AKENTEN APPIAH-MENKA UNIVERSITY OF SKILLS TRAINING AND ENTREPRENEURIAL DEVELOPMENT

ASSESSMENT OF MENTAL HEALTH AND WELL-BEING AMONG HEALTH WORKERS IN KINTAMPO NORTH MUNICIPALITY

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BY

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A thesis submitted to the Department of Public Health Education of the Faculty of Environment and Health Education, Akenten Appiah-Menka University of Skills Training and Entrepreneurial Development in partial fulfilment of the requirements for the award of a Master of Philosophy degree in Occupational Health and Safety Education.

MAY, 2025

DECLARATION

Candidate's Declaration

I hereby declare that this thesis is the result of my own original work and that no part of it has been presented for another degree at this university or elsewhere.

Candidate's Name: ……

Signature: …….. Date: …….

Supervisors' Declaration

We hereby declare that the preparation and presentation of the thesis were supervised in accordance with the guidelines on supervision of the thesis laid down by the Akenten Appiah-Menka University of Skills Training and Entrepreneurial Development.

Principal Supervisor's Name: ……..

Signature: ……. Date: …….....

Co-Supervisor's Name: ……

Signature: ……. Date: …….

ABSTRACT

Health workers play a pivotal role in providing essential services to individuals and communities at large, contributing significantly to the overall well-being of individuals and society. This study assessed the prevalence, work-related risk factors, predictors, and coping mechanisms for mental health disorders among health workers in Kintampo North Municipality. A cross-sectional design was used to collect data from 316 health workers. Data on demographics, work-related risk factors, and coping mechanisms were obtained using a closed-ended questionnaire. The Perceived Stress Scale (PSS-10), Maslach's Burnout Inventory (MBI), Beck's Depression Inventory (BDI), and Beck's Anxiety Inventory (BAI) were used to assess the prevalence of stress, burnout, depression, and anxiety, respectively. Data were analysed using the STATA version of the 14 (StataCorp, College Station, USA). Descriptive statistics were performed to generate frequency and percentage. Pearson's chi-square tests were performed to determine differences in proportion; logistic regression analyses were performed to compute odd ratios and identify the factors or predictors that were significantly associated with mental health disorders ($p < 0.05$) at a 95% (CI). The majority (57.9%) of the participants were females, 41.5% were between 18-25 years old. It was revealed that 36.1% of health workers were severely stressed, 28.8% were burnout, 31.6% were severely depressed, and 34.7% showed severe anxiety. Work-related factors affecting mental health included job dissatisfaction (85.4%), rotational shifts (73.7%), and increased workload (88.0%). Socio-demographic factors such as being female, educational attainment, and occupational category were associated with varying mental health outcomes. Coping strategies identified were mindfulness, physical exercise, seeking support, and setting realistic goals. The study underscores the need for targeted interventions to improve health workers' mental health, such as reducing workloads, enhancing work conditions, and providing mental health services.

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DEDICATION

This thesis is dedicated to special people: my father (Mr Bakari Zakaria), my mother (Natomah Abiba), my wife (Mrs Abass Mashuda), and finally, my children, whose understanding, sacrifices, encouragement, and prayers propelled me to this stage of the academic ladder.

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LIST OF ACRONYMS (ABBREVIATION) AND SYMBOLS

AOR	Adjusted Odds Ratio
BAI	Beck's Anxiety Inventory
BDI	Beck's Depression Inventory
CDC	Centres for Disease Control
CHRPE	Committee on Human Research, Publication, and Ethics
CI	Confidence Interval
COR	Crude Odds Ratio
COVID 19	Coronavirus Disease
DASS-21	Depression, Anxiety, and Stress Scale version 21
DP	Depersonalisation
EE	Emotional Exhausion
EMT	Emergency Medical Technician
Etc	Et Cetera
GDHS	Ghana Demographic and Health Survey
GHS	Ghana Health Service
GLSS6	Ghana Living Standards Survey Round 6
ICU	Intensive Care Unit
MBI	Maslach's Burnout Inventory
MMDAs	Metropolitan, Muncipal, and District Assemblies
PPE	Personal Protective Equipment
PSS	Perceived Stress Scale
SDGs	Sustainable Development Goals
SMS-KNUST	School of Medical Science, Kwame Nkrumah University of Science and Technology
SSA	Sub-Saharan Africa
WHO	World Health Organization
$\chi 2$	Chi-Square
%	Percentage
&	And
=	Equal to
±	Plus or minus sign
°C	Degree Celsius
/	Solidus
()	Parenthesis (bracket)

CHAPTER ONE

INTRODUCTION

1.0. Overview

This chapter presents the study's background. It also highlights the problem statement, research objectives, research questions, significance of the study, and hypotheses. The chapter concludes with the study's justification.

1.1. Background of the study

The protection of human and facility resources in the workplace is the focus of occupational safety and health (Calvo et al., 2022). This involves providing standard practices geared towards addressing all aspects of occupation-related health issues, including preventing workplace hazards, protecting and promoting workplace safety practices and working conditions, and improving healthcare systems' responses to personnel health. Good mental health and well-being, especially among workers, is one of the most important predictors of work efficiency (de Oliveira et al., 2023). In contrast to good mental health and well-being, poor mental health affects professional integrity, work ethic, working efficiency, and overall maintenance of working standards. Around the world, health services have evolved to meet the increasing demand for rapid and efficient healthcare (Bhandari & Yadav, 2020; National Academies of Sciences et al., 2018). Depending on the patient's perceived condition, health workers provide services such as disease diagnosis, cure, or prevention of disease or injury to improve or maintain anatomical, physiological, and psychological function or, to a more significant extent, obtain information about the health status and prognosis (Llop-Gironés et al., 2021).

Despite these enormous contributions, mental health disorders in the workplace, including but not limited to stress, burnout, depression, and anxiety, have increasingly been recognized as a problem in most healthcare settings (de Oliveira et al., 2023). This is mainly due to the lack of job satisfaction, substance abuse, lack of support from superiors, workplace conflict, years of employment, unsafe working environments, attitude of patients, and poor working conditions (Ashipala & Nghole, 2022; Szwamel et al., 2022). From another perspective, the demanding nature of the various practices aligned with the health profession, such as high workload and long working hours, exposes health workers to work-related mental health issues. These may consequently reduce efficiency and trigger mental health challenges with long-lasting existential effects on the individual's cognitive function, family, employment, and social interaction (Epifanio et al., 2023; Rink et al., 2023). These factors may also influence absenteeism, presenteeism, and reduced quality of life (Edú-Valsania et al., 2022). In addition, people with mental health illnesses have increased odds of risky lifestyles, including substance abuse, divorce, and suicide (Motillon-Toudic et al., 2022).

Stress is broadly described as a person's worry or mental tension that triggers internal and external reactions to address challenges and threats (WHO, 2023c). Thus, it is the feelings of individuals when they anticipate their demands to be greater than the available resources to fulfil these demands (Epel et al., 2018). If an individual is unable to manage the negative impact of stress, they exhibit symptoms of anxiety and depression (WHO, 2023c). The complexity of stress makes it difficult to determine its source, as each individual perceives stress differently because of their knowledge and experience of the stressor (Epel et al., 2018). Stress is also associated with a high level of maladaptive behaviours, such as smoking, alcoholism, and over- or under-eating (WHO, 2023c). The physical impact of stress on individuals includes but is not limited

to back pain, migraines, sleep disturbance, apathy, and high blood pressure (Felman & Sampson, 2020).

The body's reaction to permanent stress results in occupational burnout (WHO, 2024). Expanding the scope of this definition, occupational burnout is an individual's response to work stress that develops with time and could become chronic in due course, resulting in changes in anatomical, physiological, cognitive, emotional, and attitudinal functions of the body (Merabet et al., 2022), which translates into negative behaviour towards work, peers, users, and the professional role itself (Rodríguez-Jiménez et al., 2022). Nevertheless, occupational burnout may not be personal but the result of certain work-related tasks, such as working under pressure and an unfriendly working environment (Załuski & Makara-Studzińska, 2022). This might increase emotional exhaustion, which consequently, may, in turn, trigger a defence mechanism called depersonalization (lower sensitivity to others) (Szwamel et al., 2022). Occupational burnout could result in a higher intake of psychoactive substances, depression, and an increasing number of suicides (Eslava-Schmalbach et al., 2020).

As one of the commonly reported mental health disorders, depression causes a chronic feeling of emptiness, feelings of sadness, loss of interest in pleasurable activities, guilt, inability to feel pleasure, low self-esteem, sleep disturbance, and difficulties in concentration (Chand & Arif, 2023; Mackin et al., 2021). According to a recent report by the World Health Organization (WHO), approximately 280 million people have been diagnosed with depression, which is commonly prevalent in approximately 5% of the world's adult population and 5.7% of adults above 60 years of age (WHO, 2023b). On a continental basis, depression among health workers is higher in Africa, with a prevalence rate of 82%, followed by the United States of America and Europe, with

rates of 33% and 31%, respectively. The lowest prevalence of depression was recorded in Asia, with a prevalence rate of 19% (Rezaei et al., 2022a). Persistent symptoms of depression, such as back and neck pain, anger, and worry, reduce the capacity of healthcare workers to adapt to different working conditions, limiting their propensity to deliver untimely healthcare services (Virkkunen et al., 2022).

Anxiety, on the other hand, is the way an individual's body responds to a perceived threat (Grogans et al., 2023). An unpleasant, uncertain, and subjective feeling is experienced by an individual that is triggered by the individual's thoughts, beliefs, and feelings about events, other persons, or objects (Anderson et al., 2019; Grogans et al., 2023). It is the discomfort that one experiences with scepticism towards the unknown. Consistent with the report by the World Health Organization (WHO), not less than 4% of the global population currently experiences an anxiety disorder. Approximately 301 million individuals globally were reported to have been diagnosed with anxiety in 2019 (WHO, 2023a). Symptoms of anxiety include increased blood pressure, increased rate of respiration, increased pulse rate, tension or restlessness, heart palpitations, trouble concentrating or making decisions, feeling irritable, nausea or abdominal pain, sweating, trembling or shaking, trouble sleeping, and a sense of impending danger, panic, or doom (Chand & Marwaha, 2023; WHO, 2023a). The incidence of anxiety is associated with individual differences in the evaluation of the significance of events, which makes them respond to stressors differently. If an event is of value to a person, then it can have threatening consequences that result in an anxious situation (Knowles & Olatunji, 2020).

From these foundations, there may be a complex relationship among stress, burnout, depression, and anxiety. However, it is unclear whether these psychological conditions

have separate aetiologies (Koutsimani et al., 2019). In recent times, there has been a surge in the prevalence of mental health challenges, as most health workers suffer from at least one mental health disorder (Saragih et al., 2021). Consequently, the impacts of these mental health disorders include occupational accidents, reduced work performance, alcoholism, irritability, and poor attitude toward patients (Kelloway et al., 2023; Viertiö et al., 2021). This could endanger patients' lives at the hospital, reducing the quality of care and patient satisfaction.

1.2. Problem Statement

Mental health disorders such as stress, burnout, depression, and anxiety are increasingly recognized as critical issues in healthcare settings due to their impact on work performance, patient care, and overall well-being. Globally, mental health disorders contribute to approximately 7.4% of the total disease burden, with over 970 million people affected as of 2019 (WHO, 2022a). The World Health Organization (WHO) estimates that stress affects about 30% of healthcare workers in high-income countries (WHO, 2023c), while burnout prevalence rates range from 24% to 67% depending on the region (WHO, 2024). Depression affects approximately 280 million individuals worldwide, with 5% of the adult population diagnosed annually (WHO, 2022a). Anxiety disorders affect around 301 million people globally, with a prevalence rate of 24.94% among healthcare workers during the COVID-19 pandemic (Sahebi et al., 2021a).

In Africa, mental health conditions among healthcare workers are alarmingly high. The prevalence of stress is estimated at 57.5% in Ethiopia (Yesuf et al., 2022), while burnout rates have reached 62% in Tanzania (Marchand et al., 2024). Depression rates are notably high, with 82% of healthcare workers in Africa experiencing depressive

symptoms (Rezaei et al., 2022a). Similarly, anxiety rates hover around 47% on the continent, with a high of 63% reported in Ethiopia (Hasen et al., 2023). West Africa reflects similar patterns, with mental health challenges posing significant concerns among healthcare workers. In Nigeria, a study reported a 14.9% prevalence of depression (Ademola et al., 2019), and anxiety rates of approximately 5% were recorded among healthcare workers in Lagos (Olude et al., 2022).

Ghana also reports concerning statistics pointing to a rising prevalence of mental health disorders among healthcare workers (Ae-Ngibise et al., 2023; Odonkor & Frimpong, 2020; Ofori et al., 2021; Opoku Agyemang et al., 2022). This, thus, calls for an urgent need to comprehensively understand the multifaceted nature of work-related mental health disorders and their specific impact on health workers. There is a paucity of empirical data on mental health disorders among health workers in the Kintampo North Municipality. Moreover, the municipality is prone to accidents due to a major highway linking the Bono East Region and Northern Ghana. Hence, a dedicated examination of the mental health status of health workers is essential to inform targeted interventions and policies tailored to the needs of this local healthcare workforce. Therefore, this research sought to comprehensively assess the mental health and well-being of health workers in Kintampo North Municipality, shedding light on their unique occupational stressors.

1.3. Research objectives

The main aim of this study was to assess the mental health of health workers in the Kintampo North Municipal of the Bono East Region.

1.3.1. Specific Objectives

1. To determine the prevalence of mental health disorders among health workers in the Kintampo North Municipality.
2. To identify the specific work-related factors of mental health disorders among health workers in the Kintampo North Municipality.
3. To determine the sociodemographic predictors of mental health disorders among health workers in the Kintampo North Municipality.
4. To discuss the coping mechanisms employed by health workers to manage work-related mental health disorders.

1.4. Research questions

1. What is the prevalence of stress, burnout, depression, and anxiety among health workers in Kintampo North Municipality?
2. What are the specific work-related factors of stress, burnout, depression, and anxiety among health workers in the Kintampo North Municipality?
3. What are the socio-demographic predictors of stress, burnout, depression, and anxiety among health workers in the Kintampo North Municipality?
4. What do health workers employ the coping mechanisms to manage work-related mental health disorders?

1.5. Justification

Health workers' mental health and well-being directly impact the quality of healthcare services provided to the community (Søvold et al., 2021). A resilient and mentally healthy healthcare workforce is better equipped to handle the challenges of their profession, resulting in improved patient care and overall healthcare outcomes (Baskin & Bartlett, 2021). The current turbulent environment in which health workers conduct

their work requires that organizations examine their practices, including their mental health and well-being. Working in the various levels of the health care system is an inherently stressful profession with long working hours and difficult and conflicting demands. The physical and psychological demands of health workers at healthcare facilities make them more vulnerable to high levels of stressors (Babapour et al., 2022). The effects of these stressors are evidenced by increased errors in communications, medical procedures, high medical bills, lateness to work, low productivity, and increased sick leave (Rink et al., 2023). Despite the extremely negative effects of occupational stressors on mental health and work performance, many health facilities have not put in any concrete measures to address these stress-related conditions that negatively affect the mental health and well-being of health workers (Dartey et al., 2023).

The literature has consistently identified a range of risk factors contributing to mental disorders among health workers. These factors include temporal employment, gender disparities, age-related vulnerabilities, extended working hours, exposure to extreme temperatures, lack of access to personal protective equipment (PPE), a deficient safety culture within organizations, exposure to infectious materials, strenuous patient handling, the challenge of shifting and lifting heavy equipment, and prolonged static postures (Bello et al., 2022; Sagaon-Teyssier et al., 2020; Viertiö et al., 2021). These findings underscore the need to comprehensively examine occupational health and safety practices within this specific healthcare context.

However, in Kintampo North Municipality, limited data predominantly focus on the mental health and well-being of health workers. Therefore, this study aimed to bridge these critical gaps in the existing literature by thoroughly assessing the mental health

and well-being of health workers in Kintampo North Municipality and identifying the associated implications for occupational health and safety within the health service. By examining the factors contributing to workplace depression, stress, anxiety, and burnout and their impact on work performance, this research endeavours to provide valuable insights that can inform policies, interventions, and practices aimed at enhancing the well-being and safety of health workers in this municipality and, potentially, beyond. In doing so, this study sought to contribute to the broader discourse on healthcare worker safety and management of mental health disorders, ultimately benefiting healthcare workers, healthcare institutions, and the communities they serve.

1.6. Significance of the study

Health workers play a pivotal role in providing essential services to individuals and communities at large, contributing significantly to the overall well-being of individuals and society. This study's findings would significantly contribute to a better understanding of how mental health disorders manifest, thereby contributing to essential mechanisms to provide a safer and adequate workplace that promotes the good mental health and well-being of health workers. Hence, the findings would aid essential tailored-made interventions and policies that resonate with the local context. The study would provide insights into the challenges that may differ from those observed in global or national studies, thereby enhancing the effectiveness of interventions and contributing to long-term mental health improvements. Moreover, the findings would empower policymakers for decision-making and effective policy formulation. The findings from this research served as a valuable resource of data for local health authorities, enabling them to make informed decisions and implement policies that prioritize the mental health and well-being of health workers. Furthermore, the study findings would serve as reference material for academics and students who intend to

study the mental health and well-being of health workers. Finally, the study would also stimulate further research in the field of mental health and the well-being of health workers with its occupational health implications.

1.7. Scope of the study

The study was limited to the Kintampo North Municipality. This study focused on determining the prevalence, work-related factors, socio-demographic predictors, and coping mechanisms of stress, burnout, depression, and anxiety among health workers in the Kintampo North Municipality. The study was conducted from December 2023 to July 2024.

1.8. Limitation of the study

The study was hospital-based and targeted health workers sampled from 13 units at the Kintampo municipal hospitals. It excluded health workers at private health facilities, which could affect the generalisation of findings. Ideally, all health facilities in the municipality should have been part of this study but because of logistic constraints, the study focused on only the municipal hospital. The study relied on self-reported data to assess the prevalence of mental health disorders and coping mechanisms. This approach may be subject to response bias, where participants might underreport or overreport their experiences due to social desirability or recall bias.

Further, the cross-sectional design limits the ability to infer causality between identified mental health disorders and the coping mechanisms employed by the sampled health workers to manage these mental health disorders. Finally, depending on the duration of the study, there might be time constraints that limit the depth of the investigation, particularly in understanding long-term coping mechanisms and the evolution of mental health disorders over time.

1.9. Organization of the study.

This study is organised into six chapters. The first chapter (Chapter One) introduced the study. The second chapter (Chapter Two) reviewed relevant literature on mental health based on the objectives of the study. The third chapter (Chapter Three) presents the research methodology used in this study. The fourth chapter (Chapter Four) presents and describes the key findings of the study. The fifth chapter (Chapter Five) covers the discussions of results with the study's objectives, existing literature, and the theoretical framework underpinning the study. Finally, the sixth chapter (Chapter Six) covers the summary of key findings, recommendations, and conclusions.

CHAPTER TWO

LITERATURE REVIEW

2.0. Introduction

This study assessed the mental health of health workers in Kintampo North Municipality. The literature review involved systematic identification, location, and analysis of documents containing information related to the research problem. This includes concepts and theories underpinning the topic, including the global prevalence and burden of mental health conditions. In addition, empirical evidence in line with the prevalence and risk factors of stress, burnout, depression, and anxiety was reviewed. This chapter also reviewed work-related risk factors and sociodemographic predictors associated with mental health disorders among health workers. The chapter concluded with a review of the coping mechanisms employed by health workers to manage work-related mental health disorders.

2.1. Global prevalence and burden of mental health conditions

According to the World Health Organization (WHO), mental health is a state of mental well-being that enables individuals to realise their potential, cope with stressors, perform duties assigned to them efficiently, and learn well, thus contributing to society (WHO, 2022b). Mental health condition is considered to be one of the most important predictors of health in any community that underpins individuals' abilities to make decisions, build relationships, and shape the world we live in (WHO, 2022b). It goes beyond the absence of mental disorders and includes psychosocial disabilities as well as other mental states associated with significant distress, impairment in functioning, or risk of self-harm (WHO, 2022b). Individuals diagnosed with mental health conditions are more likely to experience lower levels of mental well-being with varying severity and distress experienced differently from one person to the next due to very

different social and clinical outcomes (Granlund et al., 2021; WHO, 2022b). Globally, it is estimated that one out of every two persons will be diagnosed with a mental disorder at least once in their lifetime (McGrath et al., 2023). It has also been estimated that approximately 7.4% of the global disease burden is attributed to mental disorders (Kayiteshonga et al., 2022; Uddin et al., 2019). In 2019, 970 million people around the world were living with a mental disorder (WHO, 2022b). In Africa, approximately more than 116 million people were estimated to be living with mental health conditions pre-pandemic (WHO, 2023d). This underscores the burden of mental illnesses that potentially pose serious public health challenges.

2.5. Conceptual and empirical review of key mental health disorders

This section describes the concepts used in this study. The concepts include stress, burnout, depression, and anxiety. Stress was first reviewed, followed by burnout, depression, and anxiety.

2.5.1. Stress

Stress is defined as the emotional and physical strain resulting from individuals' responses to internal and external pressures, yet it remains complex and multifaceted (Chu et al., 2024; O'Connor et al., 2021). It serves as the body's adaptive mechanism, gearing up to tackle challenges with heightened focus, strength, stamina, and alertness. Stressors, categorised as biological, psychological, or social demands from the environment, exert their influence when individuals perceive them as demands exceeding their capabilities (Lim et al., 2023). While low levels of stress can be beneficial, fostering motivation, adaptation, and positive reactions to the environment, elevated stress levels pose risks to biological, psychological, and social well-being, detrimentally affecting individuals (Kupferberg & Hasler, 2023).

2.5.1.1. Prevalence of Stress

A series of studies have assessed the prevalence of stress among health workers. For instance, in the United States of America, a national survey was administered during the Coronavirus disease (COVID-19) pandemic by multiple healthcare organisations covering 20,947 respondents in 42 organisations and reported that daily stress was scored as high or very high by 30% of healthcare workers (Prasad et al., 2021). In addition, a cross-sectional study at a tertiary-level hospital in Northern Vietnam reported a 13.9% prevalence of stress (Thu Pham et al., 2023). Another cross-sectional survey that examined the demographic, employment, and mental health characteristics of healthcare workers in a large metropolitan hospital in Australia showed a prevalence of stress of 29% (Dobson et al., 2021). In addition, a comparative cross-sectional survey conducted among 435 health professionals working at government and commercial health facilities in the Afar region, Ethiopia, revealed a 57.5% prevalence of stress (Yesuf et al., 2022). Similarly, an institutional-based cross-sectional study conducted among 422 nurses working at public hospitals in Addis Ababa, Ethiopia, reported a 47.8% prevalence of stress (Werke & Weret, 2023).

In Ghana, several studies have also been conducted to determine the prevalence of stress among healthcare workers. For instance, a descriptive cross-sectional study to assess workplace stress among 400 healthcare workers in the Western Region reported an overall stress prevalence of 30.5% (Odonkor & Adams, 2021). Another cross-sectional survey conducted in three psychiatric hospitals, namely, Accra Psychiatric Hospital, Ankaful Psychiatric Hospital, and Pantang Hospital, reported a prevalence of mild to high stress of 42% (Opoku Agyemang et al., 2022). In addition, a cross-sectional survey conducted among 300 health workers in three hospitals in the Ashanti Region reported an 8.2% prevalence of stress (Ofori et al., 2021).

2.5.2. Burnout

The World Health Organization (WHO), in its most recent update to the International Classification of Diseases (ICD-11, 2019), officially recognises burnout as an occupational phenomenon, characterising the body's response to persistent stress (Edú-Valsania et al., 2022). Drawing on the foundation laid by Maslach's earlier research, the WHO's ICD-11 defines burnout, which is now acknowledged as a significant aspect of occupational health (Søvold et al., 2021). According to the World Health Organization, burnout is "a syndrome conceptualized as resulting from chronic workplace stress that has not been successfully managed and characterized by three dimensions: feelings of energy depletion or exhaustion; increased mental distance from one's job or feelings of negativism or cynicism related to one's job; and reduced professional efficacy" (Amer et al., 2022; Atroszko et al., 2020).

Nevertheless, occupational burnout may not be personal but the result of specific work-related tasks, such as working under pressure and an unfriendly working environment (Załuski & Makara-Studzińska, 2022). This might increase emotional exhaustion, which consequently may trigger a defence mechanism called depersonalisation (lower sensitivity to others) (Szwamel et al., 2022). Occupational burnout can result in a higher intake of psychoactive substances, depression, and an increasing number of suicides (Eslava-Schmalbach et al., 2020).

2.5.2.1. Prevalence of Burnout

Numerous studies have determined the prevalence of burnout among healthcare workers. Reports on the prevalence rate of burnout differ across geographical locations and sample sizes. For instance, a multinational study on 3,537 healthcare workers from the United Kingdom, Poland, and Singapore found a 67% prevalence of burnout

(Denning et al., 2021). In addition, a prospective study among 2744 healthcare workers in Singapore found a 24% prevalence of burnout that mildly increased over six months (Teo et al., 2021). Similarly, a multicenter study among 464 healthcare workers in Greece found elevated levels of burnout, with 65% scoring moderate-severe in Emotional Exhaustion, 92% experiencing severe Depersonalization, and 51% experiencing low-to-moderate levels of Personal Accomplishment, underscoring 60% prevalence of burnout (Pappa et al., 2021).

Another European cross-sectional study, based on an online survey, collected demographic data and mental distress outcomes from 184 healthcare workers from May 2020 to June 2020 from 45 different countries and found 56% of cases of emotional exhaustion and 48.9% of depersonalisation among healthcare workers (Orrù et al., 2021). An observational study conducted from April to May 2020 among healthcare workers in Verona University Hospital revealed that 38.3% of participants displayed symptoms of high emotional exhaustion, 46.5% of low professional efficacy, and 26.5% (n=519) of high cynicism, underscoring a high prevalence of burnout (Lasalvia et al., 2021).

In Africa, various studies have shown varying prevalences of burnout among healthcare workers. An analytical cross-sectional study performed at a national referral hospital in Tanzania revealed a 62% prevalence of burnout among health workers, with 90.4% of participants showing high emotional exhaustion (Lwiza & Lugazia, 2023). An institutional-based cross-sectional study conducted among 501 health professionals working in public health facilities of Dire Dawa city administration, Eastern Ethiopia, using structured self-administered validated questionnaires using the Maslach Burnout Inventory scale showed a prevalence of burnout of 54.1% (Ahmed et al., 2022). In

addition, a cross-sectional survey conducted among 375 randomly selected nurses from health facilities in northern Uganda revealed a 49.1% prevalence of burnout (Udho & Kabunga, 2022).

In Ghana, a cross-sectional study conducted among 1,264 health workers recruited from three public hospitals in Accra between March and November 2020 showed a 20.57% prevalence of burnout, with non-clinicians displaying higher burnout than clinicians (Konlan et al., 2022). Another cross-sectional study among health professionals found a 9.90% prevalence of burnout (Odonkor & Frimpong, 2020). In addition, a hospital-based cross-sectional study among 391 nurses and midwives in Kumasi, Ghana reported 58% in emotional exhaustion, 55.5% in poor personal accomplishment, and 38.3% in depersonalisation, signifying a surge in the prevalence of burnout (Opoku et al., 2023).

2.5.3. Depression

Depression is a mental health condition characterized by a chronic feeling of emptiness, persistent sad mood, concentration difficulties, reduced energy, loss of interest in once-pleasurable activities, weight changes, altered sleep patterns (insomnia or hypersomnia), psychomotor changes (agitation or retardation), pessimistic behaviour, guilt, enduring fatigue, and low self-esteem (Chand & Arif, 2023; Mackin et al., 2021). It is considered a mental health condition involving affective disorders as its natural symptoms, manifesting as a persistent state of sadness and unhappiness, transient or permanent, accompanied by a loss of interest in life, impaired concentration, sleep disturbances, and compromised interpersonal relationships (Chand & Arif, 2023; Young, 2023). This multifactorial disorder involves specific behavioural, cognitive,

social, and biological symptoms that hinder daily functioning (Bains & Abdijadid, 2024).

Historically, depression has been expressed as “melancholy” or “sadness”, but distinctions exist between these terms and depression. Depression involves prolonged high levels of sadness, whereas sadness is a transient emotional response to an unpleasant situation or loss. Melancholy concerns sadness over irretrievable past events (Arias et al., 2020; Hosny et al., 2023; Sagdahl, 2021). Globally, depression is a leading cause of disease burden, affecting millions and raising public health concerns because of its short and long-term effects (Proudman et al., 2021).

2.5.3.1. Prevalence of Depression

According to a recent report by the World Health Organization (WHO), approximately 280 million people have been diagnosed with depression, which is commonly prevalent in approximately 5% of the world’s adult population and 5.7% of adults above 60 years of age (WHO, 2023b). A systematic review and meta-analysis of the global prevalence of depression among health workers during the COVID-19 pandemic showed a prevalence of 26% (Rezaei et al., 2022b). On a continental basis, depression among health workers is higher in Africa, with a prevalence rate of 82%, followed by the United States of America and Europe, with rates of 33% and 31%, respectively. The lowest prevalence of depression was recorded in Asia, with a prevalence rate of 19% (Rezaei et al., 2022b).

An Iranian study that used an explanatory sequential mixed methods design to investigate the prevalence of depression, anxiety, and stress among 303 primary healthcare workers found a prevalence of depression of 42.6% (Kakemam et al., 2024). Similarly, a cross-sectional study conducted among 245 healthcare workers in

December 2021 at a tertiary hospital in Shenzhen, China, using a simple random sampling strategy, reported a prevalence of depression of 34.7% (Liang et al., 2023). Another on-site cross-sectional study among 3,373 medical staff in public hospitals in Jilin Province, China, from December 1 to December 30, 2020, revealed a 23.6% prevalence of depression (Ning et al., 2022). In Europe, a cross-sectional survey conducted among 10,325 healthcare workers in French public and private healthcare facilities nationally between May 2021 and June 2021 revealed a 30.2% prevalence of depression (Fond et al., 2022a).

Similarly, in Africa, a systematic review and meta-analysis on the prevalence of anxiety and depression among the general population during the COVID-19 pandemic showed a 48% prevalence of depression among healthcare workers (Bello et al., 2022). In addition, a cross-sectional study conducted on 252 healthcare professionals at Dessie Comprehensive Specialized Hospital, Northeast, Ethiopia, reported a prevalence of depression of 27.8% (Belete & Anbesaw, 2022a). Another cross-sectional descriptive survey of depression among health workers in Enugu, the capital of Enugu state, South East Nigeria, revealed a 14.9% prevalence of depression (Obi et al., 2015).

Furthermore, a cross-sectional survey of 435 healthcare workers from 32 health facilities in Malawi revealed a 28% prevalence of depression among the studied health workers (Phiri et al., 2023). In Ghana, a cross-sectional study conducted in three psychiatric hospitals in Ghana between March 2020 and May 2021 revealed a prevalence of depression of 19.6% among 311 psychiatric nurses (Opoku Agyemang et al., 2022). Similarly, a cross-sectional study conducted among 274 health workers in three hospitals in the Ashanti Region of Ghana from July 2020 to August 2020 reported a prevalence of depression disorder of 21.1% (Ofori et al., 2021).

2.5.4. Anxiety

Anxiety, on the other hand, is the way an individual's body responds to a perceived threat (Grogans et al., 2023). An unpleasant, uncertain, and subjective feeling is experienced by an individual triggered by their thoughts, beliefs, and feelings about events, other persons, or objects (Anderson et al., 2019; Grogans et al., 2023). Symptoms of anxiety include increased blood pressure, increased rate of respiration, increased pulse rate, tension or restlessness, heart palpitations, trouble concentrating or making decisions, feeling irritable, nausea or abdominal pain, sweating, trembling or shaking, trouble sleeping, and a sense of impending danger, panic, or doom (Chand & Marwaha, 2023; WHO, 2023a).

2.5.4.1. Prevalence of Anxiety

Consistent with the World Health Organization (WHO), not less than 4% of the global population currently experiences an anxiety disorder. Approximately 301 million individuals globally were reported to have been diagnosed with anxiety in 2019 (WHO, 2023a). Numerous studies have determined the prevalence of anxiety among healthcare workers. Reports on the prevalence rate of anxiety differ across geographical locations and sample sizes. For instance, an umbrella review of meta-analyses on the prevalence of anxiety and depression among healthcare workers during the COVID-19 pandemic reported a prevalence of anxiety of 24.94% (Sahebi et al., 2021b).

In addition, a cross-sectional study conducted in Jordan among 422 healthcare workers during the first year of the COVID-19 pandemic reported a prevalence of anxiety of 30.8% (Yassin et al., et al., 2022). Another prospective study among 2744 healthcare workers in Singapore found a 13% prevalence of anxiety (Teo et al., 2021). Similarly, a multicentre study among 464 healthcare workers in Greece found elevated levels of

anxiety with a 25% prevalence rate (Pappa et al., 2021). Another European cross-sectional study, based on an online survey, collected demographic data and mental distress outcomes from 184 healthcare workers from May 2020 to June 2020 from 45 different countries and found a prevalence of anxiety of 47.5% among frontline healthcare workers. In contrast, it was 30.3% among healthcare workers in other units (Orrù et al., 2021). A cross-sectional study at a tertiary-level hospital, where the Depression Anxiety and Stress Scale 21 (DASS-21) web-based questionnaire was employed, showed that the prevalence of anxiety was 24.7% among the studied healthcare workers (Thu Pham et al., 2023).

In Africa, various studies have shown varying prevalences of burnout among healthcare workers. A hospital-based study conducted on 305 healthcare workers in a hospital in Ethiopia revealed a 63% prevalence of anxiety (Kibret et al., 2020). A systematic review and meta-analysis on the prevalence of anxiety and depression among the general population in Africa during the COVID-19 pandemic showed a prevalence of anxiety of 47% among healthcare workers (Bello et al., 2022). In addition, a descriptive cross-sectional study conducted between June and July 2021 among 1452 doctors and nurses in Ikeja, Lagos, Nigeria, revealed a 5.0% prevalence of anxiety among the studied healthcare workers (Olude et al., 2022).

Furthermore, a cross-sectional study conducted among 420 healthcare workers during the COVID-19 pandemic at a tertiary hospital in Addis Ababa, Ethiopia, reported a 21.9% prevalence of anxiety among the studied healthcare workers (Mulatu et al., 2021). In Ghana, a cross-sectional study conducted in three psychiatric hospitals between March 2020 and May 2021 revealed a 27% prevalence of anxiety among 311 psychiatric nurses (Opoku Agyemang et al., 2022). Similarly, a cross-sectional study

conducted among 274 health workers in three hospitals in the Ashanti Region of Ghana from July 2020 to August 2020 reported a 27.8% prevalence of anxiety (Ofori et al., 2021). Furthermore, an analytical cross-sectional study to assess psychological distress and fear of COVID-19 among 245 frontline healthcare workers in selected healthcare facilities in the Western Region of Ghana: St. Martin De Porres, the Aiyinasi Health Centre, and the Esiama Health Centre reported a 52.2% anxiety level (Fofie et al., 2023).

2.6. Work-related risk factors of stress, burnout, depression, and anxiety

The hospital work environment is diverse, with variations across different settings, leading to inherent risks of mental health disorders and other occupational-related issues among healthcare workers (Elbejjani et al., 2020). Specific activities conducted within each environment influence mental health in these settings. Hospitals serve as workplaces where several health care services are provided to patients, including treatment, diagnosis, antenatal care, prenatal care, family planning services, and various primary health care services (Khosravi et al., 2022). Each activity presents unique challenges and stressors for healthcare workers, contributing to the variability in mental health outcomes across different hospital settings (Leo et al., 2021).

Evidence from the World Health Organization (WHO) indicates that more than 1.4 million healthcare workers have disorders and injuries acquired in healthcare settings (Haque et al., 2020). They are exposed to a variety of occupational hazards, including, but not limited to, needle prick, musculoskeletal injuries, human immune virus (HIV), tuberculosis (TB), hepatitis B, hepatitis C, influenza, back and neck pain, allergic reactions, chemical spills, radiation, and violence from patients (Awini et al., 2023; Chhabra, 2016). These occupational-related disorders, coupled with the nature of the

work rendered to patients, make healthcare workers the most vulnerable working group in the healthcare team to experience high levels of mental health disorders, putting them at an increasing risk of presenting with psychiatric morbidity such as stress, burnout, depression, and anxiety that can affect their personal, family, and professional life (Korošec et al., 2023).

It has been established that the type of unit or clinical setting where these healthcare workers work is linked to a high prevalence of stress, burnout, depression, and anxiety (Rink et al., 2023). Similarly, workplace conditions such as temporal employment, job satisfaction, long working hours, extreme temperatures, high-speed driving, lack of personal protective equipment (PPE), poor safety culture, exposure to infectious material, patient handling, shifting, lifting heavy equipment, violence, and static postures have all been identified as work-related risk factors for mental health conditions among health care professionals (Al-Surimi et al., 2022; Awini et al., 2023; J. Lee et al., 2019).

Furthermore, research has highlighted the significant impact of the hospital or department environment on the mental health disorders of healthcare workers (De Kock et al., 2021). It is crucial to note that the risk of developing mental health conditions varies across departments, emphasising the importance of department-specific training for healthcare workers (Babapour et al., 2022). Different work settings present varying job demands, with findings indicating that healthcare workers in intensive care units (ICU) and emergency departments experience higher stress levels than those in medicine and surgery departments (Saravanan et al., 2023).

For instance, healthcare workers in the emergency department often face higher job demands and lower decision-making authority than their counterparts in paediatric

palliative care units (Arra et al., 2023). In Greece, psychiatric wards have been identified as particularly challenging environments for healthcare workers and are associated with high levels of stress and depression (Melemeni et al., 2021). Similarly, healthcare workers working in mental health facilities, including psychiatric wards, exhibit higher rates of stress symptoms and depression, with an elevated risk of suicide compared with those in general hospital settings (Awan et al., 2022; Fond et al., 2022a). Additionally, healthcare workers employed in tertiary care facilities such as regional and teaching hospitals face an increased risk of developing depression and anxiety compared with those in primary healthcare facilities such as health centres. This heightened risk in tertiary hospitals is often attributed to nurses' heavy workload in such settings (Odonkor & Adams, 2021; Schou-Bredal et al., 2022a).

Conversely, job dissatisfaction among healthcare workers was associated with an increased risk of mental health disorders (Villarreal-Zegarra et al., 2022). Healthcare workers who are not satisfied with their profession are at a high risk of developing mental morbidities such as stress, burnout, depression, and anxiety (Nigam, 2023). The study by Yeshaw and co-authors revealed compelling findings regarding the impact of job satisfaction on healthcare workers' mental health. According to their research, healthcare workers who reported dissatisfaction with their jobs were significantly more likely to experience symptoms of depression, anxiety, and stress. Specifically, those who were dissatisfied with their work were 10.59 times more likely to develop symptoms of depression, 7.12 times more likely to experience anxiety, and 6.69 times more likely to suffer from stress (Yeshaw & Mossie, 2017).

In addition, research has consistently demonstrated a positive correlation between the working hours of healthcare workers and the prevalence of stress, burnout, depression,

and anxiety (Budzyńska & Moryś, 2023). Healthcare workers who work longer hours and are employed in shift systems face a higher risk of developing depression, burnout, stress, and anxiety (Cheng et al., 2022; Liang et al., 2023). The demands of working in a shift system can have detrimental effects on the physical, emotional, and psychological well-being of healthcare workers, leading to higher rates of mental health disorders compared with those who do not work in such systems (National Academies of Sciences et al., 2021). However, there are contrasting findings from a study conducted in Ghana, which found no significant difference in the prevalence of stress and anxiety between nurses working in shift rotations and those on fixed shifts (Opoku Agyemang et al., 2022).

2.7. Socio-demographic predictors of stress, burnout, depression, and anxiety

A series of sociodemographic factors have been associated with mental health disorders among healthcare workers. These include but are not limited to age, gender, marital status, income, education, urbanity, culture, and religious affiliation, as they can play a significant role in understanding the nature and prevalence of various mental health conditions (Durand-Sanchez et al., 2023). Concerning age, numerous studies have explored the relationship between age and mental health outcomes, with findings indicating that younger individuals may experience higher levels of stress and burnout due to career demands or academic pressures (J. Chen et al., 2022; Hugh-Jones et al., 2023).

Conversely, older adults might face stressors related to retirement, health issues, or caregiving responsibilities (Yan et al., 2023). A cross-sectional study conducted among 245 healthcare workers aged 21 to 64 years in December 2021 at a tertiary hospital in Shenzhen, using a simple random sampling strategy, highlighted those middle-aged and

late middle-aged healthcare workers had a higher risk of anxiety, burnout, stress, depression, and insomnia compared with younger health care workers. However, their risks were still lower than those of the general population (Liang et al., 2023). Similarly, a nationwide longitudinal cohort study in Taiwan among 46,120 nurses and 92,240 matched controls showed that middle-aged and late-middle-aged healthcare workers had significantly higher odds ratios for anxiety, depression, and insomnia than younger nurses. However, middle-aged and late-middle-aged nurses still had significantly lower risks for anxiety, depression, and insomnia than the general population (Huang et al., 2018).

On gender, female healthcare workers were found to have a higher prevalence of mental health disorders than male healthcare workers in healthcare facilities (Hajebi et al., 2022; Idowu et al., 2022; S. Liu et al., 2021a). In addition, marital status has been noted to influence mental health disorders among healthcare workers significantly. Single or divorced healthcare workers are at a higher risk of stress, burnout, depression, and anxiety than married healthcare workers (Y.-H. Chen et al., 2022; Thu Pham et al., 2023). A cross-sectional study conducted in Hong Kong investigated the prevalence and associated risk factors of depression, anxiety, and stress among nurses. It revealed that female nurses who were divorced, widowed, or separated reported higher rates of depression, anxiety, and stress than male nurses (Cheung & Yip, 2015). Furthermore, educational level was associated with job stress, burnout, depression, and anxiety (Gao et al., 2023).

A descriptive, cross-sectional design with self-administered questionnaires to assess workplace stress among healthcare workers in the western region of Ghana revealed that stress is likely to decrease with an increasing level of education and that

respondents with a diploma are 3.73 times more likely to be stressed compared with those with higher education qualification (Odonkor & Adams, 2021). While some studies suggest that higher education may reduce the risk of mental health disorders, others indicate that it might increase the likelihood of experiencing mental health disorders (Kondirolli & Sunder, 2022a).

2.8. Coping mechanisms to manage work-related mental health disorders

Given the surge in the prevalence of mental health disorders among healthcare workers, multiple successful coping mechanisms have been transactionally and flexibly employed to manage stress, burnout, depression, and anxiety. Coping mechanisms refer to individuals' cognitive and behavioural strategies to manage stressors and mitigate their negative effects on mental well-being (Algorani & Gupta, 2024). Coping strategies can be categorised as adaptive or maladaptive, depending on their effectiveness in reducing stress and promoting psychological resilience (Algorani & Gupta, 2024; Corman et al., 2023). These mechanisms are based on intrapersonal and situational characteristics, including work-life balance, medication prophylaxis, reliable, consistent, timely information, and the education and preparation of employees' families and the community. Also, ethical concerns and fairness, such as fair distribution of resources and risk exposure.

Furthermore, visibility and presence of leadership, valuing the contribution of frontline staff, addressing mistrust or fear of healthcare workers, information about staff redeployment to unusual duties or work areas, and the need for ongoing resilience training are also crucial to maintaining mental health and general well-being among healthcare workers (Heath et al., 2020). These can be categorised as seeking social

support, practising self-care, using coping mechanisms, and finding meaning and purpose in work (Parvaresh-Masoud et al., 2023).

2.8.1. Seeking social support

Social support encompasses various forms of assistance, including emotional, informational, and instrumental support, provided by individuals' social networks (Bavel et al., 2020; Drageset, 2021). For healthcare workers, social support is crucial in buffering the adverse effects of occupational stressors, fostering resilience, and promoting psychological well-being (Karadaş & Duran, 2022). Studies have consistently demonstrated that healthcare workers with strong social support networks are less susceptible to burnout, depression, and other mental health disorders than those lacking adequate support (National Academies of Sciences et al., 2021). Social support acts as a protective factor by offering a sense of belonging, validation, and encouragement, thereby bolstering healthcare professionals' coping mechanisms in challenging circumstances (Dailey et al., 2023).

Research indicates that social support can be classified into different types based on its source and nature. Perceived support from colleagues, supervisors, friends, and family members significantly contributes to the mental resilience of healthcare workers (Htay et al., 2021; Parvaresh-Masoud et al., 2023). Peer support programmes, mentoring initiatives, and employee assistance programmes are formal mechanisms implemented within healthcare organisations to facilitate social support (Htay et al., 2021; Krumm et al., 2022). Informal support networks, such as co-worker friendships and professional communities, also play a vital role in fostering a supportive work environment. Moreover, online platforms and virtual communities have emerged as valuable

resources for healthcare professionals to connect, share experiences, and seek advice, particularly during times of crisis or isolation (Pianese & Belfiore, 2021).

In a multi-country cross-sectional study to ascertain how healthcare workers coped with mental health challenges during the COVID-19 pandemic, it was reported that seeking social support was one of the main methods of reducing stress and other mental health-related disorders (Htay et al., 2021). Despite the recognised benefits of social support, healthcare workers may encounter barriers to accessing or using available support networks (Keyworth et al., 2022). The stigma surrounding mental health issues, fear of professional repercussions, and perceived norms of self-sacrifice and perfectionism within the healthcare culture can deter individuals from seeking support (Hyseni Duraku et al., 2023). Additionally, healthcare organisations' heavy workloads, irregular schedules, and hierarchical structures may impede interpersonal relationships and limit opportunities for social connection (Ihara et al., 2020).

2.8.2. Practicing Self-care

Self-care encompasses various activities and strategies individuals use to maintain and promote their physical, mental, and emotional well-being. For healthcare workers, self-care practises may include physical self-care, such as exercise and healthy eating; emotional self-care, such as mindfulness, meditation, and leisure activities; and time management, such as adequate rest when needed (Parvaresh-Masoud et al., 2023). These practices are essential for preventing burnout, reducing stress, and improving overall mental health.

A study examining the moderating effects of self-care on the relationships between perceived stress, job burnout, and retention intention in clinical nurses revealed that self-care had a positive moderating effect on stress, job burnout, and retention intention

(S.-H. et al., 2023). In addition, a study highlighted how healthcare workers used positive thinking as a psychological strategy to combat stress. This finding is not unexpected, given the extensive documentation supporting the efficacy of positive thinking in stress management (Htay et al., 2021). Furthermore, a study by Ross and co-authors found that self-care behaviours, such as exercise and healthy eating, were associated with lower levels of burnout among nurses (Ross et al., 2017). Similarly, a qualitative descriptive study with a phenomenological overtone revealed that self-care activities, such as mindfulness and relaxation techniques, effectively reduced stress and improved well-being among paediatric critical care nurses and physicians (Wei et al., 2020).

Another study found that physical self-care, such as exercise and healthy eating, was an effective strategy for managing stress among healthcare workers (Parvaresh-Masoud et al., 2023). Regular exercise is associated with lower levels of depression and anxiety among healthcare workers (de Pinho et al., 2021). Additionally, emotional self-care, such as mindfulness and meditation, is an effective strategy for managing stress (Jiménez-Giménez et al., 2021; Parvaresh-Masoud et al., 2023). Time management has also been noted as an essential self-care strategy for healthcare workers, as it helps older adult caregivers manage their workload and reduce stress (Sabo & Chin, 2021). Despite the benefits of self-care practices, healthcare workers often face barriers to engaging in these activities. Heavy workloads, long hours, and high job demands can make it challenging for individuals to prioritise self-care (Muhlare & Downing, 2023).

Additionally, the stigma surrounding mental health in the healthcare profession may discourage individuals from seeking help or engaging in self-care activities (Knaak et al., 2017). Moreover, organisational factors, such as inadequate resources and lack of

support from supervisors, can hinder healthcare workers' ability to practise self-care effectively (National Academies of Sciences et al., 2021). An empirical study in private hospitals in East Java, Indonesia, on organisational culture as a mediator of credible leadership influence on work engagement identified organisational culture and leadership as critical factors influencing healthcare workers' engagement in self-care and work in general (Srimulyani & Hermanto, 2022).

2.8.3. Finding meaning and purpose in work

Meaning and purpose in work refer to the sense of significance, fulfilment, and contribution that individuals derive from their professional roles (Martela & Pessi, 2018). Studies have shown that individuals who perceive their work as meaningful are more likely to experience higher job satisfaction, lower levels of burnout, and greater overall well-being (Moscu et al., 2023). For healthcare workers, finding meaning and purpose in their work, which includes helping others and professional growth, can be particularly crucial given the demanding and often emotionally draining nature of their roles (X. Chen et al., 2023; Parvaresh-Masoud et al., 2023).

For instance, a study found that helping others was an important source of meaning and purpose for healthcare workers (Parvaresh-Masoud et al., 2023), which is also consistent with another research that suggests that helping others is a crucial motivator for healthcare workers and can contribute to overall job satisfaction (Ayalew et al., 2019). Additionally, the study by Parvaresh-Masoud and co-authors found that professional growth, such as continuing education and skill development, was an essential source of meaning and purpose for healthcare workers (Parvaresh-Masoud et al., 2023).

CHAPTER THREE

METHODOLOGY

3.0. Introduction

This chapter outlines the research methodology of this study. It details the study design, area, population, and variables of interest. In addition, it discusses the sampling procedure, data collection instruments and techniques, and data processing and management. This chapter also offers a comprehensive explanation of the data analysis methods used and the quality control measures implemented in the study.

3.1. Study design and justification

The study was a hospital-based analytical cross-sectional designed to assess the mental well-being of health workers in Kintampo North Municipality. The design was suitable for gathering information about events before organising, tabulating, displaying, and describing the data collected. This design allowed for the collection of data at a single point in time, making it a time-efficient method for assessing the current prevalence of stress, burnout, depression, and anxiety among health workers (Capili, 2021).

3.2. Study Area

The study was conducted in Kintampo North Municipality, Bono East Region of Ghana. The Kintampo North Municipality is one of Ghana's 261 Metropolitan, Municipal and District Assemblies (MMDAs), and forms part of the 11 Municipalities and Districts in the Bono East Region (Ghana Statistical Service, 2021). Geographically, the municipality is strategically located at the centre of Ghana and serves as a transit point between the northern and southern sectors of the country (Ghana Statistical Service, 2021). It is between latitudes 8º45'N and 7º45'N and Longitudes 1º20'W and 2°1'E (Ghana Statistical Service, 2021). It has a surface area of approximately 4859 square

kilometres. The municipality shares boundaries with Central Gonja District to the north, Bole District to the west, East Gonja Municipal to the northeast (all in the Savannah Region), Kintampo South District to the south, and Pru East District to the southeast (all in the Bono East Region) (Ghana Statistical Service, 2021). According to the 2021 population and housing census, the municipality's population is 139,508, with 69,520 males and 69,988 females (Ghana Statistical Service, 2021). The municipality has a general hospital in Kintampo from which people can access health care. There are also four private health facilities, two public rural clinics, two health centres, one outreach office and twelve functional CHPS compounds across the municipality to provide for the health needs of the inhabitants (Asumah et al., 2022).

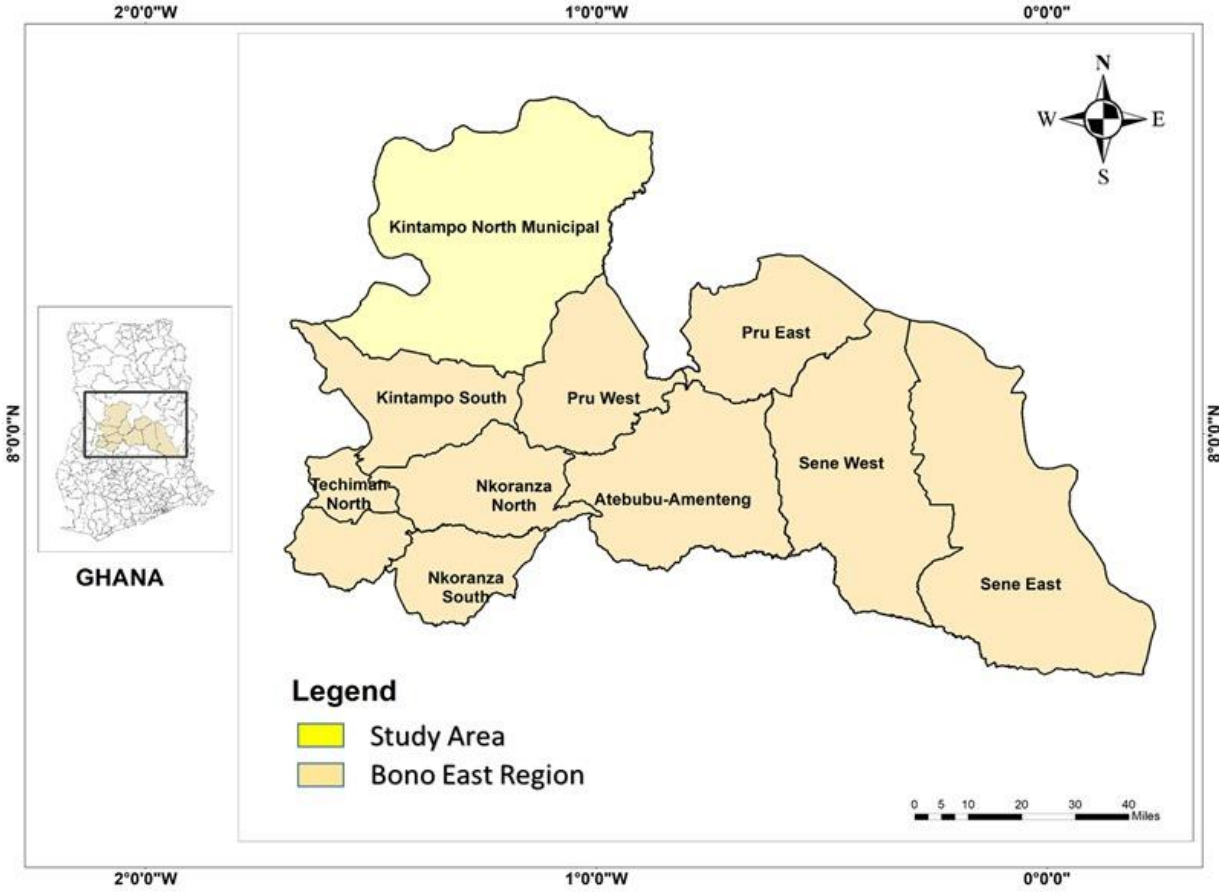

Figure 1: Bono East Regional Map indicating the study area

3.3. Study Population

The study population included health workers at Kintampo North Municipal Hospital, including physicians, nurses, allied health personnel, dispensary technicians, ambulance personnel, and orderlies.

3.4. Variables of Interest

These variables were considered in the study.

3.4.1. Dependent variable

The dependent variables included stress, burnout, depression, and anxiety.

3.4.2. Independent variables

The independent variables included work-related risk factors and socio-demographic predictors. All variables were selected based on the objectives of the study.

3.5. Sampling Procedure

The study employed a multistage sampling technique to systematically select participants from the target population. Three key sampling methods were used: purposive sampling, quota sampling, and simple random sampling. Purposive sampling was used to deliberately select healthcare workers from Kintampo North Municipal Hospital. This approach ensured that participants with relevant characteristics, such as healthcare professionals including physicians, nurses, allied health personnel, dispensary technicians, ambulance personnel, and orderlies, were included in the study. The rationale was to target individuals most likely to experience work-related mental health disorders due to the nature of their work. Likewise, quota sampling was employed to ensure proportional representation from each unit within the hospital. The sample size was determined based on the total number of healthcare workers in each

unit. For instance, nurses, who formed the largest group, had a higher quota compared to smaller units like orderlies and dispensary technicians. This approach helped maintain diversity and representativeness within the sample. Finally, after determining the number of participants needed from each unit through quota sampling, simple random sampling was used to select individuals from these units. This method provided each healthcare worker within the unit with an equal chance of being selected, thereby minimizing selection bias. Randomization was achieved using a lottery method where participant identification numbers were drawn randomly until the required sample size for each unit was attained.

3.5.1. Inclusion criteria

All health workers at the time of the study and those who were willing to participate were included.

3.5.2. Exclusion criteria

Health workers who were not staff of the selected health facilities within Kintampo North at the time of the study were excluded. In addition, a health worker who was a staff member of the selected health facilities but was unwilling to participate in the study was excluded.

3.5.3. Sample size estimation

The sample for this study was obtained using Slovene's formula (Khaleel et al., 2023):

$$n = \frac{N}{1 + \mathrm{N}(e)^2}$$

Where (**N)** is the target population (437), (**e**) is the standard error (Chosen to be 0.05), and (**n**) is the sample size.

$$= \frac{437}{1 + 437(0.05)^2}$$

$$208.8$$

$$\approx 209$$

After determining the sample size of the 209 health workers, to ensure sufficient statistical power and reliability from the sample for analysis, 55% of the total sample size (209), which is 114.95 rounded to the nearest decimal, was added to give a total sample size of 324. The rationale was also to ensure sufficient statistical power and reliability from the sample for analysis and also to compensate for non-response (Bardoe et al., 2024, 2025). In addition, it was also to satisfy one of the assumptions of the logistic regression analysis, which emphasizes the presence of a larger sample size (Schreiber-Gregory & Bader, 2018).

Table 1: Sample size proportional to each selected unit

District	Population of health workers	Sample Proportion%	Estimated sample size	Approximated Sample Size
Nurses	338	77.3	250.4	250
Allied Health Personnel	45	10.3	33.4	34
Physicians	23	5.3	17.2	17
Emergency Medical Technicians	14	3.2	10.4	10
Dispensary Technicians	9	2.1	6.8	7
Orderlies	8	1.8	5.8	6
Total	**437**	**100**	**324**	**324**

3.6. Description of the data collection instrument

Data for the study was obtained using a questionnaire prepared and pre-tested. The questionnaire was administered through a face-to-face interview. The questionnaire was primarily structured into five sections. The first section (named 'Section I') was the sociodemographic study of health workers. This section comprised of 10 items. The second section (named 'Section II') assessed the prevalence of stress, burnout, depression, and anxiety among health workers. This section comprised of 74 items. The third section (named 'Section III') determined the work-related factors of stress,

burnout, depression, and anxiety among health workers in Kintampo North Municipality. This section consisted of 8 items. Finally, the last section (named 'Section IV') assessed the various coping mechanisms for managing stress, burnout, depression, and anxiety. This section consisted of 10 items.

3.6.1. Perceived Stress Scale (PSS)

The Perceived Stress Scale (PSS) is a psychological instrument for measuring the perception of stress (Harris et al., 2023). Developed by Sheldon Cohen and his colleagues in 1983, it is often used in studies examining the relationship between stress and health outcomes, including mental health disorders, cardiovascular diseases, and immune function, and also evaluating the effectiveness of stress-reduction interventions (Harris et al., 2023; Seiler et al., 2020). The original scale consists of 14 items (PSS-14), which were later shortened to a 10-item (PSS-10) and a 4-item version (PSS-4) to increase its applicability in various research contexts (Jatic et al., 2023). The PSS is based on the transactional model of stress, which views stress as a product of the interaction between individuals and their environment (Maqsood et al., 2024).

3.6.2. Maslach Burnout Inventory (MBI)

The Maslach Burnout Inventory (MBI) is a widely used instrument for assessing burnout among physicians, nurses, and other healthcare professionals, highlighting the impact of long hours, high-stress environments, and emotional demands on burnout levels (Papazian et al., 2023). Developed by Christina Maslach and Susan E. Jackson in the late 1970s, the MBI has been instrumental in both academic research and practical applications for understanding and addressing burnout (Papazian et al., 2023). The original MBI consists of 22 items divided into three subscales (Wang et al., 2024):

1. Emotional Exhaustion (EE): Measures feelings of being emotionally overextended and exhausted by one's work (Wang et al., 2024).
2. Depersonalization (DP): Assesses an unfeeling and impersonal response towards recipients of one's service or care (Wang et al., 2024).
3. Personal Accomplishment (PA): Evaluates feelings of competence and achievement in one's work (Wang et al., 2024).

3.6.3. Beck's Depression Inventory (BDI)

Beck's Depression Inventory (BDI) is one of the self-report measures for assessing the severity of depression (Hubley, 2014). Developed by Aaron T. Beck in 1961, the BDI has undergone several revisions to improve its psychometric properties and adapt to evolving understandings of depression (García-Batista et al., 2018). It consisted of 21 items, each describing a specific symptom or attitude related to depression (Hubley, 2014). The items addressed emotional, cognitive, behavioural, and somatic aspects of depression (García-Batista et al., 2018).

3.6.4. Beck's Anxiety Inventory (BAI)

Beck's Anxiety Inventory (BAI) is a widely used self-report measure designed to assess the severity of anxiety symptoms in clinical and research settings (Modak et al., 2023). Developed by Aaron T. Beck and his colleagues in 1988, the BAI focuses on the somatic and subjective symptoms of anxiety rather than depression, making it distinct from other similar tools like the Beck Depression Inventory (BDI) (do Nascimento et al., 2023). Beck and his colleagues identified 21 common symptoms of anxiety through clinical observation and literature review, which formed the basis of the inventory (Modak et al., 2023). It is employed in diverse settings, such as hospitals, clinics, and

research studies, to monitor treatment progress, evaluate intervention effectiveness, and aid in diagnosing anxiety disorders (Gkintoni & Ortiz, 2023).

3.7. Assessing the Prevalence of stress, depression, and anxiety

3.7.1. Prevalence of stress

The prevalence of stress was assessed using the Perceived Stress Scale (PSS-10). This instrument is comprised of 10 items measured on a 4-point Likert scale, which ranges from 1 (Never), 2 (Sometimes), 3 (Often), and 4 (Always) (Harris et al., 2023; Seiler et al., 2020). Composite scores were determined to categorise the proportion of health workers with low (≤22), moderate (23 – 35), and high (≥36) stress (Opoku Agyemang et al., 2022).

3.7.2. Prevalence of burnout

The prevalence of burnout was assessed using the Maslach Burnout Inventory (MBI). The MBI comprises 22 items, of which the emotional exhaustion (EE) domain consists of nine items, the depersonalisation (DP) domain consists of five items, and the personal accomplishment (PA) domain consists of eight items. Each domain score ranged from 0 to 6 based on the self-reported frequency of the feeling addressed by each item (Im et al., 2023). High scores on EE indicate feelings of being emotionally overextended and depleted of emotional resources. Conversely, low scores suggest a lower level of emotional exhaustion and a greater capacity to manage stress and maintain emotional well-being (Černe & Aleksić, 2024).

Moreover, high DP scores suggest a negative, cynical, and detached response to work-related tasks and interactions. In contrast, low DP scores indicate a more positive and empathetic attitude towards others, with a greater sense of connectedness and engagement in interpersonal interactions (Černe & Aleksić, 2024; Im et al., 2023).

Furthermore, high PA scores reflect a sense of competence, efficacy, and achievement in the work role (Im et al., 2023). In contrast, low PA scores indicate feelings of incompetence, ineffectiveness, and a lack of achievement in one's work (Yue et al., 2022). High scores on EE and DP, coupled with low scores on PA, indicate burnout. Conversely, lower scores on EE and DP and higher scores on PA indicated the absence of burnout (Claponea & Iorga, 2023).

3.7.3. Prevalence of depression

The Beck's Depression Inventory (BDI-21) was used to determine the prevalence of depression among health workers. This instrument consisted of 21 items measured on a 4-point Likert scale, which ranged from 1 (Never), 2 (Sometimes), 3 (Often), and 4 (Always) (García-Batista et al., 2018). Composite scores were obtained to categorise the proportion of health workers with minimal (≤21), mild (22 – 27), moderate (28 – 36), and severe (≥37) depression (Opoku Agyemang et al., 2022).

3.7.4. Prevalence of anxiety

The Beck's Anxiety Inventory (BAI-21) was used to determine the prevalence of anxiety among health workers. It comprised 21 items measured on a 4-point Likert scale, which ranges from 1 (Not at all), 2 (Mildly – but did not bother me much), 3 (Moderately – it was not pleasant at times), and 4 (Severely – it bothered me a lot) (Modak et al., 2023). Composite scores were obtained to categorise the proportion of health workers with low (≤21), moderate (22 – 35), and severe (≥36) anxiety (Opoku Agyemang et al., 2022).

3.8. Data Analysis

Variables obtained from the responses to the questionnaire were transformed into frequencies and percentages using Microsoft Excel 16 (Microsoft, USA). Descriptive

statistics were performed to measure the mean and standard deviation for continuous variables and other graphical representations. Pearson's chi-square tests were performed to determine differences in proportion at a significance level of 5%. Univariate and multivariate logistics regression were performed to determine the association between mental health disorders and sociodemographic characteristics with STATA 14 (StataCorp, College Station, USA) at a statistical significance of 5% (0.05).

3.8.1. Reliability analysis

Reliability tests were conducted to verify relationships between variables. Reliable measures yield consistent results, enhancing their scientific validity (Chiang et al., 2015). Reliability was assessed using Cronbach's alpha, which measures the internal consistency of items on a scale (Gravesande et al., 2019). Cronbach's alpha ranges from 0 to 1, with higher values indicating better consistency. Typically, values above 0.7 are acceptable (Taber, 2018), though values of 0.8 or 0.9 are preferred, and values below 0.7 may indicate instability (Bujang et al., 2018)As shown in Table 2, this study's Cronbach's alpha was 0.908, demonstrating good reliability for all variables.

Table 2: Reliability statistics for the study's data collection instrument

Cronbach's Alpha	Cronbach's Alpha Based on Standardised Items	N of Items
0.908	0.909	138

3.9. Quality Control

3.9.1. Pretest

The questionnaires designed for the study were pre-tested at the Kintampo Municipal Hospital. This enabled the identification of errors and obscure, undefined, vague, and ambiguous questions for correction before field data collection. Furthermore, the

pretesting allowed for the appraisal or evaluation of the feasibility of the study to determine if the sample size and sampling technique were tolerable and adequate.

3.9.2. Ethical Approval

Approval letter from the Bono East Regional Health Directorate, the study's proposal, and other relevant documents were submitted to the Committee on Human Research, Publication, and Ethics (CHRPE), Kwame Nkrumah University of Science and Technology, School of Medical Sciences (KNUST-SMS) to obtain ethical clearance for the study. The study was then approved and assigned an ethical approval number (CHRPE/AP/037/24). Informed consent was sought from all participants involved in the study. Participants were made aware that information obtained from them was for policy and decision-making by stakeholders.

CHAPTER FOUR

RESULTS

4.0. Introduction

This chapter presents the study's results based on the study objectives. Key results include the socio-demographic characteristics of the healthcare personnel, the prevalence of mental health disorders among health workers, and the specific work-related risk factors of the assessed mental health disorders. The chapter further determined the socio-demographic predictors and concludes by assessing the coping mechanisms employed by health workers to manage work-related mental health disorders.

4.2. Socio-demographic characteristics of the health workers

The estimated sample size for the study was 324 health workers sampled from 13 units within the health facility. Of these, 316 consented to participate, signifying a non-response rate of 2.46%. Hence, the analyses were based on the data from 316 health workers. **Table 3** presents the socio-demographic characteristics of the respondents. The majority (57.9%) of the participants were females. The mean age of health workers at enrollment was 5.8 ± 2.73 years (95% C.I: 18.63 – 25.02), ranging from 18 to 41+ years. 41.5% were between 18-25 years old, and 1.9% were between 51-60 years old. Also, 60.4% of the participants were single, whereas 2.2% were cohabitating. The educational status ranges from Senior High School (5.7%) to Bachelor's Degree (29.4%). The majority of the health workers (50.6%) were Christian, 76.6% were nurses, 11.0% were Allied Health Personnel, and 1.9% were Dispensary Technicians. The majority of the participants (65.8%) have worked for between 1 to 7 years; 30.1% earned Gh¢3000 and above, 28.2% earned less than Gh¢1500 and 25% earned between Gh¢1500 – Gh¢ 2000 monthly.

Table 3: Socio-demographic characteristics of health workers

Variable	Frequency (N)	Percentage (%)
Gender		
Male	133	42.1
Female	183	57.9
Age		
18-25	131	41.5
26-30	91	28.8
31-40	63	19.9
41+	31	9.6
Marital status		
Single	191	60.4
Married	118	37.3
Cohabitation	7	2.2
Education		
SHS	18	5.7
Certificate	102	32.3
Diploma	103	32.6
Bachelor's degree	93	29.4
Religious affiliation		
Islam	144	45.6
Christianity	160	50.6
Traditional religion	12	3.8
Occupational category		
Nurses	242	76.6
Allied Health Personnel	35	11
Physicians	17	5.4
Ambulance Personnel	10	3.2
Dispensary Technicians	6	1.9
Orderlies	6	1.9
Number of years in the health profession		
1-7 years	208	65.8
8-12 years	59	18.7
13-17 years	35	11.1
18-23 years	14	4.4
Monthly income		
Less than Gh¢ 1500	89	28.2
Gh¢ 1500 - 2000	79	25
Gh¢ 2100 - 2900	53	16.8
Gh¢ 3000 and above	95	30.1

(Field Survey, 2024)

4.3. Prevalence of mental health disorders among health workers

4.3.1 Stress

Table 4 shows composite scores from the Perceived Stress Scale (PSS) of 36.1% prevalence of severe stress, 30.4% moderate stress and 33.5% low stress among health workers. There was no significant difference between the proportion of health workers with evidence of high, moderate, and low stress ($\chi^2 = 1.544$, DF = 2, $p = 0.462$).

4.3.2. Burnout

Table 4 shows that high scores on emotional exhaustion (EE) and depersonalisation (DP), coupled with low scores on personal accomplishment (PA), indicate a state of high burnout. Conversely, lower scores on EE and DP and higher scores on PA suggest a healthier work-related psychological state. Composite scores from Maslach's Burnout Inventory (MBI) showed that 28.8% of the health workers had high scores on EE, signifying high burnout. Likewise, 30.6% had high score in terms of DP, indicating high burnout. In addition, all the health workers studied (100%) exhibited low scores in PA, signifying high burnout. The proportion of health workers with high scores on EE and DP and low scores on PA showed that 28.8% showed evidence of high burnout syndrome.

4.3.3. Depression

Furthermore, the study revealed a 31.6% prevalence of severe depression, a 30.7% prevalence of moderate depression, a 23.8% prevalence of mild depression, and an 11.8% prevalence of minimal depression among the health workers studied, as shown in Table 4. A statistical significance was observed between the various levels of depression experienced by the health workers ($\chi^2 = 33.08$, DF = 3, $p = 0.0012$).

4.3.4. Anxiety

Finally, the analysis revealed a 34.7% prevalence of severe anxiety, a 51.4% prevalence of moderate anxiety, and an 11.8% prevalence of low anxiety among health workers, as shown in Table 4. A statistical significance was observed between the three levels of anxiety experienced by the health workers studied ($\chi^2 = 78.41$, DF = 2, $p < 0.05$).

Table 4: Prevalence of Stress, Burnout, Depression, and Anxiety

Mental health disorder	Scale	Frequency (N)	Percentage (%)
Stress			
High	≥36	114	36.1
Moderate	23 - 35	96	30.4
Low	≤22	106	33.5
Burnout			
Emotional Exhaustion (EE)			
High	≥27	91	28.8
Moderate	19 - 26	62	19.6
Low	0 - 18	163	51.6
Depersonalisation (DP)			
High	≥10	97	30.6
Moderate	06-10	160	50.6
Low	0 - 5	59	18.7
Personal Accomplishment (PA)			
High	0 - 33	316	100
Moderate	34 - 39	0	0
Low	≥40	0	0
Depression			
Severe	≥37	102	31.6
Moderate	28 – 36	99	30.7
Mild	22 – 27	77	23.8
Minimal	≤21	38	11.8
Anxiety			
Severe	≥36	112	34.7
Moderate	22 – 35	166	51.4
Low	≤21	38	11.8

(Field Survey, 2024)

4.4. Specific work-related risk factors associated with stress, burnout, depression, and anxiety

Table 5 shows that most (85.4%) health workers were unsatisfied with their current job, 73.7% indicated working in a shift rotational pattern, 88.0% indicated increased workload, and 65.8% have not experienced workplace violence in the past months. In addition, 75% of health workers had no conflict with colleagues at the workplace in the past months, 80.1% had no chronic illness, 88% did not take alcohol, and 93% did not smoke.

Table 5: Work-related Factors Contributing to Mental Health Issues among Health Workers.

Responses	**Yes**		**No**	
Items	**N**	**%**	**N**	**%**
Job dissatisfaction	270	85.4	46	14.6
Rotational shift pattern	233	73.7	83	26.3
Increase in workload	160	50.6	156	49.4
Workplace violence in the past month	108	34.2	208	65.8
Conflicts with colleagues in the past month	79	25	237	75
Chronic illness	63	19.9	253	80.1
Alcohol uptake	38	12	278	88
Smoking	22	7	294	93

(Field Survey, 2024)

Socio-demographic predictors of mental health disorders among health workers

4.5.1. Association between Socio-demographic Predictors and High Stress

Table 6 shows that gender was significantly associated with high stress in the bivariate analysis. Meanwhile, in logistics analysis, gender and occupational category were independent predictors significantly associated with high stress. Male health workers had 3.89 times the odds of having high stress (AOR = 3.89; 95% CI: 1.92 – 5.10), whereas nurses had 41.77 times the odds of experiencing high stress (AOR = 41.77; 95% CI: 1.56 – 47.73). Similarly, the likelihood of high stress was 2.12 and 3.14 times

higher among allied health personnel (AOR = 2.12; 95% CI: 1.21 – 3.86), physicians (AOR = 3.14; 95% CI: 1.31 – 5.96), emergency medical technicians (AOR = 3.71; 95% CI: 1.37 – 5.41) and dispensary technicians (AOR = 2.31; 95% CI: 1.14 – 3.60).

4.5.2. Association between socio-demographic predictors and burnout

Table 7 shows that gender, education, and occupational category were significantly associated with burnout in bivariate analysis. Meanwhile, gender and occupational category were independently associated with burnout. The likelihood of burnout was 3.52 times higher among male health workers (AOR = 3.52; 95% CI: 1.25 – 5.20). Similarly, nurses had a 52.79 times increased risk of burnout (AOR = 52.79; 95% CI: 1.63 – 58.82). Likewise, allied health professionals were 18.50 times more likely to experience burnout (AOR = 18.50; 95% CI: 1.47 – 21.06). Besides, the risk of experiencing burnout was approximately 9 times among physicians (AOR = 8.94; 95% CI: 1.22 – 11.04). Consequently, emergency medical technicians had 87.42 times the odds of experiencing burnout (AOR = 87.42; 95% CI: 1.85 – 91.01)

4.5.4. Association between socio-demographic predictors and depression

Table 8 shows that only gender and health workers with certificates were significantly associated with severe depression in a bivariate analysis. In logistic regression analysis, only gender, educational attainment, and occupational category were independently associated with severe depression. Male health workers had a 1.98 times higher likelihood of severe depression syndrome (AOR = 1.98; 95% CI: 1.53 – 3.81) and health workers with senior high school (SHS) level had an increased odds of experiencing severe depression (AOR = 24.45; 95% CI: 2.22 – 26.57). Concerning occupational category, nurses (AOR = 17.87; 95% CI: 3.55 – 21.50), allied health personnel (AOR = 14.49; 95% CI: 3.38 – 16.98), physicians (AOR = 12.88; 95% CI:

1.27 – 16.43), and emergency medical technicians (AOR = 17.34; 95% CI: 3.36 – 22.47) had the odds of severe depression.

4.5.5. Association between socio-demographic predictors and anxiety

Table 9 shows that only gender and educational attainment were significantly associated with severe anxiety in a bivariate analysis. Meanwhile, gender, educational attainment, and occupational category were significantly associated with severe anxiety in logistics regression analysis. Male health workers had higher odds of experiencing severe anxiety (AOR = 1.68; 95% CI: 1.48 – 2.59). Health workers with senior high school education had an extremely high likelihood of experiencing severe anxiety (AOR = 45.54; 95% CI: 3.04 – 51.24). Concerning the occupational category, nurses (AOR = 40.11; 95% CI: 1.90 – 43.73), allied health personnel (AOR = 43.58; 95% CI: 1.79 – 45.56), and emergency medical technicians (AOR = 36.68; 95% CI: 1.79 – 39.54) have the odds of severe anxiety.

Table 6: Association between Socio-demographic Predictors and High-Stress

		High stress ((N = 114)							
Predictors	**N**	**Stressed (≥36)**	**Not stressed**	**COR**	**[95%CI]**	**p-value**	**AOR**	**[95%CI]**	**p-value**
Gender									
Male	133	78	35	1.68	1.04 - 2.73	0.034*	3.89	1.92 - 5.10	0.028*
Female	183	36	147	1			1		
Age									
18-25	131	39	92	0.77	0.28 - 2.08	0.611	0.79	0.13 - 2.62	0.802
26-30	91	35	56	0.58	0.21 - 1.60	0.296	0.65	0.13 - 3.15	0.593
31-40	63	17	46	0.67	0.23 - 1.95	0.474	0.61	0.14 - 2.71	0.523
41+	31	23	8	1			1		
Marital status									
Single	191	43	148	2.94	0.34 - 5.07	0.322	1.79	0.15 - 2.74	0.64
Married	118	67	51	2.74	0.31 - 3.58	0.359	1.78	0.14 - 3.45	0.648
Cohabitation	7	4	3	1			1		
Education									
SHS	18	5	13	1.1	0.37 - 3.22	0.857	1.23	0.20 - 2.38	0.815
Certificate	102	45	57	1.1	0.60 - 2.01	0.748	0.75	0.28 - 1.99	0.574
Diploma	103	26	77	0.78	0.42 - 1.45	0.442	0.54	0.21 - 1.36	0.193
Bachelor’s degree	93	38	55	1			1		
Occupational category									
Nurses	242	85	157	4.99	1.24 - 6.14	0.029*	41.77	1.56 - 47.73	0.026*
Allied Health Personnel	35	12	23	2.75	1.11 - 5.91	0.014*	2.12	1.21 - 3.86	0.041*
Physicians	17	6	11	3.07	1.01 - 6.19	0.036*	3.14	1.31 - 5.96	0.048*
Emergency Medical Technicians	10	4	6	2.11	1.21 - 4.39	0.019*	3.71	1.37 - 5.41	0.013*
Dispensary Technicians	6	3	3	4.16	2.21 - 6.51	0.027*	2.31	1.14 - 3.60	0.028*
Orderlies	6	4	2	1			1		

(Field Survey, 2024)

Table 7: Association between Socio-demographic Characteristics and Burnout

		Burnout ((N = 91)							
Predictors	**N**	**Burnout**	**Not burnout**	**COR**	**[95%CI]**	**p-value**	**AOR**	**[95%CI]**	**p-value**
Gender									
Male	133	57	76	2.71	1.41 - 3.21	0.014*	3.52	1.25 - 5.10	0.021*
Female	183	34	149	1			1		
Age									
18-25	131	31	100	0.7	0.07 - 1.26	0.752	0.1	0.01 - 2.97	0.184
26-30	91	21	70	0.55	0.06 - 1.02	0.603	0.09	0.034 - 2.39	0.151
31-40	63	27	36	1.37	0.14 - 3.32	0.783	0.4	0.01 - 2.56	0.589
41+	31	12	19	1			1		
Marital status									
Single	191	43	148	0.97	0.10 - 1.96	0.98	1.11	0.03 - 3.52	0.952
Married	118	45	81	0.73	0.07 - 1.82	0.785	0.39	0.01 - 1.62	0.591
Cohabitation	7	3	4	1			1		
Education									
SHS	18	4	14	0.43	0.14 - 1.25	0.122	0.28	0.04 - 1.93	0.199
Certificate	102	27	75	0.57	0.30 - 1.09	0.091	0.48	0.15 - 1.50	0.208
Diploma	103	52	51	2.54	1.12 - 3.77	0.025*	2.11	0.64 - 3.87	0.214
Bachelor’s degree	93	8	85	1			1		
Occupational category									
Nurses	242	43	199	9.21	1.36 - 12.92	0.017*	52.79	1.63 - 58.82	0.039*
Allied Health Personnel	35	23	12	14.15	1.42 - 16.50	0.024*	18.5	1.47 - 21.06	0.017*
Physicians	17	11	6	7.41	1.71 - 13.34	0.042*	8.94	1.22 - 11.04	0.046*
Emergency Medical Technicians	10	8	2	27	1.26 - 29.35	0.035*	87.42	1.85 -91.01	0.023*
Dispensary Technicians	6	2	4	7.5	0.45 - 9.69	0.158	14.38	0.25 - 16.11	0.193
Orderlies	6	4	2	1			1		

(Field Survey, 2024)

Table 8: Association between Socio-demographic Characteristics and Severe Depression

Severe depression (N = 102)									
Predictors	**N**	**Severely depressed (≥37)**	**Not severely depressed**	**COR**	**[95%CI]**	**p-value**	**AOR**	**[95%CI]**	**p-value**
Gender									
Male	133	73	60	2.74	1.45 - 3.20	0.030*	1.98	1.53 - 3.81	0.035*
Female	183	29	154	1			1		
Age									
18-25	131	44	87	2.35	0.26 - 3.83	0.44	2.87	0.16 - 4.11	0.469
26-30	91	20	71	1.79	0.19 - 2.17	0.603	1.69	0.10 - 2.31	0.708
31-40	63	32	31	2.5	0.27 - 3.78	0.416	2.31	0.15 - 4.62	0.542
41+	31	6	25	1					
Marital status									
Single	191	67	124	1.45	0.15 - 3.37	0.739	0.59	0.04 - 1.27	0.688
Married	118	34	84	2.46	0.26 - 3.76	0.426	1.5	0.13 - 2.32	0.744
Cohabitation	7	1	6	1			1		
Education									
SHS	18	6	12	2.12	1.72 - 3.54	0.013*	24.45	2.22 - 26.57	0.009*
Certificate	102	49	53	0.91	0.50 - 1.66	0.77	1.69	0.61 - 2.66	0.309
Diploma	103	24	79	0.82	0.44 - 1.50	0.526	1.05	0.40 - 2.72	0.918
Bachelor’s degree	93	23	70	1			1		
Occupational category									
Nurses	242	63	179	1.78	1.17 - 3.22	0.025*	17.87	3.55 - 21.50	0.009*
Allied Health Personnel	35	21	14	1.5	1.15 - 2.47	0.028*	14.49	3.38 - 16.98	0.009*
Physicians	17	8	9	0.75	0.34 - 1.13	0.037*	12.88	1.27 - 16.43	0.038*
Emergency Medical Technicians	10	6	4	1.67	1.13 - 2.57	0.019*	17.34	3.36 - 22.47	0.010*
Dispensary Technicians	6	3	3	0.33	0.01 - 1.04	0.482	0.88	0.02 - 1.46	0.946
Orderlies	6	1	5	1			1		

(Field Survey, 2024)

Table 9: Association between Socio-demographic Characteristics and Severe Anxiety

		Severe anxiety (N = 112)							
Predictors	**N**	**Severe anxiety (≥36)**	**No anxiety**	**COR**	**[95%CI]**	**p-value**	**AOR**	**[95%CI]**	**p-value**
Gender									
Male	133	133	77	1.74	1.46 - 1.19	0.021*	1.68	1.48 - 2.59	0.037*
Female	183	183	35	1			1		
Age									
18-25	131	131	49	2.89	0.32 - 3.48	0.339	3.44	0.20 - 5.24	0.391
26-30	91	91	18	2.01	0.22 - 2.95	0.536	2.13	0.14 - 3.40	0.586
31-40	63	63	32	2.68	0.29 - 4.42	0.381	2.77	0.19 - 4.30	0.455
41+	31	31	13	1			1		
Marital status									
Single	191	191	69	1.77	0.19 - 2.21	0.613	0.86	0.07 - 1.39	0.909
Married	118	118	41	2.64	0.28 - 4.43	0.39	1.93	0.16 - 2.24	0.597
Cohabitation	7	7	2	1			1		
Education									
SHS	18	18	11	2.99	1.05 - 4.47	0.039*	45.54	3.04 - 51.24	0.006*
Certificate	102	102	44	0.99	0.55 - 1.79	0.989	1.59	0.59 - 3.25	0.352
Diploma	103	103	27	0.93	0.51 - 1.69	0.836	1.14	0.45 - 2.88	0.773
Bachelor’s degree	93	93	30	1			1		
Occupational category									
Nurses	242	242	75	4.57	2.07 - 7.19	0.018*	40.11	1.90 - 43.73	0.036*
Allied Health Personnel	35	35	18	2.55	1.35 - 4.24	0.028*	43.58	1.79 - 45.56	0.035*
Physicians	17	17	10	0.25	0.02 - 1.04	0.277	19.45	0.31 - 21.97	0.158
Emergency Medical Technicians	10	10	6	5.59	2.17 - 7.52	0.016*	36.68	1.79 - 39.54	0.036*
Dispensary Technicians	6	6	2	0.33	0.01 - 0.65	0.472	2.09	0.01 - 3.23	0.809
Orderlies	6	6	1	1			1		

(Field Survey, 2024)

4.6. Coping mechanisms to manage stress, burnout, depression, and anxiety

Table 10 indicates that 63.3% of health workers sometimes practised mindfulness or meditation to manage assessed mental health disorders, and 63.0% sometimes engaged in physical exercise. Most (73.4%) health workers sometimes sought support from their colleagues, and 59.2% sometimes sought support from specialists. Also, 45.3% sometimes set realistic work goals as a mechanism for managing various mental health disorders, whereas 62.3% of them sometimes take short breaks during work hours as a mechanism to cope with work-related mental health disorders. Meanwhile, 52.2% sometimes lowered their expectations as a coping mechanism.

Table 10: Coping mechanisms for stress, burnout, depression, and anxiety management

Responses	**Always**		**Often**		**Sometimes**		**Never**	
Variable	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Practicing mindfulness or meditation	12	3.80	32	10.10	200	63.30	72	22.80
Engaging in physical exercise	54	17.10	42	13.30	199	63.00	21	6.60
Seeking support from colleagues	20	6.30	29	9.20	232	73.40	35	11.10
Seeking support from specialists	24	7.60	40	12.70	187	59.20	65	20.60
Setting realistic work goals	71	22.50	74	23.40	143	45.30	28	8.90
Taking short breaks during work hours	44	13.90	41	13.00	197	62.30	34	10.80
Lowering your expectations.	12	3.80	24	7.60	165	52.20	115	36.40

(Field Survey, 2024)

CHAPTER FIVE

DISCUSSION

5.1. Prevalence of mental health disorders among health workers

5.1.1. Stress

The study revealed a 36.1%, 30.4%, and 33.5% prevalence of high, moderate, and low stress, respectively, among health workers studied. A series of studies on stress conducted among health workers have also provided evidence of severe to low stress (Almutairi et al., 2024; Herraiz-Recuenco et al., 2022; Thapa & Pradhan, 2024), which are in line with the findings of this study. In Ghana, several studies have also been conducted to determine the prevalence of stress among healthcare workers. For instance, a descriptive cross-sectional study to assess workplace stress among 400 healthcare workers in the Western Region reported an overall stress prevalence of 30.5% (Odonkor & Adams, 2021). Another cross-sectional survey conducted in three psychiatric hospitals, namely, Accra Psychiatric Hospital, Ankaful Psychiatric Hospital, and Pantang Hospital, reported a prevalence of mild to high stress of 42% (Opoku Agyemang et al., 2022).

In addition, a cross-sectional survey conducted among 300 health workers in three hospitals in the Ashanti Region reported an 8.2% prevalence of stress (Ofori et al., 2021). The prevalence revealed implies that health workers in the study area had moderate to low feelings of unexpected upset, inability to control situations, nervousness, inability to cope with situations, and anger regarding situations outside their control. It also means that the health workers could overcome difficulties they encountered, were confident, controlled work-related irritations, and were on top of challenges.

5.1.2. Burnout

The study further revealed a 28.8% prevalence of high burnout syndrome among health workers in the Kintampo North Municipality. Thus, 28.8% of the health workers exhibited a high score on emotional exhaustion (EE) and depersonalisation (DP), coupled with low scores on personal accomplishment (PA), signifying burnout in all three dimensions. This result is consistent with previous studies revealing burnout syndrome among health workers. These include 10.6% (Luiza Fucuta-de-Moraes & Jéssica Cristina Ruths, 2023), 57.4% (Batanda, 2024), and 18.3% (Štěpánek et al., 2023). In Ghana, a cross-sectional study conducted among 1,264 health workers recruited from three public hospitals in Accra between March and November 2020 showed a 20.57% prevalence of burnout, with non-clinicians displaying higher burnout than clinicians (Konlan et al., 2022). Another cross-sectional study among health professionals found a 9.90% prevalence of burnout (Odonkor & Frimpong, 2020).

These health workers exhibited emotional and physical drainage, fatigue, stress, frustration, and lack of patience in dealing with difficult situations regarding emotional exhaustion (Batanda, 2024; Poku et al., 2020). Likewise, in terms of depersonalisation, they had the feeling of treating patients as impersonal objects, cold-heartedness, hardened emotions, carelessness, and laying blame on people for their problems (Murphy, 2023). Finally, regarding personal accomplishment, the health workers often exhibited little responsiveness to patients' feelings, were ineffective in dealing with patients' problems, did not positively influence the lives of their patients, and were not energetic. These health workers also exhibited the feeling of not being able to create a relaxed atmosphere for their patients, are not delighted after working with their patients, and have challenges dealing with emotional problems calmly during their working routines (Batanda, 2024; Povedano-Jiménez et al., 2021). The results from other studies

showed a low prevalence of burnout among health workers, which contradicts the findings of this study (Opoku et al., 2023).

5.1.3. Depression

Moreover, the study revealed a prevalence of severe to low depression among health workers. Thus, 31.6%, 30.7%, 23.8%, and 11.8% of the health workers showed evidence of severe, moderate, mild, and minimal depression, respectively. This is consistent with a series of previous studies which also revealed a prevalence of severe to low depression among health workers (Almarhapi & Khalil, 2021; Belete & Anbesaw, 2022b; Elgohary et al., 2021). In Ghana, a cross-sectional study conducted in three psychiatric hospitals in Ghana between March 2020 and May 2021 revealed a prevalence of depression of 19.6% among 311 psychiatric nurses (Opoku Agyemang et al., 2022). Similarly, a cross-sectional study conducted among 274 health workers in three hospitals in the Ashanti Region of Ghana from July 2020 to August 2020 reported a prevalence of depression disorder of 21.1% (Ofori et al., 2021). Thus, these health workers exhibited a severe to little sense of self-confidence, irritation, self-accusations, sense of failure, lack of satisfaction, feelings of guilt, self-hatred, self-dislike, suicidal ideations, mood swings, social isolation, sleeping difficulties, loss of appetite, significant loss of weight, and decision-making difficulties.

5.1.4. Anxiety

Finally, the study revealed a 34.7%, 51.4%, and 11.8% prevalence of severe, moderate anxiety, and low anxiety among health workers. This observation aligns with previous studies, which also revealed a severe to low prevalence of anxiety among health workers (Aly et al., 2021; Bosma et al., 2023; Yassin et al., et al., 2022). In Ghana, a cross-sectional study conducted in three psychiatric hospitals between March 2020 and May 2021 revealed a 27% prevalence of anxiety among 311 psychiatric nurses (Opoku

Agyemang et al., 2022). Similarly, a cross-sectional study conducted among 274 health workers in three hospitals in the Ashanti Region of Ghana from July 2020 to August 2020 reported a 27.8% prevalence of anxiety (Ofori et al., 2021).

Furthermore, an analytical cross-sectional study to assess psychological distress and fear of COVID-19 among 245 frontline healthcare workers in selected healthcare facilities in the Western Region of Ghana: St. Martin De Porres, the Aiyinasi Health Centre, and the Esiama Health Centre reported a 52.2% anxiety level (Fofie et al., 2023). The results revealed in this study implied that these health workers exhibited little to no behavioural patterns regarding numbness or tingling, feeling hot, wobbliness in legs, difficulty in relaxing, fear, breathing difficulties, nervousness, fear of losing control, dizziness or light-headedness, unsteadiness, feeling of choking, and hand trembling (do Nascimento et al., 2023).

5.2. Work-related factors of mental health disorders among health workers

This study also assessed a series of work-related factors influencing the various mental health disorders among the health workers studied. This included job satisfaction, working in a shift rotational pattern, increased workload, workplace violence, conflict with colleagues at the workplace, chronic illnesses, uptake of alcohol, and smoking. The most prevalent work-related factors were job satisfaction, working in a shift rotational pattern, and increased workload. Most health workers in the study (85.4%, n = 270) reported dissatisfaction with their current jobs, a sentiment likely driven by several challenging working conditions. This is consistent with previous reports (Y. Liu et al., 2023; Ren et al., 2023; Villarreal-Zegarra et al., 2022). Key factors likely to contribute to this dissatisfaction include heavy workloads, which place significant physical and mental strain on the workers (Belloni et al., 2022), and low salaries that

do not adequately compensate for the demanding nature of their roles (Bimpong et al., 2020).

In addition, the lack of sufficient incentives further diminishes their motivation (W. Liu & Liu, 2022), while poor leadership within healthcare facilities often leads to ineffective management and a lack of staff support (Teame et al., 2022). Moreover, the limited availability of essential equipment (PPEs) hampers their ability to perform their duties effectively, exacerbating their frustrations (Haward et al., 2023). These issues, among others, create a work environment that many health workers find unsustainable and unfulfilling, ultimately leading to widespread job dissatisfaction. This finding, however, contradicts some previous studies that have established that job dissatisfaction is not a factor likely to lead to mental health disorders (Baek et al., 2023; Qiu et al., 2021; Yilmaz, 2018).

Secondly, working in a rotational shift pattern was highlighted by the majority of the health workers (73.7%) as a significant work-related factor contributing to stress, burnout, depression, and anxiety. This observation agrees with a series of findings from previous studies (Hulsegge et al., 2020; Li et al., 2022; Okechukwu et al., 2023). The irregular and often unpredictable nature of shift work disrupts the body's natural circadian rhythms, leading to chronic sleep disturbances and fatigue (Boivin et al., 2022). This constant disruption not only affects physical health but also takes a toll on mental well-being, as the lack of consistent rest can exacerbate feelings of stress and anxiety (James et al., 2017). Over time, the cumulative effect of these factors can lead to burnout, characterized by emotional exhaustion, depersonalization, and a diminished sense of personal accomplishment (Ahmad et al., 2020). Furthermore, the social isolation that often accompanies shift work due to conflicting schedules with family and friends can contribute to depression (Wickramaratne et al., 2022), making it a

significant occupational hazard in healthcare settings. This finding, however, contradicts a previous study that has highlighted working in a rotational shift pattern as not a factor likely to lead to mental health disorders among health workers (Jørgensen et al., 2021).

Furthermore, an increase in workload was revealed as another work-related factor influencing stress, burnout, depression, and anxiety among the health workers studied. This observation is also affirmed by earlier reports from a series of studies (Edikpa et al., 2022; Xiong et al., 2023). As the demands of roles escalate, health workers often find themselves overwhelmed by the sheer volume of tasks they must complete within limited timeframes (Glenton et al., 2021). This excessive workload not only leads to physical exhaustion but also heightens psychological stress, as workers struggle to meet the expectations placed upon them (Izdebski et al., 2023). In terms of burnout, the constant pressure to perform at high levels without adequate breaks or support can quickly lead to burnout, characterized by emotional exhaustion, depersonalization, and a diminished sense of personal accomplishment (Izdebski et al., 2023).

Furthermore, the relentless demands of an increased workload can foster feelings of helplessness and inadequacy, contributing to the onset of depression (Fernández-García et al., 2022). Health workers may feel that no matter how hard they work, they cannot make a meaningful impact, leading to a sense of hopelessness and a decline in mental well-being. In addition, the chronic stress associated with an overwhelming workload can trigger anxiety, as workers continuously worry about their ability to keep up with their responsibilities and fear the consequences of falling short (Gómez-Salgado et al., 2023). Over time, the cumulative effects of stress, burnout, depression, and anxiety can severely impair the mental health of health workers, diminishing their overall quality of life and potentially compromising the quality of care they provide.

5.3. Sociodemographic predictors of mental health disorders among health workers

The study revealed a series of sociodemographic predictors (including gender, educational attainment, and occupational category) of stress, burnout, depression, and anxiety among health workers.

5.3.1. Gender

Gender was significantly associated with all the assessed mental health disorders, such that male health workers had an increased likelihood of experiencing severe stress, burnout, depression, and anxiety. This could be attributed to the influence of societal expectations and traditional gender roles. In many cultures, including Ghana, men are often expected to assume the role of primary breadwinners and provide for their families (Sikweyiya et al., 2020). This societal pressure can exacerbate mental health disorders they experience at work, as they may feel an added burden to succeed and maintain financial stability (Kirkbride et al., 2024).

In addition, male health workers are generally less likely to seek mental health support or acknowledge emotional difficulties due to societal perceptions of masculinity (Sheikh et al., 2024). These societal and traditional views of masculinity often discourage vulnerability and emotional expression, which may lead men to internalize mental health disorders rather than seek help, causing their mental health symptoms to escalate to severe levels before they are addressed (Staiger et al., 2020).

The association is in line with a series of previous studies which found a significant association between male health workers and stress (Aisa et al., 2022; Osei-Mireku et al., 2020; Yesuf et al., 2022), burnout (Alvares et al., 2020; Anbesaw et al., 2023), depression (Almarhapi & Khalil, 2021; Cermakova et al., 2023; Fond et al., 2022b), and anxiety (Alenazi et al., 2020; Franzoi et al., 2021; S. Liu et al., 2021b).

5.3.2. Educational attainment

The study also revealed that lower levels of educational attainment were significantly associated with an increased likelihood of severe depression and anxiety. Education often equips individuals with critical thinking, problem-solving, and coping skills that are essential for managing work-related disorders and emotional challenges (Fteiha & Awwad, 2020). Health workers with higher educational attainment may have a broader range of coping mechanisms, enabling them to navigate better stressful situations which may induce mental health challenges (Maresca et al., 2022). In contrast, those with lower educational levels may struggle to manage triggers of mental health disorders effectively, leading to higher levels of anxiety and depression when faced with demanding workloads, limited resources, and complex patient cases (Halat et al., 2023).

Likewise, lower educational attainment often limits opportunities for career advancement and professional development (Zajacova & Lawrence, 2018). Health workers in this category may find themselves confined to lower-paying, more physically demanding, and less prestigious roles, which can negatively impact job satisfaction (Afulani et al., 2021). A lack of upward mobility can lead to feelings of frustration, stagnation, and inadequacy, all of which are strong predictors of depression and anxiety (Mofatteh, 2020). In addition, lower-educated health workers may be more likely to work in environments with fewer resources and greater workloads, further contributing to their mental health burden (Maple et al., 2024). The sense that their job lacks meaningful opportunities for growth or recognition is likely to amplify feelings of dissatisfaction, leading to mental health disorders.

Finally, educational attainment is often closely linked to socioeconomic status, as health workers with lower educational qualifications typically earn lower wages, which may increase financial stress (Zajacova & Lawrence, 2018). This could potentially

exacerbate anxiety and depression, as health workers may feel overwhelmed by the dual pressures of maintaining their household and fulfilling demanding job responsibilities (Ryu & Fan, 2023). These results are consistent with previous studies, which also reported a significant association between a lower level of education and higher odds of depression (Di Novi et al., 2021; Schou-Bredal et al., 2022b) and anxiety (Chlapecka et al., 2023; Kondirolli & Sunder, 2022b).

5.3.3. Occupational category

The occupational category was significantly associated with all the assessed mental health disorders, such that the risk of experiencing severe stress, burnout, depression, and anxiety was significantly associated with nurses, allied health personnel, physicians, emergency medical technicians, and dispensary technicians. These results agree with previous studies which established a significant association between the occupational categories and stress, burnout (De Hert, 2020; Opoku et al., 2022; Taranu et al., 2022), depression (Agyapong-Opoku et al., 2023; Fond et al., 2022b; Saade et al., 2022), and anxiety (Belayneh et al., 2021; d'Ussel et al., 2022; Lluch et al., 2022).

5.4. Coping mechanisms to manage stress, burnout, depression, and anxiety

The study further revealed that the health workers studied were exposed to significant physical, emotional, and psychological demands, leading to increased levels of stress, burnout, depression, and anxiety. To manage such mental health challenges, the health workers employed various coping mechanisms. This included practising mindfulness, engaging in physical exercise, seeking support from colleagues, seeking support from specialists, setting realistic work goals, taking short breaks during work hours, and lowering expectations.

Mindfulness focuses on the present moment while calmly acknowledging and accepting one's feelings, thoughts, and bodily sensations (Schuman-Olivier et al., 2020).

Meditation, on the other hand, is often a component of mindfulness but can also include various techniques, such as focused attention, breathing exercises, and guided imagery, designed to relax the mind and improve emotional regulation (Nien et al., 2023). Both practices encourage individuals to detach from distractions, quiet their inner dialogues, and cultivate a sense of calm and self-awareness (Schuman-Olivier et al., 2020).

Previous to this study, some research has shown that mindfulness and meditation can significantly reduce stress, burnout, depression, and anxiety among healthcare workers (Green & Kinchen, 2021; Kriakous et al., 2021; Ong et al., 2024; Sulosaari et al., 2022). This is achieved through decreasing the physiological response to stress, burnout, depression, and anxiety triggers, such as lowering cortisol levels, cognitive flexibility, heart rate, and management of negative thoughts and feelings, leading to a sense of relaxation and reduced rumination and anxiety (Norelli et al., 2024; Pascoe et al., 2021). For health workers constantly exposed to high workloads, patient demands, and emotional challenges, mindfulness and meditation can act as a buffer, improving their ability to handle daily pressures with resilience (Cohen et al., 2023).

Furthermore, physical exercise, as revealed in this study as a coping mechanism, is a well-documented stress, burnout, depression, and anxiety reliever due to its ability to trigger the release of endorphins (Mahindru et al., 2023) and regulate neurotransmitters such as serotonin and dopamine (Martín-Rodríguez et al., 2024), which contribute to mood stabilization and also promote a sense of well-being (Mahindru et al., 2023; Martín-Rodríguez et al., 2024). This coping mechanism also allows healthcare workers to detach from their work environment and immerse themselves in a healthy, non-work-related activity, promoting mental rejuvenation (Mahindru et al., 2023). This observation is consistent with earlier studies that also revealed that physical exercise

can significantly reduce stress, burnout, depression, and anxiety among healthcare workers (Balatoni et al., 2023; Kua et al., 2022; Mincarone et al., 2024).

Moreover, health work's collaborative and often team-based nature creates an inherent support system, which can be a key factor in maintaining mental well-being amidst demanding workloads and emotional challenges. Seeking support encompasses various forms of assistance, including emotional, informational, and instrumental support, provided by individuals' social networks (Bavel et al., 2020; Drageset, 2021). For health workers, this support plays a crucial role in buffering the adverse effects of occupational stressors, fostering resilience, and promoting psychological well-being (Karadaş & Duran, 2022). Likewise, seeking support from specialists equips health workers with personalized tools for early recognition of mental health symptoms, enabling proactive management, relaxation techniques, and time management skills, which are critical for managing the emotional and physical demands of their profession (Browne & Chun Tie, 2024; Pollock et al., 2020). This support offers a safe space for health workers to express their fears, frustrations, and emotional challenges, thus alleviating the emotional burden associated with patient care (Billings et al., 2021; Pedrosa et al., 2020). Some earlier studies have consistently demonstrated that health workers with strong support networks are less susceptible to stress, burnout, depression, and other mental health disorders than those lacking adequate support (Batanda, 2024; Collett et al., 2024; Maddock, 2024).

The study also revealed realistic goal setting as a coping mechanism employed by health workers to manage stress, burnout, depression, and anxiety. This coping mechanism has been established by a series of earlier studies as one of the effective coping mechanisms that many healthcare professionals adopt to manage these mental health challenges (Bhui et al., 2012; Maresca et al., 2022; Tamminga et al., 2023).

Setting realistic work goals enables healthcare workers to prioritize tasks according to their urgency and importance (Addis et al., 2023). In high-stakes environments such as hospitals, there is often an overwhelming amount of work to be done, from attending to patients to managing administrative tasks. By identifying the most critical tasks and focusing on them first, health workers can avoid feeling overwhelmed by the sheer volume of responsibilities (Sutton et al., 2023), they can create structured schedules, break down large tasks into manageable steps, and set deadlines that are achievable without causing unnecessary pressure, thereby reducing the likelihood of mental health disorders (Addis et al., 2023).

In addition, the study revealed taking short breaks during work hours as another coping mechanism employed by health workers to stress, burnout, depression, and anxiety, as affirmed by a series of previous reports (Albulescu et al., 2022; Nwobodo et al., 2023; Shahin et al., 2023). As one of the increasingly recognized coping mechanisms for work-related mental health disorders, taking short breaks during work hours allows health workers to step away from the intensity of their duties, fostering mental detachment from work-related concerns, maintaining a more balanced perspective, preventing the accumulation of stress serves as the trigger for other mental health disorders (Arends et al., 2022; Maresca et al., 2022; Menardo et al., 2022). Short breaks allow healthcare workers to practice mindfulness or relaxation techniques such as deep breathing or brief walks, helping them manage anxiety and depressive symptoms (Knudsen et al., 2023; Tamminga et al., 2023). These breaks also create space for self-reflection, personal recovery, and recalibration, offering control amid a busy work environment (Walker et al., 2023).

Finally, lowering expectations has been revealed by the study as a coping mechanism to manage stress, burnout, depression, and anxiety. This is also consistent with some

previous reports (Freire et al., 2020; Maresca et al., 2022; Rodrigues et al., 2023). In the context of healthcare, where high-pressure environments, heavy workloads, emotional fatigue, and limited resources are commonplace, adjusting one's expectations can offer a pragmatic approach to preserving mental well-being (Halat et al., 2023).

By lowering their expectations, healthcare workers may avoid the constant frustration that arises from unmet goals or unrealistic performance standards (Bianchi & Ghirotto, 2022). For instance, shifting from expecting to save every patient or deliver flawless care to recognizing the inherent limitations of medicine can mitigate feelings of failure or inadequacy (Ferreira et al., 2023). Lowering expectations also allows healthcare workers to set more realistic goals that are attainable within the constraints they face, such as understaffing, resource limitations, or patient non-compliance (Bhati et al., n.d.; Yinusa & Faezipour, 2023).

CHAPTER SIX

SUMMARY OF THE FINDINGS, CONCLUSION, AND RECOMMENDATIONS

6.0. Introduction

This chapter summarizes the findings, recommendations, and conclusions. It reviews the research objectives and summarizes the findings. The chapter further explores various recommendations for implementation and highlights some areas for future research directions. Finally, it concludes with a conclusion statement.

6.1. Summary of the findings

This study explored the prevalence, work-related risk factors, and predictors of mental health disorders among health workers, alongside the coping mechanisms employed to manage these mental health disorders. The study revealed that 36.1%, 30.4%, and 33.5% of health workers exhibited severe, moderate, and low stress, respectively. Moreover, 28.8% of health workers exhibit high emotional exhaustion, 30.6% have high depersonalization, and 100% report low personal accomplishment, indicating a 28.8% prevalence of burnout. Furthermore, 31.6% of the health workers studied suffered from severe depression, 30.7% from moderate depression, and 23.8% from mild depression. Finally, 34.7% of the health workers experience severe anxiety, 51.4% moderate anxiety, and 11.8% low anxiety. Regarding specific work-related risk factors of stress, burnout, depression, and anxiety, 85.4% of health workers are dissatisfied with their jobs, 73.7% of workers follow a rotational shift pattern, and 88.0% report feeling overworked. Conversely, most health workers reported no recent exposure to workplace violence, conflicts, chronic illness, alcohol consumption, or smoking.

Regarding the sociodemographic predictors of severe stress, burnout, depression, and anxiety, male health workers, nurses, allied health personnel, and physicians. Emergency medical technicians and dispensary technicians had a higher likelihood of experiencing severe stress, burnout, depression, and anxiety. Likewise, health workers with lower educational attainment (Senior High School) had higher odds of experiencing severe stress, burnout, depression, and anxiety. Regarding coping mechanisms, the most common strategies included mindfulness or meditation (63.3%), physical exercise (63.0%), support from colleagues (73.4%), and short breaks during work hours (62.3%).

6.2. Conclusion

This study identified a significant prevalence of mental health disorders among health workers in Kintampo North Municipality, with 36.1% experiencing severe stress, 28.8% facing burnout, 31.6% suffering from severe depression, and 34.7% experiencing severe anxiety. Key work-related risk factors included job dissatisfaction, rotational shifts, and feeling overworked. Male health workers, nurses, allied health personnel, physicians, EMTs, and those with lower educational attainment were at higher risk of severe stress, burnout, depression, and anxiety. To manage these disorders, health workers commonly employ coping mechanisms such as mindfulness, physical exercise, colleague support, and taking short breaks. Addressing these risk factors and enhancing coping strategies are critical for improving the mental well-being of health workers in the Kintampo North Municipality and beyond.

6.3. Recommendations/policy implications

Concerning the findings of the study, the following recommendations and policy implications are suggested to the stakeholders of health to address the mental health challenges among health workers:

6.3.1. Government of Ghana

1. The government should allocate increased funding specifically for the mental health of health workers. This funding should support the provision of accessible mental health services, training for mental health professionals, and the development of preventive programs tailored to the unique needs of healthcare personnel.

6.3.2. Ministry of Health (MoH):

1. The Ministry should advocate for and enforce policies that promote work-life balance among health workers. This could include regulating working hours, providing adequate rest breaks, and implementing guidelines that prevent excessive workloads, especially in high-pressure environments like hospitals.
2. The Ministry should develop and implement a nationwide mental health strategy focusing on health workers. This framework should include measures for early detection, prevention, and management of mental health conditions like stress, burnout, depression, and anxiety.

6.3.3. Ghana Health Service (GHS):

1. The GHS should strengthen occupational health services in all public health facilities. This could include setting up dedicated mental health support units where health workers can access counselling, stress management training, and mental health education.

2. The GHS should prioritize improving the working conditions of health workers by addressing job satisfaction drivers such as workload, salaries, provision of personal protective equipment (PPE), and leadership support. GHS should regularly review these areas to reduce job dissatisfaction and its associated mental health risks.

6.3.4. Kintampo Municipal Hospital:

1. The health facility should modify shift schedules to ensure better work-life balance and reduce mental health disorders caused by irregular shifts. Healthcare institutions should adopt flexible and less demanding shift rotations, ensuring health workers have sufficient rest periods between shifts. Policies that regulate work hours and guarantee rest periods can significantly reduce stress and burnout.
2. The health facility should implement more flexible and predictable shift schedules. This would allow health workers to maintain a better work-life balance and reduce burnout. Regular rotation and flexibility should be key to avoiding prolonged exposure to stressful work hours.

6.4. Future research directions

The findings of this study on stress, burnout, depression, and anxiety among health workers open several avenues for future research. To further deepen understanding of the mental health challenges faced by health workers and improve intervention strategies, the following research directions are recommended:

1. Future studies could focus on longitudinal research to track changes in stress, burnout, depression, and anxiety among health workers over time. This would

provide insights into the long-term effects of work-related factors on mental health and the potential cumulative impact of prolonged exposure to stressors.

2. Research should assess the effectiveness of specific mental health interventions, such as mindfulness programs, counselling services, flexible work schedules, and support groups, on reducing stress, burnout, depression, and anxiety.
3. Future research could explore the relationship between health workers' mental health and the quality of patient care. Studies can assess whether stress, burnout, depression, and anxiety among healthcare workers impact patient outcomes, satisfaction, and safety.

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APPENDIX I: Participant Information Leaflet and Consent Form

Statement of the person obtaining informed consent

I have fully explained this research to the participant with code number_____ and have given sufficient information, including that about risks and benefits, to enable her to make an informed decision to or not to participate.

DATE:……. NAME:……

Statement of the person giving consent

I have read the information on this study/research or have had it read to me in a language I understand. I have also talked it over with the interviewer to my satisfaction.
I understand that my participation is voluntary (not compulsory).
I know enough about the purpose, methods, risks, and benefits of the research study to decide that I want to take part in it.
It has been explained to me that I may freely stop being part of this study at any time without having to explain myself.
I have received a copy of this information leaflet and consent form to keep for myself.

DATE:…… SIGNATURE/THUMPRINT:……

APPENDIX II: Structured Questionnaire

SECTION A: SOCIODEMOGRAPHIC CHARACTERISTICS OF PERSONNEL

No	Question	Response options
1.	Gender	1. Male 2. Female
2.	Age Category	1. Between 18 and 25 2. Between 26 and 30 3. Between 31 and 40 4. Between 41 and 50 5. Between 51 and 60
3.	Marital Status:	1. Never married 2. Married 3. Cohabitation 4. Separated 5. Divorced 6. Widowed
4.	Educational Level	1. SHS/Secondary/Technical 2. Certificate 3. Diploma 4. Degree
5.	Religious Affiliation	1. Islam 2. Christianity 3. African Traditional Religion 4. Others
6.	Occupational status	1. Nurses 2. Allied Health Personnel 3. Physicians 4. Emergency Medical Technicians 5. Dispensary Technicians 6. Orderlies
7.	Number of years in the health profession	1. Between 1 and 7 2. Between 8 and 12 3. Between 13 and 17 4. Between 18 and 23
8.	Department	1. Administration 2. Out-Patient Department 3. Ward 4. Mortuary 5. Dispatch/control 6. Operations
9.	On the average, how much do you earn from your work?	1. Less than 1500 cedis 2. Between 1500 – 2000 cedis 3. Between 2100 – 2900 cedis 4. Between 3000 cedis and above

SECTION B: PREVALENCE OF STRESS, BURNOUT, DEPRESSION, AND ANXIETY AMONG HEALTH WORKERS. SELECT BY TICKING (√) THE APPROPRIATE OPTIONS

No.	Question	Response options	Skip
PREVALENCE OF STRESS **BECK'S PERCEIVED STRESS INVENTORY** Please read each statement and tick (√) a number 1,2, 3 or 4 which indicates how much the statement applied to you after experiencing the triggers over the past month. There are no right or wrong answers. **In the last month, how often have you been/felt:**			
10.	Upset because of something that happened unexpectedly?	1. Never 2. Sometimes 3. Often 4. Almost always	
11.	You were unable to control the important things in your life?	1. Never 2. Sometimes 3. Often 4. Almost always	
12.	Nervous and stressed?	1. Never 2. Sometimes 3. Often 4. Almost always	
13.	You could not cope with all the things that you had to do?	1. Never 2. Sometimes 3. Often 4. Almost always	
14.	Are you angry because of things that happened that were outside of your control?	1. Never 2. Sometimes 3. Often 4. Almost always	
15.	Difficulties were piling up so high that you could not overcome them?	1. Never 2. Sometimes 3. Often 4. Almost always	
16.	Confident about your ability to handle your personal problems?	1. Never 2. Sometimes 3. Often 4. Almost always	
17.	Things were going your way?	1. Never 2. Sometimes 3. Often 4. Almost always	
18.	Able to control irritations in your life?	1. Never 2. Sometimes 3. Often 4. Almost always	

19.	You were on top of things?	1. Never 2. Sometimes 3. Often 4. Almost always	

PREVALENCE OF BURNOUT
MASLACH'S BURNOUT INVENTORY

Please read each statement and tick (√) a number 1,2, 3 or 4 which indicates how much the statement applied to you after experiencing the triggers over the past month. There are no right or wrong answers.

Emotional Exhaustion (EE) Subscale			
20.	You feel emotionally drained from your work	1. Never 2. Sometimes 3. Often 4. Almost always	
21.	You feel used up at the end of the work day	1. Never 2. Sometimes 3. Often 4. Almost always	
22.	You feel fatigued when getting up in the morning	1. Never 2. Sometimes 3. Often 4. Almost always	
23.	You feel working with people puts too much stress on you	1. Never 2. Sometimes 3. Often 4. Almost always	
24.	You feel burned-out from your work.	1. Never 2. Sometimes 3. Often 4. Almost always	
25.	You feel frustrated with your job.	1. Never 2. Sometimes 3. Often 4. Almost always	
26.	You feel you are working too hard on your job	1. Never 2. Sometimes 3. Often 4. Almost always	
27.	You feel working with people all day is a strain	1. Never 2. Sometimes 3. Often 4. Almost always	
28.	You feel like you have no more patience or strength to deal with difficult situations.	1. Never 2. Sometimes 3. Often 4. Almost always	
Depersonalization (DP) Subscale			

29.	You treat patients as impersonal objects.	1. Never 2. Sometimes 3. Often 4. Almost always	
30.	You are more cold-hearted toward people since ou took this job	1. Never 2. Sometimes 3. Often 4. Almost always	
31.	You worry that your job is hardening you emotionally	1. Never 2. Sometimes 3. Often 4. Almost always	
32.	You don't really care what happens to some patients	1. Never 2. Sometimes 3. Often 4. Almost always	
33.	Patients blame you for their problems.	1. Never 2. Sometimes 3. Often 4. Almost always	
Personal Accomplishment (PA) Subscale			
34.	You can easily understand the patient's feelings.	1. Never 2. Sometimes 3. Often 4. Almost always	
35.	You can deal effectively with patients' problems	1. Never 2. Sometimes 3. Often 4. Almost always	
36.	You can positively influence people's lives through your work	1. Never 2. Sometimes 3. Often 4. Almost always	
37.	You are energetic	1. Never 2. Sometimes 3. Often 4. Almost always	
38.	You can easily create a relaxed atmosphere for your patients	1. Never 2. Sometimes 3. Often 4. Almost always	
39.	You are exhilarated after working with patients	1. Never 2. Sometimes 3. Often 4. Almost always	
40.	You have accomplished worthwhile things in this job	1. Never 2. Sometimes	

		3. Often 4. Almost always	
41.	You deal with emotional problems calmly in your work	1. Never 2. Sometimes 3. Often 4. Almost always	
PREVALENCE OF DEPRESSION **BECK'S DEPRESSION INVENTORY** Please read each statement and tick (√) a number 1,2, 3 or 4 which indicates how much the statement applied to you after experiencing the triggers over the past month. There are no right or wrong answers.			
42.	You are so sad and unhappy that you can't stand it	1. Never 2. Sometimes 3. Often 4. Almost always	
43.	You feel the future is hopeless and that things cannot improve	1. Never 2. Sometimes 3. Often 4. Almost always	
44.	You feel you are a complete failure as a person	1. Never 2. Sometimes 3. Often 4. Almost always	
45.	You are dissatisfied or bored with everything	1. Never 2. Sometimes 3. Often 4. Almost always	
46.	You feel guilty all of the time	1. Never 2. Sometimes 3. Often 4. Almost always	
47.	You feel you are being punished.	1. Never 2. Sometimes 3. Often 4. Almost always	
48.	You hate yourself	1. Never 2. Sometimes 3. Often 4. Almost always	
49.	You blame yourself for everything bad that happens	1. Never 2. Sometimes 3. Often 4. Almost always	
50.	You would kill yourself if you had the chance	1. Never 2. Sometimes 3. Often 4. Almost always	

51.	You used to cry, but now you can't cry even though you want to	1. Never 2. Sometimes 3. Often 4. Almost always	
52.	You feel irritated all the time.	1. Never 2. Sometimes 3. Often 4. Almost always	
53.	You have lost all your interest in other people	1. Never 2. Sometimes 3. Often 4. Almost always	
54.	You can't make decisions at all anymore	1. Never 2. Sometimes 3. Often 4. Almost always	
55.	You believe that you look ugly.	1. Never 2. Sometimes 3. Often 4. Almost always	
56.	You can't do any work at all	1. Never 2. Sometimes 3. Often 4. Almost always	
57.	You wake up several hours earlier than you used to and cannot get back to sleep.	1. Never 2. Sometimes 3. Often 4. Almost always	
58.	You are too tired to do anything	1. Never 2. Sometimes 3. Often 4. Almost always	
59.	You have no appetite at all anymore	1. Never 2. Sometimes 3. Often 4. Almost always	
60.	You have loss significant weight.	1. Never 2. Sometimes 3. Often 4. Almost always	
61.	You are so worried about your physical problems that you cannot think of anything else.	1. Never 2. Sometimes 3. Often 4. Almost always	
62.	You have lost interest in sex completely	1. Never 2. Sometimes 3. Often	

		4. Almost always	
PREVALENCE OF ANXIETY **BECK'S ANXIETY INVENTORY** Please read each statement and tick (√) a number 1,2, 3 or 4 which indicates how much the statement applied to you after experiencing the triggers over the past month. There are no right or wrong answers.			
63.	Numbness or tingling	1. Never 2. Mildly 3. Moderately 4. Severely	
64.	Feeling hot	1. Never 2. Mildly 3. Moderately 4. Severely	
65.	Wobbliness in legs	1. Never 2. Mildly 3. Moderately 4. Severely	
66.	Unable to relax	1. Never 2. Mildly 3. Moderately 4. Severely	
67.	Fear of the worst happening	1. Never 2. Mildly 3. Moderately 4. Severely	
68.	Dizzy or lightheaded	1. Never 2. Mildly 3. Moderately 4. Severely	
69.	Heat pounding/racing	1. Never 2. Mildly 3. Moderately 4. Severely	
70.	Shaky/unsteady	1. Never 2. Mildly 3. Moderately 4. Severely	
71.	Terrified or afraid	1. Never 2. Mildly 3. Moderately 4. Severely	
72.	Nervous	1. Never 2. Mildly 3. Moderately 4. Severely	
73.	Feeling of choking	1. Never 2. Mildly	

		3. Moderately 4. Severely	
74.	Hands trembling	1. Never 2. Mildly 3. Moderately 4. Severely	
75.	Fear of losing control	1. Never 2. Mildly 3. Moderately 4. Severely	
76.	Difficulty in breathing	1. Never 2. Mildly 3. Moderately 4. Severely	
77.	Fear of dying	1. Never 2. Mildly 3. Moderately 4. Severely	
78.	Scared	1. Never 2. Mildly 3. Moderately 4. Severely	
79.	Indigestion	1. Never 2. Mildly 3. Moderately 4. Severely	
80.	Faint/lightheaded	1. Never 2. Mildly 3. Moderately 4. Severely	
81.	Face flushed	1. Never 2. Mildly 3. Moderately 4. Severely	
82.	Hot/cold sweats	1. Never 2. Mildly 3. Moderately 4. Severely	
83.		5. Never 6. Mildly 7. Moderately 8. Severely	

SECTION C: RISK FACTORS FOR STRESS, BURNOUT, DEPRESSION, AND ANXIETY. KINDLY INDICATE YOUR RESPONSE BY SELECTING/TICKING THE APPROPRIATE OPTIONS

No	Question	Response options	Skip
84.	Are you satisfied with your current job?	1. Yes 2. No	
85.	Do you work in a shift rotation pattern?	1. Yes 2. No	
86.	Do you feel an increase in workload?	1. Yes 2. No	
87.	Have you experienced workplace violence in the past 1 month?	1. Yes 2. No	
88.	Have you had conflicts with colleagues at the workplace in the past 1 month?	1. Yes 2. No	
89.	Do you have a history of chronic illness?	1. Yes 2. No	
90.	Do you drink alcohol?	1. Yes 2. No	
91.	Do you smoke?	1. Yes 2. No	
92.	What is your average work hours per week?	1. Up to 24 hours 2. Up to 36 hours 3. Up to 48 hours 4. More than 48 hours	
93.	What is your average work hours per day?	1. Up to 8 hours 2. Up to 9 - 10 hour 3. Up to 11 hours	
94.	What is your average sleep hours per day?	1. Up to 5 hours 2. Up to 6 - 7 hour 3. Up to 8 hours or more	

SECTION D: COPING MECHANISMS. ANSWER THE QUESTIONS BELOW BY TICKING THE APPROPRIATE OPTION WHERE APPLICABLE.

Please read each statement and tick (√) a number 1,2, 3 or 4 which indicates how much the statement applied to you after experiencing the triggers over the past month. There are no right or wrong answers.

No.	Question	Response options	Skip
95.	Practicing Mindfulness or Meditation	1. Never 2. Sometimes 3. Often 4. Almost always	
96.	Engaging in Physical Exercise	1. Never 2. Sometimes 3. Often 4. Almost always	

97.	Seeking Support from Colleagues	1. Never 2. Sometimes 3. Often 4. Almost always	
98.	Seeking Support from Specialists	1. Never 2. Sometimes 3. Often 4. Almost always	
99.	Setting Realistic Work Goals	1. Never 2. Sometimes 3. Often 4. Almost always	
100.	Taking Short Breaks During Work Hours	1. Never 2. Sometimes 3. Often 4. Almost always	
101.	Connecting with your community- or faith-based organizations.	1. Never 2. Sometimes 3. Often 4. Almost always	
102.	Lowering your expectations.	1. Never 2. Sometimes 3. Often 4. Almost always	
103.	Maintaining emotional composure or, alternatively, expressing distressing emotions.	1. Never 2. Sometimes 3. Often 4. Almost always	
104.	Challenging previously held beliefs that are no longer adaptive	1. Never 2. Sometimes 3. Often 4. Almost always	
105.	Directly attempting to change the source of stress	1. Never 2. Sometimes 3. Often 4. Almost always	
106.	Eating well	1. Never 2. Sometimes 3. Often 4. Almost always	
107.	Limiting alcohol and stimulants	1. Never 2. Sometimes 3. Often 4. Almost always	

APPENDIX III: Introductory Letter

AKENTEN APPIAH-MENKA UNIVERSITY
of Skills Training and Entrepreneurial Development

FACULTY OF ENVIRONMENT & HEALTH EDU.
DEPARTMENT OF PUBLIC HEALTH EDUCATION

P.O. Box 40, Asante Mampong 0209777318

The Regional Director
Ghana Health Service
Bono East Region
Kintampo

5th December, 2023

Dear Sir,

Permission to Conduct Research: ""Assessment of Mental Health and Well-Being among Health Workers in the Kintampo North Municipality: Implication for Occupational Health and Safety".

Mr. Mohammed Zakaria (Index Number 8221930007) is our M.Phil Occupational Health and Safety student at the Department of Public Health Education, Faculty of Environment and Health Education, AAMUSTED-Mampong Campus of the erstwhile University of Education Winneba. Mr. Mohammed, as part of his academic requirements for the award of Master of Philosophy Degree in Occupational Health and Safety Education, is to conduct research titled "**Assessment of Mental Health and Well-Being among Health Workers in the Kintampo North Municipality: Implication for Occupational Health and Safety**".

The will be a hospital-based cross-sectional study that will assess the mental health and well-being of workers in the Kintampo North Municipality, and how this can influence safety in the work environment. The study population will include all categories of health workers in selected health facilities within Kintampo North Municipality, including Physicians, Nurses, Pharmacists, Biomedical Scientists, Ambulance Personnel, etc.

We seek your official consent to permit him to collect data from the proposed study sites and participants under your jurisdiction. The outcome of this study would provide empirical data on mental health and well-being of health workers in the region. Your approval letter will pave the way for him to apply for ethical clearance before the commencement of the research. The data collected will be used solely for academic purposes.

We would be grateful if your outfit would accord him the needed assistance for the successful execution of this proposed study. Your kind approval is required to conduct this study in fulfilment of his academic obligation.

Thank you for your kind consideration.

Yours faithfully,

Denis Dekugmen Yar (PhD)

DEPT. OF PUBLIC HEALTH EDUCATION
FACULTY OF ENV. & HEALTH EDUCATION
COLLEGE OF AGRIC EDUCATION
AKENTEN APPIAH-MENKA
UNIVERSITY OF SKILLS TRAINING & ENTREPRENEURIAL DEVELOPMENT
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APPENDIX IV: Approval Letter from Study Site

OUR CORE VALUES
- **People-Centered**
- **Team work**
- **Innovation**
- **Discipline**
- **Integrity**

GHANA HEALTH SERVICE
Your Health Our Concern

Regional Health Directorate
Ghana Health Service
P. O. BOX KH 155
Kintampo, BE
Ghana

Tel: 0506202600
Fax:
E-mail: rdhs.ber@ghs.gov.gh

My Ref: GHS/BE-RHD/RU/RD.12.23/029
Your Ref:

11th December, 2023.

The Chairman
Ethics and Review Committee
Ghana Health Service
Accra

SUPPORT LETTER FOR ETHICAL CLEARANCE FOR MR. MOHAMMED ZAKARIA TO CONDUCT A STUDY

I write to support the request for Ethical Clearance for Mr. Mohammed Zakaria, an MPhil Occupational Health and Safety student at the department of Public health Education, Faculty of Environmental and Health Education, Akenten Appiah-Menka, AAMUSTED-Mampong Campus of the erstwhile University of Education, Winneba. He is undertaking research entitled: **"Assessment of Mental Health and Well-being among Health Workers in the Kintampo North Municipality: Implication for Occupational Healthand Safety".** This study will be a hospital based cross-sectional study aimed at assessing the mental health and well-being of workers in the Kintampo North Municipality and how this can influence safety in the work environment.

The findings of the study will provide empirical data on mental health and well-being of health workers in the region.

I would be much grateful if he is given Ethical Clearance to facilitate the data collection process.

Thank you.

DR. FRED ADOMAKO-BOATENG
REGIONAL DIRECTOR OF HEALTH SERVICE
BONO EAST REGION

APPENDIX V: Ethical Approval

Kwame Nkrumah
University of Science
and Technology, Kumasi

College of Health Sciences
SCHOOL OF MEDICINE AND DENTISTRY

COMMITTEE ON HUMAN RESEARCH, PUBLICATION AND ETHICS

Our Ref: CHRPE/AP/037/24

15th January 2024

Mr. Mohammed Zakaria
Akenten Appiah Menka University of
Skill Training and Entrepreneurial Development,
Department of Public Health Education.

Dear Sir,

LETTER OF APPROVAL

Protocol Title: ***"Assessment of Mental Health and Well-Being among Health Workers in Kintampo North Municipality: Implication on Occupational Health and Safety."***

Proposed Site: ***Kintampo North Municipal, Bono East Region.***

Sponsor: ***Self-Sponsored.***

Your submission to the Committee on Human Research, Publications, and Ethics on the above-named protocol refer.

The Committee reviewed the following documents:

- A notification letter of 11th December 2023 from the Regional Health Directorate (study site) indicating approval for the conduct of the study in the Municipality.
- A Completed CHRPE Application Form.
- Participant Information Leaflet and Consent Form.
- Research Protocol.
- Questionnaire.

The Committee has considered the ethical merit of your submission and approved the protocol. The approval is for a fixed period of one year, beginning **15th January 2024** to **14th January 2025** renewable thereafter. The Committee may, however, suspend or withdraw ethical approval at any time if your study is found to contravene the approved protocol.

Data gathered for the study should be used for the approved purposes only. Permission should be sought from the Committee if any amendment to the protocol or use, other than submitted, is made of your research data.

The Committee should be notified of the actual start date of the project and would expect a report on your study, annually or at the close of the project, whichever one comes first. It should also be informed of any publication arising from the study.

Thank you for your application.

Yours faithfully,

Rev. Prof. John Appiah-Poku.
Honorary Secretary
FOR: CHAIRMAN

Room 7, Block L, School of Medicine and Dentistry, KNUST, University Post Office, Kumasi, Ghana
Tel: +233 (0) 3220 63248 **Mobile:** +233 (0) 20 5453785 **Email:** chrpe.knust.kath@gmail.com/chrpe@knust.edu.gh

APPENDIX VI: Introductory Letter To Study Site

OUR CORE VALUES
- People-Centered
- Team work
- Innovation
- Discipline
- Integrity

GHANA HEALTH SERVICE
Your Health Our Concern

Regional Health Directorate
Ghana Health Service
P. O. BOX KH 155
Kintampo, BE
Ghana

Tel: 0506202600
Fax:
E-mail: rdhs.ber@ghs.gov.gh

My Ref: GHS/BE-RHD/RU/RD.02.24/005
Your Ref:

12th February, 2024.

INTRODUCTORY LETTER

I write to introduce to you Mr. Mohammed Zakaria, an MPhil student at the department of Public Health Education, Faculty of Environmental and Health Education, Akenten Appiah-Menka, AAMUSTED-Mampong Campus of the erstwhile University of Education, Winneba. He is undertaking research titled: **"Assessment of Mental Health and Well-Being among Health Workers in Kintampo North Municipal: Implication on Occupational Health and Safety".**

This study will be cross-sectional study and the findings of the study will provide empirical data on the above-mentioned health issue among health workers.

I would be much grateful if he is given the necessary assistance and support to facilitate the data collection process.

Thank you.

DR. FRED ADOMAKO-BOATENG
REGIONAL DIRECTOR OF HEALTH SERVICE
BONO EAST REGION

APPENDIX VII: Plagiarism Report

ASSESSMENT OF MENTAL HEALTH AND WELL-BEING AMONG HEALTH WORKERS IN KINTAMPO NORTH MUNICIPALITY

ORIGINALITY REPORT

13%	9%	9%	5%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	www.ncbi.nlm.nih.gov Internet Source	1%
2	www.researchgate.net Internet Source	1%
3	Dennis Bardoe, Robert Bagngmen Bio, Denis Dekugmen Yar, Daniel Hayford. "Assessing the prevalence, risk factors, and socio-demographic predictors of malaria among pregnant women in the Bono East Region of Ghana: a multicentre hospital-based mixed-method cross-sectional study", Malaria Journal, 2024 Publication	<1%
4	www.modernghana.com Internet Source	<1%
5	Gemechu B. Gerbi, Tsegaye Habtemariam, Berhanu Tameru, David Nganwa, Vinaida Robnett. "The correlation between alcohol consumption and risky sexual behaviours	<1%