health distress followed a similar trend, as those experiencing moderate distress had an increased likelihood of drug abuse, while individuals with severe distress had the highest probability. Younger participants, particularly those aged 26–35, had greater odds of drug abuse compared to their older counterparts. Marital status also influenced substance use, with single and divorced individuals being more likely to engage in drug abuse than those who were married. Education appeared to reduce the risk, as those with higher qualifications had lower odds of abuse. These findings suggest that both occupational pressures and personal circumstances shape drug use behaviours among pharmacy professionals.

The findings suggest that work-related pressures contribute to drug abuse among this group. High-stress environments, easy access to medications, and limited mental health support create conditions that increase the likelihood of substance abuse. Strengthening workplace conditions,

promoting mental health interventions, and enforcing stricter controls on medication access could help reduce this problem. Further research should explore additional factors influencing drug abuse and assess the effectiveness of proposed interventions in pharmacy settings.

6.2 Recommendations

6.2.1 Recommendations for Practice

Employers, including pharmacy owners and managers, should integrate mental health support services into workplace policies to help pharmacy workers manage stress. Professional bodies such as the Pharmacy Council and pharmacy associations should ensure that mental health resources are available across the profession. Confidential counselling services, stress management programmes, and employee assistance initiatives should be provided to support staff experiencing workplace pressures. Supervisors and managers should receive training from mental health professionals to recognise signs of distress and offer appropriate support. Establishing peer support networks within pharmacies may encourage open discussions about mental health without fear of judgment.

Work schedules should include sufficient rest periods between shifts to reduce exhaustion, which has been linked to prescription drug abuse. Professional associations can work with employers to develop fair work schedules that balance operational needs with employee well-being. Fair wages, structured breaks, and manageable workloads may contribute to job satisfaction and reduce reliance on medication to cope with stress.

6.2.2 Recommendations for Policy

The Pharmacy Council and professional associations should develop policies that promote ethical medication management and workplace well-being. Ethical training on medication handling

should be compulsory for all pharmacy workers, with accredited institutions ensuring consistency across the profession. Clear consequences for professional misconduct related to prescription drug abuse should be outlined in policy guidelines.

Whistle-blower protections should be introduced to allow employees to report concerns about improper medication use without fear of retaliation. Employers should establish anonymous reporting channels that provide a secure way for staff to raise concerns while maintaining job security. Proper communication and enforcement of these policies may encourage accountability in pharmacy settings.

6.2.3 Recommendations for Regulation

Regulatory bodies, particularly the Pharmacy Council, should strengthen oversight on medication handling to prevent unauthorised access to high-risk drugs. Dual verification systems for dispensing controlled substances should be introduced to improve accountability and reduce the likelihood of abuse. Regular audits should be conducted to track medication movement within pharmacies and detect irregularities that may indicate improper use. The use of digital tracking systems may enhance monitoring, ensuring that medication distribution follows legal and ethical requirements.

Stronger enforcement of penalties for violations should be prioritised to deter misconduct. Regulatory authorities should conduct routine inspections to ensure compliance with existing laws and identify gaps in enforcement. Strengthening these regulations may help limit the availability of prescription drugs for non-medical use within pharmacy settings.

6.2.4 Recommendations for Future Research

A long-term study following pharmacy workers throughout their careers may provide greater clarity on how workplace stress influences prescription drug abuse. Examining how gender differences affect stress responses and drug use patterns could also be useful, as research suggests men and women may experience workplace pressures differently. Investigating how professional culture contributes to prescription drug abuse in pharmacies may offer new ways to develop targeted interventions. Expanding research in these areas may improve policies and workplace strategies aimed at reducing drug abuse in the profession.



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APPENDIX I

PARTICIPANT INFORMATION SHEET

- ✓ **Title of Study:** Levels of Prescription Drug Abuse and Associated Factors Among Community Pharmacy Staff in the Ledzokuku Municipality, Accra- Ghana
- ✓ **Introduction:** My name is Miss Deborah Enyan, and I am a Master of Public Health student at the University of Ghana. You can reach me on mobile: 0550189298 or via email: enyandeborah@gmail.com. I am conducting this research as part of my academic requirements under the supervision of Professor John Ganle at the School of Public Health, Legon.
- ✓ **Background and Purpose of Research:** This study aims to explore the levels and risk factors associated with prescription drug abuse among community pharmacists and their support staff in the Ledzokuku Municipal Assembly. This issue must be comprehensively understood to inform strategies that protect public health and promote a healthy and sustainable healthcare workforce.
- ✓ **Nature of Research:** This study will involve community pharmacy staff in the Ledzokuku Municipality. Participants will be asked to share information regarding their experiences and perspectives related to prescription drug use and potential abuse. A total of 423 participants would be interviewed. This would take place in the various pharmacies they work in.
- ✓ **Participants Involvement:**
 - **Duration / What is Involved:** Participation will involve completing a questionnaire or interview that will take approximately 15 minutes. You will be asked questions regarding your prescription drug use and related issues.

- **Potential Risks:** While no invasive procedures will be performed, discussing personal experiences may evoke discomfort or emotional upset. Participation is voluntary, and participants may skip any questions they do not wish to answer.
- **Benefits:** The findings from this research may help inform authorities about necessary interventions to prevent prescription drug abuse in the community, thereby contributing to improved healthcare practices.
- **Costs:** There will be no costs incurred for participating in this study, including transportation.
- **Compensation:** Participants will not be compensated for their time or involvement in this study.
- **Confidentiality:** All information shared during this study will be kept confidential. Your name will not be recorded, and the data collected will be used solely for academic purposes.
- **Voluntary Participation / Withdrawal:** Participation in this study is entirely voluntary. You have the right to decline participation and can withdraw at any time without penalty and without having to provide a reason.
- **Outcome and Feedback:** Data collected will be analyzed for academic purposes, and findings will be communicated to relevant authorities for potential intervention strategies. Individual feedback will not be provided.
- **Appropriate alternative Procedures and Treatment:** There would be no alternative procedure or treatment.
- **Feedback to participant:** No feedback would be given to participants.
- **Funding Information:** This research is funded solely by the principal investigator, Miss Deborah Enyan.

- **Sharing of Participants Information/Data:** Data generated from this study will remain the property of the principal investigator and will not be shared with other organizations or individuals without prior consent.
- **Provision of Information and Consent for Participants:** Participants will receive copies of this information sheet and the consent form after signing or thumbprinting.

Contact Person: If you have any questions or concerns about the study, please contact:

Miss Deborah Enyan

School of Public Health, Legon

Mobile: 0550189298

Email: enyandeborah@gmail.com

Professor John Ganle

School of Public Health, Legon

Mobile: 0249957505

Email: JGanle@ug.edu.gh

Nana Abena Apatu

GHS-ERC Administrator

Mobile: 0503539896

Email: ethics.research@ghs.gov.gh



APPENDIX II

PARTICIPANT CONSENT FORM

STUDY TITLE: Levels of Prescription Drug Abuse and Associated Factors Among Community Pharmacy Staff in the Ledzokuku Municipality, Accra- Ghana

PARTICIPANTS' STATEMENT

I acknowledge that I have read or have had the purpose and contents of the Participants' Information Sheet read and all questions satisfactorily explained to me in a language I understand (English). I fully understand the contents and any potential implications as well as my right to change my mind (i.e. withdraw from the research) even after I have signed this form.

I voluntarily agree to be part of this research.

Name of Participant.....

Participants' Signature OR Thumb Print.....

Date.....



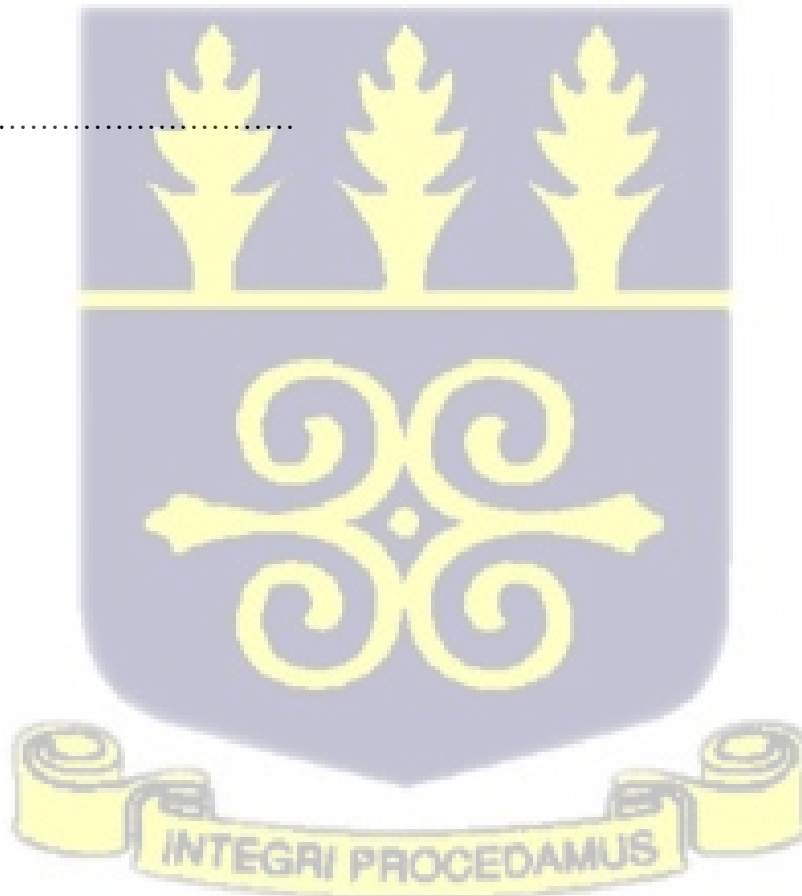
INVESTIGATOR STATEMENT AND SIGNATURE

Declaration that investigator has given enough information to participants to make informed decisions. (Example: I certify that the participant has been given ample time to read and learn about the study. All questions and clarifications raised by the participant have been addressed.)

Researcher's name.....

Signature

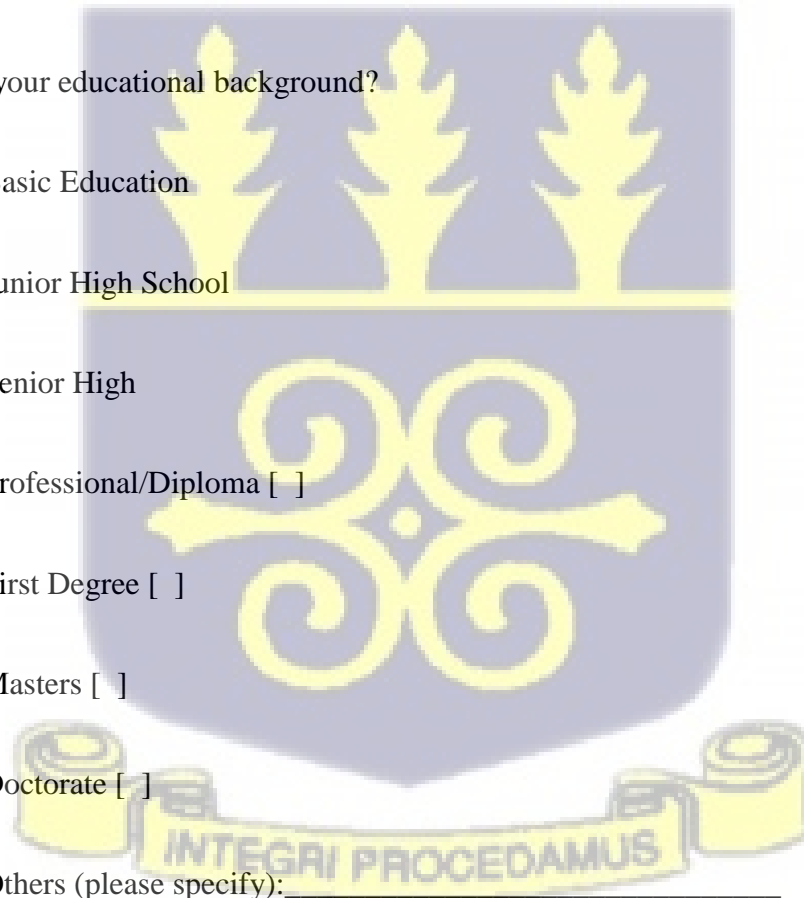
Date.....



- d. 46 – 55 []
 - e. 56 and above []
3. Marital Status?
- a. Single (Never Married) []
 - b. Committed relationship []
 - c. Married []
 - d. Divorce/Separated []

4. What is your educational background?

- a. Basic Education
- b. Junior High School
- c. Senior High
- d. Professional/Diploma []
- e. First Degree []
- f. Masters []
- g. Doctorate []
- h. Others (please specify): _____



5. What is your religious affiliation?

a. Christianity

b. Islam

c. Traditional/African religion

d. Other

6. What is your profession?

a. Community Pharmacist []

b. Medical Counter Assistant []

c. Pharmacy Technician []

d. Pharmacy Assistant []

e. Others (please specify): _____

7. Years of Experience in the Pharmaceutical Field/ Pharmacy Profession.

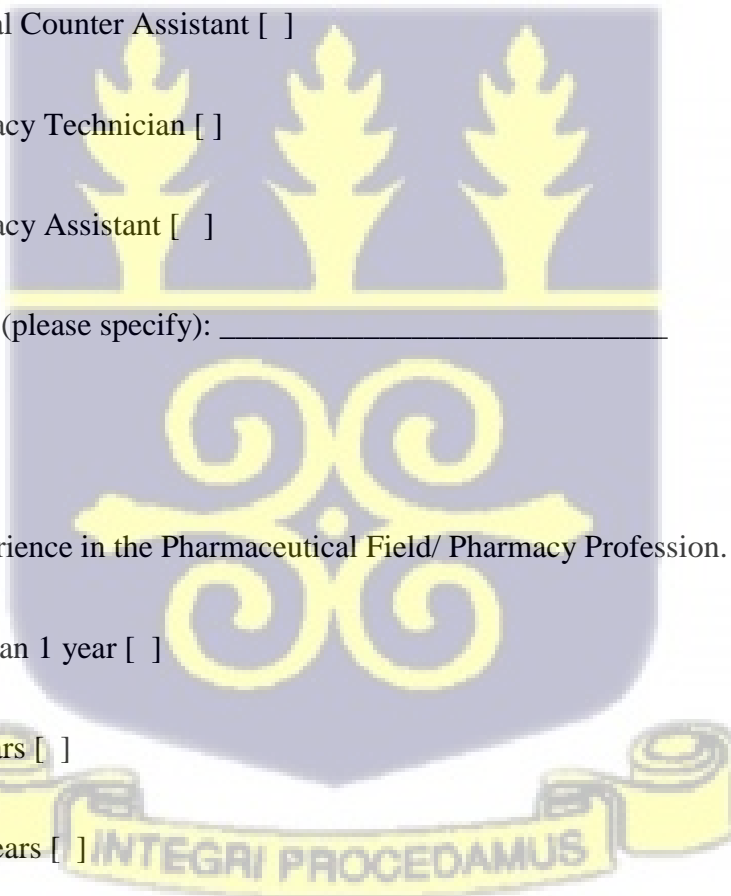
a. Less than 1 year []

b. 1-5 years []

c. 6-10 years []

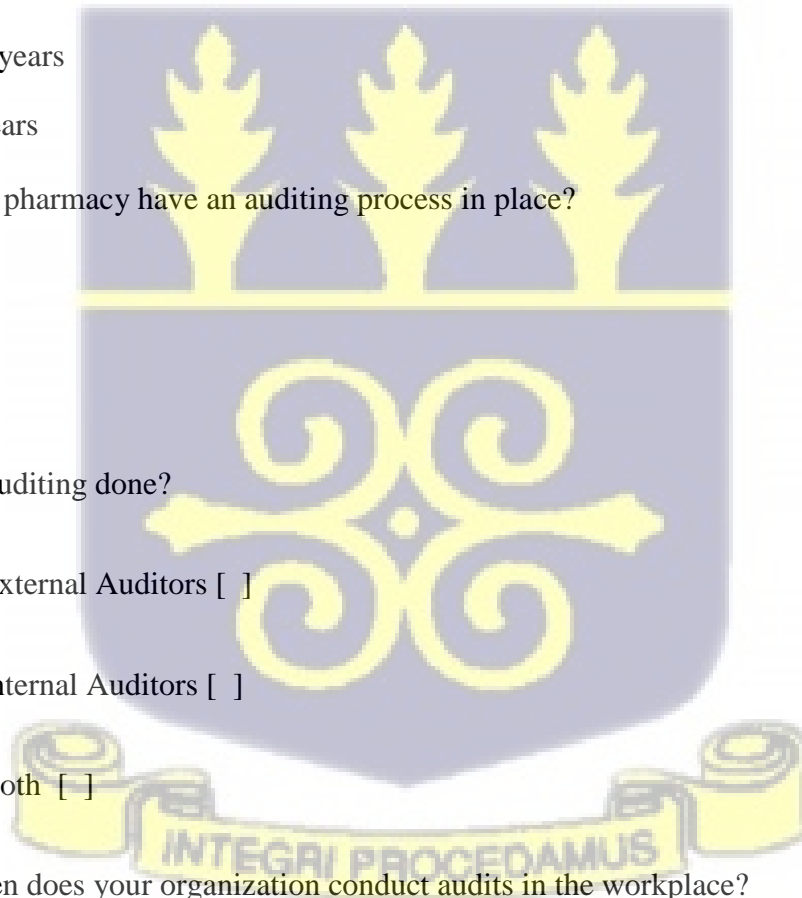
d. 11 - 15 years []

e. 16 years and above []



II. Facility Information

8. What is the pharmacy practice setting?
- a. Independent community pharmacy []
 - b. Chain community pharmacy []
9. How many years has the pharmacy been in operation?
- a. 0-2 years
 - b. 3-5 years
 - c. 6-10 years
 - d. 11-15 years
 - e. 16+ years
10. Does the pharmacy have an auditing process in place?
- a) Yes
 - b) No
11. How is auditing done?
- a. External Auditors []
 - b. Internal Auditors []
 - c. Both []
12. How often does your organization conduct audits in the workplace?
- a. Weekly



- b. Monthly
- c. Quarterly
- d. Annually
- e. Never

SECTION B: Levels of Prescription drug abuse

The following questions concern information about your involvement with drugs. Prescription drug abuse refers to (1) the use of prescribed or “over-the-counter” drugs in excess of the directions, and (2) any non-medical use of drugs. Consider the past year (12 months) and carefully read each statement. Then decide whether your answer is **YES** or **NO** and check the appropriate space. Please be sure to answer every question.

Statements	Yes	No
1. Have you ever taken any medication beyond those prescribed for medical purposes?		
2. Have you ever taken prescription medication in a way that was not recommended by a healthcare provider?		
3. Have you ever combined different prescription medications at the same time?		
4. Do you find it easy to go through the week without using prescription medications other than for medical reasons?		
5. Do you feel confident in your ability to stop using prescription medications whenever you choose?		

Statements	Yes	No
6. Do you find yourself using prescription medications regularly?		
7. Do you try to limit your prescription medications use to certain situations or occasions?		
8. Have you ever experienced memory gaps or vivid recollections due to prescription medications use?		
9. Have you ever thought about making changes to your prescription medications use habits?		
10. Have your spouse or family members expressed concern about your use of prescription medications?		
11. Do any of your friends or relatives know or suspect that you might use prescription medications?		
12. Has prescription medications use ever affected your relationship with your spouse or significant other?		
13. Has anyone in your family ever sought support for issues related to your prescription medications use?		
14. Have you noticed any changes in your social relationships due to your prescription medications use?		
15. Have you ever missed work or family obligations because of prescription medications use?		
16. Have you ever had any work-related challenges as a result of prescription medications use?		
17. Have you ever lost employment due to prescription medications related issues?		

Statements	Yes	No
18. Have you ever been involved in conflicts while under the influence of prescription medications?		
19. Have you ever had legal concerns related to your behaviour under the influence of prescription medications?		
20. Have you ever faced legal consequences for driving under the influence of prescription medications?		
21. Have you ever engaged in activities outside the law to acquire prescription medications?		
22. Have you ever been legally charged for possessing controlled prescription medications?		
23. Have you ever experienced physical symptoms after reducing or stopping the use of prescription medications?		
24. Have you encountered any health concerns related to prescription medications use, such as memory issues or other conditions?		
25. Have you ever sought assistance for concerns related to prescription medications use?		
26. Have you ever been hospitalised due to prescription medications related medical issues?		
27. Have you ever participated in a treatment program for prescription medications use?		
28. Have you ever received outpatient care for prescription medications use related issues?		

Note: This questionnaire is adapted from the Prescription drug abuse Screening Test (DAST-28)

developed by Dr. Harvey Skinner (1982).

Section C: Common Drugs Abused

Studies have identified various prescription drugs that are commonly abused among this population, including benzodiazepines, opioids, stimulants, anti-depressants, and anti-microbials (Sarangi et al., 2021; Curado et al., 2021; Agyemang et al., 2019; DeVido, 2020; Bonilla-Jaime, 2022). Below is a list of drug categories and specific examples commonly associated with abuse. For each category, please indicate how frequently you or your colleagues use these drugs, either for medical or non-medical reasons. Use the following scale:

1 = Never

2 = Rarely

3 = Sometimes

4 = Often

5 = Very Often

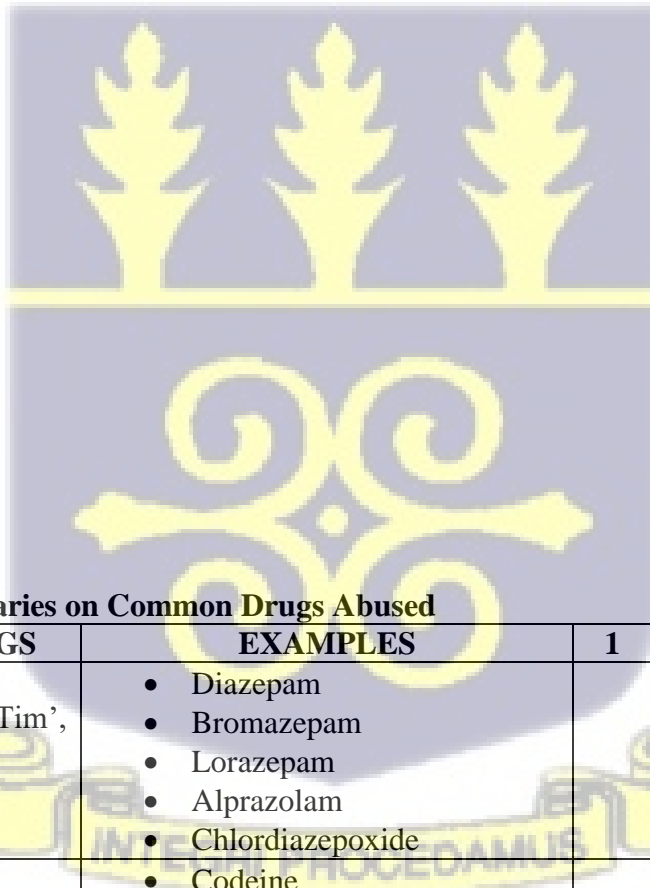


Table 3. 1: Questionnaires on Common Drugs Abused

CLASS OF DRUGS	EXAMPLES	1	2	3	4	5
Benzodiazepines (‘blue-blue’, ‘Tim’, ‘sleeping tablets’)	<ul style="list-style-type: none"> • Diazepam • Bromazepam • Lorazepam • Alprazolam • Chlordiazepoxide 					
Opioids (‘D-10’, ‘daze’, ‘tramol’, ‘t-mol’)	<ul style="list-style-type: none"> • Codeine • Tramadol • Paracetamol+Tramadol Combination • Oxycodone 					

	<ul style="list-style-type: none"> • Morphine 					
Stimulants ('Energy')	<ul style="list-style-type: none"> • Methylphenidate • Nicotine • Caffeine • Dextroamphetamine • Lisadexamfetamine 					
Anti-Depressants ('two-two')	<ul style="list-style-type: none"> • Amitriptyline • Duloxetine • Fluoxetine • Paroxetine • Citalopram 					
Anti-Microbial	Anti-Bacterial					
<ul style="list-style-type: none"> • Antibacterials 	<ul style="list-style-type: none"> • Amoxicillin+Clavulanic Acid • Ciprofloxacin • Doxycycline 					
<ul style="list-style-type: none"> • Antifungals 	Antifungals <ul style="list-style-type: none"> • Fluconazole • Griseofulvin • Ketoconazole • Clotrimazole • Miconazole 					
<ul style="list-style-type: none"> • Anti-Protozoals 	Anti-Protozoal <ul style="list-style-type: none"> • Metronidazole • Artemether Lumefantrifine • Quinine • Secnidazole • Tinidazole 					
<ul style="list-style-type: none"> • Anti-Virals ('topaye', 'oshikuro', 'red and yellow', 'abombelt', 'white', 'yellow-yellow') 	Anti-Viral <ul style="list-style-type: none"> • Acyclovir • Tenofovir • Famciclovir • Zanamivir • Lamivudine 					

Section D: Factors Contributing to Prescription drug abuse

Work-Related Stress

Thinking about your current job, how often does each of the following statements describe how you feel?

Note: Never = 1 Rarely = 2 Sometimes = 3 Often = 4 Very Often = 5

Table : Adapted Workplace Stress Scale (WSS) for Assessing Work-Related Stress

Statements	1	2	3	4	5
Conditions at work are unpleasant or sometimes even unsafe					
I feel that my job is negatively affecting my physical and emotional well-being.					
I have too much work to do and/or too many unreasonable deadlines.					
I find it difficult to express my opinions or feelings about my job conditions to my superiors.					
I feel that job pressures interfere with my family or personal life.					
I feel that I have inadequate control or input over my work duties.					
I receive inadequate recognition or rewards for good performance.					
I am unable to fully utilize my skills and talents at work.					

Job Satisfaction

Please review the items and select the appropriate checkbox that corresponds to your situation.

Employ the provided scales to express your degree of agreement with each item;

1= strongly agree. 2= Agree, 3= neither agree nor disagree, 4= Disagree and 5= Strongly

Disagree

Table: Adapted Short Index of Job Satisfaction (SIJS-5) Questionnaire Items

Statements	1	2	3	4	5
I feel fairly satisfied with my present job Most days					
I am enthusiastic about my work					
Each day at work seems like it will never end (R)					

I find real enjoyment in my work					
I consider my job to be rather unpleasant (R)					

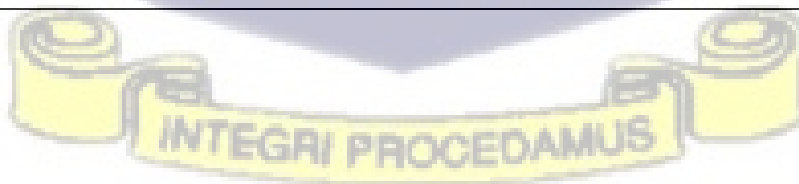
Mental Health

Thinking about your mental, how often does each of the following statements describe how you feel?

0 = Not at all, 1 = some of the time, 2 = Considerable degree, 3 = Very much

Table: Adapted Depression Anxiety Stress Scale-10 (DASS-10) Questionnaire Items for Mental Health Assessment

Statements	0	1	2	3
I felt I was close to panic				
I found it difficult to work up the initiative to do things				
I felt downhearted and blue				
I was intolerant of anything that kept me from getting on with what I was doing				
I felt that I had nothing to look forward to				
I felt scared without any good reason				
I tended to overreact to situations				
I was worried about situations in which I might make a fool of myself				
I found it difficult to relax				
I couldn't seem to experience any positive feelings at all				



APPENDIX IV: ETHICAL APPROVAL LETTER

In case of reply the number and date of this Letter should be quoted.



GHANA HEALTH SERVICE ETHICS REVIEW COMMITTEE
 Research & Development Division
 Ghana Health Service
 P. O. Box MB 190
 Accra
 Digital Address: GA-050-3303
 Mob: +233-50-3539896
 Tel: +233-302-960628
 Email: ethics.research@ghs.gov.gh
 2nd December 2024

My Ref. GHS/RDD/ERC/Admin/App/24/53
 Your Ref. No.

Deborah Enyan
 University of Ghana
 P.O. Box 2117
 Adenta-Accra

The Ghana Health Service Ethics Review Committee has reviewed and given approval for the implementation of your Study Protocol.

GHS-ERC Number	GHS-ERC: 042/10/24
Study Title	Prevalence and Risk Factors of Prescription Drug Abuse among Community Pharmacists and their Support Staff in the Ledzokuku Municipal Assembly, Accra-Ghana.
Approval Date	2 nd December 2024
Expiry Date	1 st December 2025
GHS-ERC Decision	Approved

This approval requires the following from the Principal Investigator

- Submission of a yearly progress reports 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.....
 Mr. Kofi Wellington
 (GHS ERC Chairperson)

Cc: The Director, Research & Development Division, Ghana Health Service, Accra