MZUZU UNIVERSITY

FACULTY OF HEALTH SCIENCES

DEPARTMENT OF NURSING AND MIDWIFERY

A RESEARCH REPORT

ON

IMPACT OF COVID-19 ON PATIENT CARE DELIVERY AMONG NURSES AT MZUZU CENTRAL HOSPITAL, NORTHERN MALAWI

A RESEARCH REPORT SUBMITTED IN PARTIAL FULFULMENT FOR THE AWARD OF MASTER OF SCIENCE IN NURSING EDUCATION (CLINICAL TEACHING) AT MZUZU UNIVERSITY

BY

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DECLARATION

I, Vitumbiko Munthali, do hereby declare that this proposal titled 'Impact of Covid-19 on patient care delivery among nurses at Mzuzu Central Hospital in, Northern Malawi'**,** is my own work and the use of all materials from other sources has been properly and fully acknowledged. No part of it has been submitted previously for the award of any degree, diploma at any other university or institution.

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CERTIFICATE OF APPROVAL

The undersigned certify that this research report represents the candidate's own piece of work and has been submitted with approval.

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DEDICATION

This work is dedicated to my beloved family, whose unconditional love, support, and encouragement have been my constant source of strength. To my wife, for instilling in me the value of education and hard work. To my siblings, for always believing in me. I also dedicate this thesis to all aspiring nurse educators may your passion for teaching and caring continue to shape the future of nursing.

OPERATIONAL DIFINITIONS

Covid-19: This term has been used to mean an acute respiratory illness in humans caused by a Coronavirus, capable of producing severe symptoms and in some cases death (Oxford Languages, 2022).

Contagion: The communication of disease from one person to another by close contact (Oxford Languages, 2022). In this proposal this term has been used to mean Covid-19 can be spread from one person to another by close contact.

Quarantine: In this Proposal the term quarantine means strategy used to prevent transmission of Covid-19 by keeping people who have been in close contact with Covid-19 (Centre for Disease Control and Prevention, 2020).

Isolation: The team has been used to mean separation of people with confirmed or suspected Covid-19 from those without Covid-19(Centre for Disease Control and Prevention, 2020).

Adaptation Model of Nursing: This has been used as a conceptual model of the study. States that health is an inevitable dimension of a person's life, and is represented by a health-illness continuum (Petiprin, 2020).

Lockdown: A state of isolation or restricted access internationally, instituted as a security measure. (Centre for Disease Control and Prevention, 2020).

Psychological stress: Particular relationship between the person and the environment that is appraised by the person as exceeding his or her resource and endangering his or her well-being. (Lazarus and Folk man, 1984 in Lucarelli and Chatoor, 2020)

Post-traumatic stress disorder: A state of confusion characterized by failure to recover after experiencing or witnessing a terrifying event (Pagel, 2021).

LIST OF ABBREVIATIONS AND ACRONYMS

WHO	World Health Organization
UNICEF	United Nations Children Fund
PTSD	Posttraumatic Stress Disorder
COVAX	Covid-19 Vaccine Access Facility
SMS	Short Message Service
TV	Television
CEPI	Coalition for Epidemic Preparedness Innovations
GAVI	Global Alliance for Vaccine and Immunization
NSO	National Statistics Office
PPE	Personal Protective Equipment
MCH	Mzuzu Central Hospital
APN	Advanced Practice Nurse
HCW	Health Care Worker

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ABSTRACT

Introduction: Covid-19, caused by the novel SARS-CoV-2, brought significant challenges to the health care delivery system. The pandemic impacted care delivery not only due to the severity of the disease and the high mortality rate but also because of its consequences on the management of patients. However, little is known about how Covid-19 affected patient care delivery, particularly in relation to the five major concepts highlighted in the Adaptation Model of Nursing: Person, Environment, Health, Nursing, and Adaptation. The aim of this study was to assess the impact of Covid-19 on patient care delivery among nurses at Mzuzu Central Hospital in northern Malawi.

Methods: The study employed mixed methods, utilizing both quantitative and qualitative approaches. Analytical cross-sectional and phenomenological study design strategies were used. Purposive sampling targeted frontline nurse caregivers for qualitative data, while simple random sampling was used for quantitative data. Eleven participants were involved in qualitative interviews, and 208 nurses participated in the quantitative survey. Qualitative data were analyzed using NVivo for thematic analysis, while SPSS was used for quantitative analysis, including chi-square tests and logistic regression.

Results: The study revealed enormous changes in patient care delivery due to Covid-19. Key challenges included lack of PPE (76.44%), exhaustion (76%), fear of infection (83.3%), and fear of seeking care (87%). Chi-square analysis identified significant associations with exhaustion ($p = 0.004$), fear of infection ($p = 0.019$), and resource scarcity ($p = 0.0005$). In the multivariate analysis, the adjusted Odds Ratios (aORs) were calculated to control for potential confounding factors. Some variables continued to demonstrate significant associations with compromised care delivery. This included exhaustion; (aOR = 1.984, 95% CI: 1.159-3.398 p= 0.014), fear of infection; (aOR = 1.778, 95% CI: 1.010-3.128 p= 0.045) and resource scarcity; (aOR = 2.349, 95% CI: 1.303-4.230 p= 0.004), all of which remained significant predictors of compromised care delivery during the pandemic. Qualitative findings echoed these issues but also highlighted nurses' motivation driven by duty, patient recovery, and faith.

Conclusion: The study concludes that Covid-19 significantly impacted on patient care delivery. Strengthening healthcare infrastructure, improving resources, and training are essential to enhance care quality and resilience during future health pandemic crises.

Keywords: Mzuzu Central Hospital, Nurses, frontline, Covid-19, Impact, care delivery.

CHAPTER ONE

INTRODUCTION AND BACKGROUND INFORMATION

1.0 Introduction

The novel coronavirus disease (Covid-19) has emerged as a significant public health burden worldwide. The morbidity and mortality rates associated with this disease have dramatically increased over time, with the World Health Organization reporting 510,270,667 confirmed cases and 6,233,526 deaths since the onset of the pandemic (World Health Organization, 2022). This staggering data underscores the catastrophic impact of Covid-19 on human health and life, along with profound economic repercussions (Islam, 2021).

The pandemic continues to affect patient care delivery on a global scale. The deaths and quarantines of healthcare workers have resulted in critical staffing shortages, hampering the ability to provide adequate care to patients. Furthermore, before the pandemic, nearly half of the world's population lacked access to essential healthcare services, a situation exacerbated by the crisis (Cuffari, 2022). As a result, the remaining healthcare workers faced overwhelming pressure and fears of contagion, which contributed to deteriorating standards of patient care (Cuffari, 2022).

In addition to staffing challenges, many individuals have refrained from seeking help for other health issues due to lockdowns and concerns about contracting Covid-19. This reluctance to pursue necessary medical attention has further strained healthcare systems and compromised patient outcomes (Cuffari, 2022). The ongoing effects of the pandemic highlight the urgent need for strategies to support healthcare workers and ensure access to essential services, emphasizing the critical importance of addressing both immediate and long-term health care needs in the wake of Covid-19.

The African continent reported lower Covid-19 prevalence rates compared to the Americans and Europeans. As of 2021, among the 186,934,913 confirmed cases globally, only 4,224,102 cases (approximately 2.3%) were reported in Africa (Oleribe et al., 2021). Despite these seemingly lower numbers, the situation remained serious, as the pandemic still exerted significant pressure on the continent's healthcare systems (Oleribe et al., 2021). Many African countries faced challenges that hindered their ability to effectively manage the crisis.

The primary setbacks in healthcare delivery included a lack of essential services needed to combat the pandemic, inadequate resources and equipment, and limited testing capabilities and surge capacity for Covid-19 (Tessema, 2022). These deficiencies were compounded by a reduced flow of patients and a notable increase in missed scheduled appointments, which were among the most common consequences of the pandemic (Tessema, 2022). As a result, nurses faced an increased workload when patients did arrive, often dealing with more severe complications due to delayed care. The backlog of missed visits also contributed to longer wait times, heightened stress for healthcare providers, and a greater strain on already limited resources. Additionally, the disruption in regular patient visits led to difficulties in managing chronic conditions, further complicating patient care delivery (Tessema, 2022). This combination of factors not only strained healthcare systems but also highlighted the urgent need for improved infrastructure and resources to address current and future health crises in Africa.

In Malawi, there were more than 85,788 confirmed cases of Covid-19 and 2,634 deaths as of 2022 (UNICEF Malawi, 2022). Health workers played a crucial role in combating the outbreak and saving lives, yet their efforts came with significant emotional and psychological costs (UNICEF Malawi, 2022). Many healthcare professionals developed a fear of contagion, concerns for the health of their families, feelings of interpersonal isolation, and experienced stigma. These factors contributed to overwhelming psychological pressure, resulting in various mental health issues such as anxiety, fear, depression, and stress (Malawi Ministry of Health website, 2021).

The Covid-19 pandemic had profound and widespread effects across multiple sectors in Malawi. Measures such as quarantine, social distancing, and business restrictions disrupted essential services, severely impacting industries like tourism, agriculture, trade, and employment (Malawi Ministry of Health website, 2021). These restrictions not only strained the economy but also significantly reduced the capacity of the health sector to deliver effective care. As resources became increasingly scarce and healthcare systems struggled to adapt, the challenges of providing consistent and quality patient care grew more pronounced, exacerbating existing vulnerabilities within the healthcare system (Malawi Ministry of Health website, 2021).

Despite these significant issues, there is limited literature addressing the impact of Covid-19 on patient care delivery in Malawi. This gap highlights the necessity of exploring the experiences and challenges faced by healthcare providers, particularly nurses at Mzuzu Central Hospital. By focusing on the concepts of the Adaptation Model of Nursing, this study aimed at gaining insights into how Covid-19 has influenced patient care delivery, ultimately contributing to a better understanding of the pandemic's effects on health systems and informing future responses to similar health crises.

1.1 Background Information

Covid-19 case was first reported in 2019 in Wuhan China as a respiratory disease (WHO, 2020). The virus spread throughout the globe in less than three months and was declared a global pandemic by the World Health Organization in March, 2020 (Lone, 2020). Since it was first discovered, new Covid-19 strains/variants like SARS-CoV-2 have been reported that have resulted in increased loss of life including those of health care workers globally (Lone, 2020). In Malawi, the first three cases of Covid-19 were confirmed and recorded in April of 2020(UNICEF Malawi, 2020).

Many countries around the globe, have been engaged in lockdowns, social distancing, mobility, and other restrictions, wearing of face masks, frequent washing of hands with soap or hand sanitizer, and isolation among others as a way of intervention against Covid-19 (Tessema, 2022). In the health sector countries were involved in purchasing personal protective equipment's, prioritizing health care workers to be vaccinated and providing covid-19 trainings to healthcare workers just to mention but a few (Tessema, 2022). In Africa the responses to the pandemic include the availability of telephone consultations, repurposing of available services and establishment of isolation centers, and provision of Covid-19 guidelines in some settings (Tessema, 2022). Malawian health care workers were in quarantine after exposure to Covid-19 and some had died (Masina, 2021). To deal with this ever-increasing influx of patients more healthcare workers were to be recruited (Masina, 2021). Malawi attempted to recruit 1,380 new health workers to deal with a surge of Covid-19 (Mwansambo, 2021)

Covid-19 has led to tremendous global staff shortages that has affected most health systems. The problem has further been exacerbated by the quarantining of staff, shortage of service resources, stigma and discrimination of quarantine health care workers and poor health care seeking behaviors among patients due to isolation and Covid-19 restrictions (Lone, 2020). The health systems in Africa were inadequately prepared for the pandemic and its impact was

substantial (Lone, 2020). In addition to shortage of staff due to isolation, death, fear of contagion, stigma, reduced flow of patient and missing scheduled appointments were among the most common impacts of the Covid-19 pandemic which let to compromised patient care (Tessema, 2022). The healthcare system prioritized the Covid-19 pandemic shifting from other diseases like HIV/AIDS, TB, Malaria for example hence grossly affecting the delivery of care (Tessema, 2022).

A study by Mandala and Changadeya (2021) in Malawi indicated that the pandemic resulted into a number of challenges ranging from limited test kits and center of stigmatization of Covid-19 suspects. According to Kakhobwe (2020), due to the Covid-19 pandemic the notable patient care delivery challenges that arose in Malawi include having increased working hours and multiple shifts to deal with a large number of Covid-19 patients which resulted in exhaustion and fatigue of the health care workers. This entails that Covid-19 pandemic affected the quality of patient care delivery in the sense that healthcare workers had increased hours of work and multiple shifts to care for the patients. This also means that the process of caring for the patients was affected as well. However, Literature was scanty on how Covid-19 had impacted on patient care delivery focusing on the five major concepts namely: *Person, Environment, Health, Nursing and Adaptation* as highlighted in the Adaptation Model of Nursing. It was for that reason that this study was conducted to explore the impact of Covid-19 on patient care delivery among nurses at Mzuzu Central Hospital, northern Malawi.

1.2 Problem Statement

Many studies have looked at how Covid-19 affected healthcare systems around the world. These studies show that the pandemic caused serious problems, such as not having enough staff, running out of medical supplies, and an increase in sickness and death (Islam, 2021, Tiotiu et al., 2021 & WHO, 2022). Healthcare workers were under a lot of pressure, were afraid of getting sick, and patients were afraid to go to hospitals. All these issues made it hard to give good care to patients (Cuffari, 2022 & Aloubani, 2021).

In Africa, the situation was made worse by weak health systems. Countries faced challenges like not having enough equipment, low testing capacity, and few trained health workers (Oleribe et al., 2021; Tessema, 2022). In Malawi, the pandemic caused even more problems. Health workers faced fear, stress, and mental health issues, and the health system had a hard time keeping up (UNICEF Malawi, 2022; Malawi Ministry of Health, 2021).

Some Malawian researchers reported that health workers worked longer hours and had more shifts, which made them very tired. They also pointed out that healthcare workers were often treated badly by others because of their contact with Covid-19 patients (Mandala and Changadeya, 2021 & Kakhobwe, 2020).

Although these studies talk about the general challenges of Covid-19, very few focus on how the pandemic affected nurses specifically. Also, there is very little research that uses a nursing theory such as the Adaptation Model to understand how nurses adapted and continued to deliver care during the pandemic. The study was conducted to explore how Covid-19 impacted patient care delivery by nurses at Mzuzu Central Hospital using the five key ideas in the Adaptation Model of Nursing: Person, Environment, Health, Nursing, and Adaptation.

1.3 Study Objectives

1.3.1 Main Objective

The aim of this study was to investigate the impact of the Covid-19 Pandemic on Nursing Practices and Patient Care at Mzuzu Central Hospital in Mzimba District, Northern Malawi

1.3.2 Specific Objectives

The specific objectives of the study were:

- To explore the practices on patient care delivery among nurses during Covid-19 pandemic.
- To investigate the perception of nurses on the impact of Covid-19 in provision of patient care.
- To explore the challenges of covid-19 among nurses on patient care delivery
- To assess the effects of Covid-19 on patient care delivery among nurses.

1.3.3 Research Questions

The research questions of the study were:

- What are the practices on patient care delivery among nurses during Covid-19 pandemic?

- What are the perception of nurses on the impact of Covid-19 in provision of patient care?
- What are the challenges of covid-19 among nurses on patient care delivery?
- What are the effects of Covid-19 on patient care delivery?

The alternate hypothesis is that Covid-19 has significantly impacted on patient care delivery, with nurses experiencing notable challenges in their roles and practices during the pandemic such as exhaustion and resource scarcity. The null hypothesis, on the other hand, is that Covid-19 has no significant impact on patient care delivery among nurses.

1.4 Significance of the Study

1.4.1 Clients: The findings of this study are highly significant for the clients who rely on the healthcare services provided at Mzuzu Central Hospital and other similar healthcare facilities. Patients directly benefit from an improved understanding of how the Covid-19 pandemic has impacted the delivery of care. With the insights gained from this research, healthcare administrators and policymakers can identify specific gaps in care provision, resource allocation, and staffing practices that may have affected patient care quality during the pandemic.

1.4.2 Hospital Facility: The findings of this study are crucial for hospital administrators and policymakers in Mzuzu Central Hospital and other similar healthcare facilities. By gaining an understanding of the impact of Covid-19 on patient care delivery, the hospital can address current gaps in care provision, resource allocation, and staff welfare. Additionally, the study will inform hospital management about the importance of providing adequate psychological and emotional support to nurses, as well as the need for training programs that equip staff with the necessary skills to handle public health emergencies. Insights from this research can also lead to the development of better contingency plans, ensuring hospitals are better prepared for future health crises.

1.4.3 Community: For the local community, this study offers an opportunity to raise awareness of the challenges faced by healthcare workers during the Covid-19 pandemic, as well as the importance of supporting healthcare systems. It underscores the vital role that nurses play in the provision of care, highlighting their resilience and the emotional and physical toll of the pandemic on their personal and professional lives. Furthermore, the research can empower community members to engage in behaviors that reduce the spread of infectious diseases,

support healthcare workers, and advocate for improvements in healthcare infrastructure. The study also offers a pathway to understanding how communities can collaborate with healthcare workers to enhance patient care delivery, particularly during future health emergencies.

1.4.4 Education: In the field of nursing education, this study holds significant value as it provides a real-world perspective on the challenges and adaptations nurses must make in response to a global health emergency. The insights derived from this research will serve as an essential teaching tool for nursing students and professionals, helping them understand how healthcare systems can be stressed during pandemics and the coping strategies necessary to manage the associated pressures. It will also assist nursing educators in tailoring curricula to better prepare students for future global health crises, ensuring they are equipped with the knowledge and skills to navigate such challenges effectively.

1.4.5 Research: This study contributes to the growing body of knowledge on the effects of Covid-19 on healthcare delivery, particularly in under-researched regions like Malawi. By examining the experiences of nurses at Mzuzu Central Hospital, it provides valuable insights into the challenges faced by healthcare workers during a global health crisis. Furthermore, this study will enrich the existing literature by integrating the Adaptation Model of Nursing to better understand the interplay between the key concepts of Person, Environment, Health, Nursing, and Adaptation in the context of a pandemic. The findings can serve as a foundation for future research exploring the long-term effects of Covid-19 on healthcare practices, worker well being, and patient care outcomes, as well as inform strategies for improving healthcare systems in similar low-resource settings.

1.4.6 Policy: From a policy perspective, the findings of this study are highly relevant for government health departments and global health organizations. It highlights critical areas where policy interventions are needed to improve the capacity of healthcare systems, particularly in low-resource settings like Malawi. Policymakers can use the insights from this research to advocate for increased investment in healthcare infrastructure, better protective equipment for healthcare workers, and improved mental health support for nurses. The study also calls for the development of more robust health policies that prioritize the health and wellbeing of nurses, ensure adequate staffing during public health emergencies, and guarantee access to essential medical resources. Ultimately, the findings could help shape future public health policies, making healthcare systems more resilient and better prepared for future pandemics.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

According to the University of Edinburgh (2022), a literature review is a piece of academic writing demonstrating knowledge and understanding of the academic literature on a specific topic placed in context. This study literature review section, will be based on sources relevant to the area of research study. This will provide a description, summary and critical evaluating of this work in relation to the impact of Covid-19 on patient care delivery (Arlene, 2022). The literature will be reviewed in line with the objectives of the study namely: the nurse's practices during Covid-19 pandemic, the perceptions of Covid-19 by nurses during Covid-19 pandemic and the challenges faced by nurses during Covid-19 pandemic.

2.1 Nurses Practices during Covid-19 Pandemic

To effectively meet the needs of patients and their families, caregivers must ground their practices in evidence-based approaches derived from current research (American Nurse, 2022). The fundamental components of nursing practice include assessment, diagnosis, planning, intervention, and evaluation. However, the emergence of Covid-19 as a new pandemic has likely disrupted these essential nursing processes. Factors such as resource shortages, limited information on management strategies, and the tragic loss of caregivers have compounded these challenges, affecting the overall delivery of nursing care. Despite the critical role that nurses play during the pandemic, relatively few studies have focused specifically on their practices in this context. The available literature suggests that the experiences and challenges faced by nurses have been underexplored. This gap highlights the need for further research to understand how the pandemic has altered nursing practices and the implications for patient care. Understanding these dynamics is crucial for adapting nursing education and practice to better prepare for future health crises.

Research conducted on nursing leadership during the Covid-19 pandemic has emphasized the importance of effective initiatives and teamwork among nursing professionals. Studies have shown that strong leadership has been instrumental in guiding nursing practices in the face of unprecedented challenges (American Nurse, 2022). This leadership not only fosters collaboration but also helps mitigate some of the anxiety and stress experienced by nurses,

ultimately benefiting patient care outcomes. An exploratory study examining the nursing role during the Covd-19 pandemic in Western countries reviewed that of 1,243 scientific papers related to nursing's role in the pandemic including 30 articles for their analysis, nurses were on the front lines of patient care and face numerous challenges that significantly impact their practice (Sarango et al, 2021). Factors such as fear of the disease, social distancing measures, lack of personal protective equipment, heavy workloads, high mortality rates, and concerns for their own health and that of their families contributed to changes in nursing care practices (Sarango et al, 2021).

Similarly, a cross-sectional mixed-methods survey conducted in the United Kingdom found that 124 advanced practice nurses (51% response rate) reported shortages of staff (51%) and personal protective equipment (PPE) (68%) (Wood et al., 2020) . This raised concern about patient not receiving routine care as many specialties were closed or reduced working during the crisis. The researchers also found out that these were known to be a factor in the development of mental sequelae as well as risk factor for increased turnover and retention issues. In addition, the results of this study showed that half of the APNs surveyed were considering a change in job and the UK risking a further crisis in staff morale and retention which could negatively affect the care given to patients. However, it was noted that there were also many examples of good practice, positive changes and innovation such as the improved collaboration among healthcare teams, and the development of new protocols to manage patient care during the pandemic (Wood et al, 2020).

On the other hand, a narrative literature review study done in Malawi on coping strategies used by nurses during the Covid-19 pandemic, a narrative literature review identified the following strategies: use of Covid-19 protective measures, avoidance strategy, social support, faith-based practices, psychological support and management support as some of the strategies used by nurses in coping up with the Covid-19 pandemic (Sehularo et al, 2021 & Khrais et al., 2022). Despite the fact that nurses experienced stress and psychological fatigue, they used different coping strategies to provide care to patients (Nkowane et al., 2021). However, there is a need for more studies to be conducted that will generate knowledge on **n**urses practices during Covid-19 Pandemic.

The studies reviewed provide valuable insights into the challenges and adaptations in nursing practice during the Covid-19 pandemic, but they vary in methodological rigor and depth. While Wood et al. (2020) and Sarango et al. (2021) offer empirical data highlighting staffing

shortages, PPE deficits, and psychological stress, they are limited by sample size and geographic scope, which may affect generalizability. Sehularo et al. (2021), though insightful in identifying coping strategies, relies on a narrative review format that lacks the analytical depth of systematic reviews, underscoring the need for more comprehensive and globally representative research.

2.2 Perceptions of Covid-19 pandemic

The spread of the disease is influenced by people's willingness to see, hear and become aware to adopt preventive public health behaviors, which are often associated with public risk perception. A few studies related to perception of the covid-19 pandemic indicated that respondents had worries about the outbreak, believed Covid-19 was a life threatening disease just to mention but a few (Alkhaldi, Aljiraiban & Alshaikh ,2021).

A cross-sectional study that investigated public perceptions of Covid-19 and the adoption of preventive measures in Saudi Arabia, surveyed 2,393 respondents and revealed significant insights into the psychological and behavioural responses to the pandemic (Alkhaldi, Aljiraiban & Alshaikh, 2021). A substantial majority (74%) expressed concern about the Covid-19 outbreak, with 27% believing they were likely to contract the virus and 16% considering it potentially life-threatening or severe. Despite these high levels of worry, only 11% reported experiencing high levels of anxiety, indicating a complex relationship between concern and emotional distress. The study also highlighted demographic differences in the adoption of preventive measures. Older respondents (aged over 65) exhibited significantly lower rates of hygiene practices and social distancing compared to younger participants (aged 18–24). The odds ratios (OR) demonstrated that older individuals were less likely to engage in these preventive behaviours, with values of 0.06 for both hygiene practices and social distancing (95% CI: 0.01, 0.28). This finding raises important questions about the factors influencing adherence to public health guidelines among different age groups and suggests that targeted interventions may be necessary to improve compliance among older adults.

The researchers also found that despite concerns about the virus, a high percentage of respondents over 80% reported being able to and willing to self-isolate when needed. However, individuals with the lowest gross household incomes and those exhibiting at least one flu symptom showed decreased willingness and ability to self-isolate. This suggests that socioeconomic factors and health status significantly influence individuals' capacity to adhere to public health recommendations, further complicating the public health response to the

pandemic. The study also reported a notable increase in anxiety levels and perceived effectiveness of social distancing and hygiene practices in the post-lockdown phase compared to during the lockdown. This shift underscores the dynamic nature of public perception and behavior in response to evolving circumstances during the pandemic (Alkhaldi et al., 2021). As the situation progressed, individuals adapted their responses, reflecting a growing awareness of the importance of preventive measures. These findings contribute to the understanding of how psychological and socioeconomic factors shape public health behaviours during a global health crisis, emphasizing the need for tailored communication strategies and support systems to address varying needs across different populations.

Similarly, a study on the risk perception of Covid-19 around the world, researchers surveyed people in 10 different countries around the world (United Kingdom, United States, Germany, Spain, Italy, Sweden, Mexico, Japan and South Korea) (Dryhurst, et al, 2020). The findings indicated that risk perception across the 10 sampled countries varied between 4.78 and 5.45 on a 7-point scale and were thus fairly high across all countries in Europe, Asia and North America(Dryhurst, et al, 2020) . A one-way analysis of risk perception across countries revealed significant differences in risk levels, with the highest perception of risk observed in Europe, followed by Spain. Both countries were significantly higher in risk perception compared to all other countries (Dryhurst, et al, 2020).

On the same, an online study on the risk perception, fear, depression, anxiety, stress and coping among nurses during the Covid-19 pandemic in Saudi Arabia, showed that students had modest risk perception and fear of contracting Covid-19(Alsolais2021). Poor Covid-19 knowledge, perceived seriousness of Covid-19 infection, and the use of coping mechanism were predictors of fear (Alsolais 2021 & Ning et al., 2022).

In the Covid-19 study on the knowledge, risk perceptions, and behaviors related to Covid-19 among Malawians in Malawi, the findings indicated that of 779 participants, 619 participants completed an interview, only one respondent reported not having heard about Covid-19 (Banda et al, 2021). The researchers also found out that the most common sources of Covid-19 related information were the radio and conversations with friends. In urban areas, respondents reported relying more extensively on the television, WhatsApp groups, social media, newspapers, and the internet (Banda et al, 2021). In rural areas, respondents reported obtaining Covid-19 related information more frequently from relatives and health facilities. Most participants knew that SARS-CoV-2 is spread through respiratory droplets and can be spread without showing

symptoms, and can be spread by touching an infected surface. However, almost half of the participants also thought that SARS-CoV-2 is waterborne, and one-third believed it is blood borne. The prevalence of these misconceptions was higher among rural than urban participants (Banda et al, 2021).

The studies collectively offer insights into public and healthcare workers' perceptions of Covid-19, but they differ in scope, methodological rigor, and representativeness. While Alkhaldi et al. (2021) and Dryhurst et al. (2020) provide robust cross-national and demographic analyses of risk perception and behavioral response, others like Alsolais (2021) and Banda et al. (2021) reveal significant knowledge gaps and misconceptions particularly in low-resource settings highlighting the need for context-specific, culturally sensitive health communication strategies.

2.3 Challenges faced by health care workers during the covid-19 pandemic

The most common challenges in patient care delivery include, increased work load, shortage of resources, stress and burn out, infections and deaths of care givers and poor working environment. The challenges have been exacerbated by the coming of Covid-19 pandemic.

Such is evident in a study on the unforeseen challenges to global health system, in particular context to Covid-19 pandemic and health care personnel where the results indicate that health care workers are expected to be at an increased risk of infection because of their direct exposure to Covid-19 in Asia (Arshid et al., (2021). In addition, researchers gathered information that on average 7% of all confirmed Covid-19 patients were healthcare workers (ranging up to 18%) with more than 600 deaths in nursing staff. Based on estimates such 7% would bring them to more than 1, 393,000 health care workers infected with Covid-19. Similarly, compiled data, indicate a total of more than 12,454 health care workers to have been affected by Covid-19 in Asia pacific region. (Anadolu Agency, 2021) . During the current Covid-19 pandemic, the psychological stress to health care workers has been increasing, as a result of surging number of patients, the growing workload, rising working hours and death tolls (Arshid, Mumtaz & Nazir, 2020). The researchers also found out that this stress in medical health care can trigger psychological problems to them such as anxiety and post-traumatic stress disorder (PTSD) (Arshid, Mumtaz & Nazir, 2020).

Similarly, a study on the role of uncertainty in the experiences of nurses during the Covid-19 Pandemic: A phenomenological study showed that out of the thirty-one interviews via phone and thematic analysis, the major themes that emerged were emotional challenges, uncertainty, and protective factors(Nelson et al., 2021). Emotional challenges included, stress, anxiety, exhaustion, frustration, guilt, and loneliness. These challenges were magnified by uncertainty through leadership and communication challenges, needs of the pandemic versus needs of the patient, and Covid-19 and best practice. In this study, emotional challenges were mitigated by the protective factors of education, ability to contribute, team cohesiveness, and community support (Nelson et al., 2021).

Other studies have highlighted the significant toll that increased working hours and multiple shifts have taken on healthcare workers during the Covid-19 pandemic (Nelson et al., 2021). The surge in patient numbers necessitated longer hours, leading to exhaustion and fatigue among staff. This chronic state of overwork not only affects the well-being of healthcare professionals but also compromises the efficiency and quality of care they provide to patients. As fatigue sets in, the potential for errors in patient care increases, which can have direct consequences in a healthcare setting already strained by the pandemic (Nelson et al., 2021).

In a qualitative study on the ethical challenges faced by nurses caring for Covid-19 patients in China were examined (Jia, 2021), . Eighteen nurses participated in interviews to share their experiences, revealing a range of ethical dilemmas. Key issues included maintaining patient privacy, addressing inequalities in care, and navigating professional ethics while managing their own job competencies. These challenges highlight the complex moral landscape in which nurses operate, as they strive to deliver compassionate care amidst overwhelming circumstances and ethical uncertainties(Jia, 2021).

Additionally, Jia's study identified coping strategies employed by nurses, such as active control, seeking support, and maintaining focus, as crucial for managing the emotional and psychological stressors associated with their roles (Jia, 2021). However, the impact of Covid-19 extended beyond immediate challenges; nurses reported significant repercussions on their career trajectories, including the need for specialized nursing skills, scientific research abilities, and enhanced management skills. These findings emphasize the long-term implications of the pandemic on nursing as a profession, underscoring the necessity for ongoing support and training to equip healthcare workers to navigate future crises effectively (Jia, 2021).

A scoping review on the Covid-19 pandemic and healthcare system in Africa showed that the main setbacks in health system preparation included lack of available health services needed for the pandemic, inadequate resources and equipment, and limited testing ability for Covid-19 (Tessema et al.,2021). . In addition, reduced flow of patients and missing scheduled appointments were among the most common impacts of the Covid-19 pandemic (Tessema et al., 2021).

In a study on Covid-19 in Africa: Current difficulties and future challenges considering the African Covid-19 Critical Care Outcome Study (ACCCOS), concluded that African countries had the highest mortality rate in critically ill patients compared with those of other continents(Hasanin et al., 2021). In the ACCCOS, the high mortality was linked to lack of resources and experience (Hasanin et al., 2021). On the other hand, the data revealed that over 70% of the patients received therapeutic anticoagulation and sterpid therapy, potentially costlier agents, respectively. This could mean the problem was not only drug shortage but rather lack of experience or timely detection of patient collapse (Hasanin et al., 2021).

In Malawi, a study highlighted the numerous challenges faced in the fight against Covid-19, including the pandemic's complete eradication (Mandala and Changadeya, 2021) . The review pointed out critical issues such as limited availability of test kits and stigmatization of individuals suspected of having the virus. This stigmatization, compounded by misinformation, has contributed to public denial of the disease, resulting in delayed hospital visits and ultimately leading to increased mortality rates.

Furthermore, a report underscored the impact of staffing shortages as Malawi sought to combat the surge in Covid-19 cases (Masina, 2021). Many healthcare workers were forced into quarantine after potential exposure to the virus, while some succumbed to the infection itself. This situation exacerbated the already strained healthcare system, making it increasingly difficult to provide adequate care for those affected by Covid-19 (Masina ,2021) .

While the consequences of Covid-19 have been extensively documented in various global contexts, data specific to Africa remains limited (Hasanin et al., 2021). This gap underscores the need for more localized research to better understand the unique challenges faced by healthcare systems in African countries like Malawi. Addressing these challenges is essential not only for effective pandemic response but also for informing future health policies and practices in the region.

The studies reviewed comprehensively highlight the multifaceted challenges faced by healthcare workers during the Covid-19 pandemic, including physical exhaustion, psychological stress, ethical dilemmas, and systemic limitations, particularly in resource-constrained settings. While they provide valuable qualitative and quantitative insights across different global regions, there remains a lack of region-specific, longitudinal data especially in African contexts needed to fully understand the long-term impacts and inform sustainable health system improvements.

2.4 Effects of covid-19 on patient care delivery

A survey conducted in China aiming at mitigating the psychological effects of Covid-19 on healthcare workers, findings revealed a stark contrast in mental health outcomes between those directly involved in patient care and their counterparts (Peter et al., 2020). The study included 1,257 nurses and physicians in China who were tasked with caring for patients diagnosed with Covid-19. The results showed that 41.5% of these healthcare providers experienced significantly higher levels of depression, anxiety, insomnia, and distress compared to those who were not directly involved in caring for Covid-19 patients (Peter et al., 2020). This elevated psychological burden underscores the intense pressures faced by healthcare workers during the pandemic. Those on the front lines not only dealt with the physical demands of their roles but also the emotional toll of witnessing severe illness and mortality among their patients. The findings highlight a critical need for targeted mental health support and resources to help these healthcare providers manage their psychological well-being during such unprecedented times. Moreover, the implications of this study extend beyond immediate mental health concerns; they point to the necessity for healthcare systems to implement strategies aimed at safeguarding the mental health of workers. By addressing these psychological effects, healthcare institutions can promote a more resilient workforce capable of enduring the ongoing challenges presented by the pandemic. Supporting healthcare workers' mental health is essential not only for their individual well-being but also for the overall effectiveness of patient care during a crisis.

An observational study of 180 healthcare workers providing direct care for patients with Covid-19 found substantial levels of anxiety and stress, which negatively impacted sleep quality and self-efficacy. However, healthcare workers who reported a strong social support network experienced lower levels of stress and anxiety and a higher sense of self-efficacy (Peter et al., 2020). Similarly, a qualitative study of medical residents in Toronto during the Covid-19

outbreak revealed that anxieties about personal safety and the risk of contagion to loved ones conflicted with their professional duty to care (Peter et al., 2020).

A study on the covid-19 pandemic: Effects on low-and middle-income countries reported that the disease resulted in death of people, health care facilities became overwhelmed by patients with covid-19 in addition to being overcrowded with those suffering from pneumonia, human immunodeficiency virus, tuberculosis, and Malaria (Choon-Looi Bong et al., 2020). Hospital bed became short supply and shortage of health care personnel and other resources like quality personal protective equipment's (PPEs) (Choon-Looi Bong et al., 2020).

In summary the existing literature highlights the significant challenges and disruptions caused by the Covid-19 pandemic on healthcare workers and patient care delivery. Nurses, in particular, have faced heightened stress, anxiety, and fatigue due to factors such as increased workloads, limited resources, and exposure to the virus. While studies have explored the impact of Covid-19 on nurse practices, perceptions, and challenges, gaps remain in understanding the full scope of these experiences, especially in diverse settings like Africa, Asia, and low-income countries. Research has identified critical issues such as staffing shortages, mental health concerns, and inadequate protective equipment, but more localized and comprehensive studies are needed to address these gaps and explore the long-term effects of the pandemic on healthcare systems and nursing practices. Furthermore, while some positive outcomes, like improved collaboration and innovation, have been noted, the literature underscores the ongoing need for targeted mental health support and resources for healthcare workers. There is also a need for more research on coping strategies, leadership effectiveness, and the role of social support in mitigating stress and improving care delivery during such crises.

The studies reviewed effectively demonstrate the profound psychological and operational impact of Covid-19 on patient care delivery, especially highlighting the toll on frontline healthcare workers' mental health and the strain on healthcare systems in low- and middle-income countries. However, much of the data is concentrated in specific regions like China and Canada, pointing to a critical need for broader, context-specific research particularly in underrepresented areas to better understand and respond to the diverse challenges faced globally in delivering effective and sustainable patient care during health crises.

CONCEPTUAL FRAMEWORK

2.5 Introduction

A framework is a structured system or conceptual structure that provides a foundation or guiding principles for understanding, organizing, or analyzing complex ideas, processes, or systems. It serves as a scaffold that supports the development of theories, methodologies, or practices. In various fields, frameworks help to organize knowledge, establish boundaries, and offer a standardized approach to addressing problems or tasks (Waiden University, 2021) . A conceptual framework includes one or more formal theories or models (in part or whole) as well as other concepts and empirical findings from the literature (Waiden University, 2021). This study employed the Adaptation Model of Nursing.

ADAPTATION MODEL OF NURSING

2.6 Introduction of the Model

The **Adaptation Model of Nursing** was developed by Sister Callista Roy in 1976 to increase compliance, life expectancy, wellness and death with dignity (Gonzalo, 2021)**.** . Roy adaptation model evaluates the patients in physiological mode, self –concept mode, role function and interdependence mode aiming to provide holistic care. In addition, the adaptation model of nursing is a prominent nursing theory aiming to explain or define the provision of nursing science. In her theory, Roy's model sees the individual as a set of interrelated systems that maintain a balance between these various stimuli (Gonzalo, 2021)**.** The model consists of five major concepts namely: *Person, Environment, Health, Nursing and Adaptation*. The model fits with project focus in the sense that the five major concepts mentioned in the model are the primary focus in patient care delivery. In addition, the model has been chosen because it will guide the researcher to understand how Covid-19 has impacted on the major concepts in the provision of patient care. The main assumptions in the adaptation model of nursing in relation to five major concepts are:

Person: The assumption is that the person has the human system that has thinking and feeling capacities, rooted in consciousness and meaning, by which they adjust effectively to change in the environment and turn, affect the environment (Gonzalo, 2021)**.**

Environment: The environment means the conditions, circumstances, and influences surrounding and affecting the development and behavior of a person or groups, with particular consideration of the mutuality of person and health resources that include focal, contextual, and residual stimuli (Gonzalo, 2021)**.**

Health: Health is not freedom from the inevitability of death, disease, unhappiness, and stress, but the ability to cope with them competently. Health has been defined as the state where humans can continually adapt to stimuli. Because illness is part of life, both patient and nurse/midwife can be infected with the Covid-19 virus and become ill (Gonzalo, 2021)**.**

Nursing: Nursing is the precise of providing care for the patient and infirm**.** The goal of nursing is the promotion of adaptation for individuals and groups in each of the four adaptive modes, thus contributing to health, quality of life, and dying with dignity (Gonzalo, 2021)**.**

Adaptation: Adaptation is the process and outcome whereby thinking and feeling a person as an individual or in groups use conscious awareness and choice to create human and environmental integration (Gonzalo, 2021)**.**

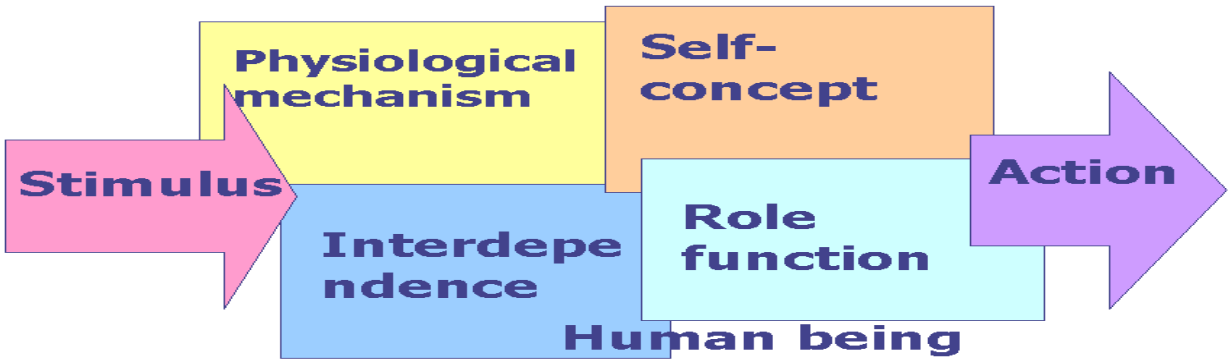

Figure 1.1: Roy Adaptation Model of Nursing(Gonzalo, 2021).

2.7 Application of the Conceptual Frame Work

The adaptation model of nursing has five major underlying concepts that are interlinked. These have been modified for this study. The first, which is the *person* refers to the, nurses that are holistic beings that are in constant interaction with the environment, in this case, the Covid-19 pandemic environment, healthcare workers use a system of adaptation, both innate and acquired to respond to the covid-19 pandemic that they have experienced. Human systems can be individuals or groups, such as families, organizations, and the whole global community**.** Secondly, *the environment* in this study relates to the circumstances during the Covid-19 pandemic and conditions where there is the shortage of staff to care for covid-19 patients, overwhelming work load, risk of infection, shortage of resources such as gloves, personal protective equipment, among others have affected health care worker's development and behaviors as the adaptive system in the patient care delivery. The third concept of *health* in this study, refers to health, that results from a process where health and illness coexist. If a nurse/midwife and a patient receiving care can continue to holistically adapt, they will maintain

health to reach completeness and unity within themselves. If they cannot adapt accordingly, they can be affected negatively. The last but not the least concept of *nursing,* in this study, refers to nurses that are facilitators of adaptation. They assess the patient's behaviors for adaptation; promote positive adaptation by enhancing environmental interaction and helping patients react positively to stimuli. Nurses eliminate ineffective coping mechanisms and eventually lead to better outcomes. Lastly *adaptation,* in this study nurses and patients use physiologic coping mechanisms to cope with the covid-19 pandemic. The body attempts to adapt via the regulation of bodily processes, including the neurochemical and endocrine systems. In addition, a health care worker and a patient use mental coping mechanisms. In this case, they use the brain to cope via self-concept, interdependence, and role function adaptive modes.

In this section as earlier mentioned there is the relationship between the model and the study focus. The study focuses on the patient care delivery and how this has been impacted by Covid-19. The main primary focus in patient care delivery are also the five major model concepts as discussed earlier in this section.

CHAPTER THREE

RESEARCH METHODOLOGY

3.0 Introduction

This section of the study includes study approach and design, research setting, population, inclusion and exclusion criteria, sampling technique and sample size, data collection, data analysis, dissemination of results and ethical consideration.

3.1 Study Design

The study employed a mixed-methods approach, combining both quantitative and qualitative research designs, with the aim of providing a comprehensive and nuanced understanding of the impact of Covid-19 on patient care delivery. This methodological approach incorporates two distinct but complementary research paradigms: the positivist (quantitative) and the interpretivist (qualitative), each with its own underlying epistemological stance.

3.1.1 Quantitative Approach

The analytical cross-sectional study design was employed for the quantitative aspect of the research. This design was grounded in the positivist paradigm, which assumed that reality is objective, measurable, and independent of the observer. In this case, the researchers aimed to measure the impact of Covid-19 on patient care delivery through numerical data. The positivist epistemology emphasized objectivity, generalizability, and replicability. It holds that knowledge is gained through observable, measurable phenomena, which was quantified and subjected to statistical analysis.

By using this approach, the researcher sought to provide a valid, reliable, and generalizable analysis of the impact of Covid-19 on patient care, while minimizing sampling errors. The reliance on quantitative data ensures the study's results were robust and were generalized to a broader population of healthcare workers, beyond the specific context of Mzuzu Central Hospital.

3.1.2 Qualitative Approach

In contrast, the study also adopted a phenomenological study design for the qualitative component, which was grounded in the interpretivist paradigm. Phenomenology is a qualitative

approach focused on understanding the lived experiences and subjective realities of participants. In this case, the study aimed to explore the personal narratives at Mzuzu Central Hospital, to uncover the complex and nuanced challenges they faced during the pandemic. The interpretivist epistemology emphasized that knowledge was socially constructed and rooted in the lived experiences and perceptions of individuals. It recognized that the meaning of events and phenomena was subjective, and understanding emerges through interpretation and empathy.

This qualitative approach enabled the researchers to give voice to the participants, ensuring that the findings were grounded in their lived experiences and perspectives. By prioritizing personal narratives, the study provided a richer, more contextualized understanding of how Covid-19 affected healthcare delivery. It highlighted emotional, psychological, and interpersonal aspects that could not be captured through quantitative measures alone, thus adding depth and context to the analysis.

The combination of quantitative and qualitative methods allowed the researcher to capitalize on the strengths of both approaches, leading to a more holistic and comprehensive understanding of the research questions. This methodological triangulation not only improved the validity and reliability of the study but also minimized potential biases or limitations inherent in any single approach (Yin, 2018).

By integrating numerical data (quantitative) with personal experiences (qualitative), the study provided a well-rounded analysis of the impact of Covid-19 on patient care delivery. The quantitative data offered insights into broad trends and patterns, while the qualitative data illuminated the emotional, social, and cultural dimensions of the challenges faced by healthcare workers. This integration of different epistemological stances positivism for the quantitative component and interpretivism for the qualitative component ensured a more complete and multi-faceted understanding of the impact of Covid-19 on patient care delivery.

3.2 Study Setting

This study was conducted at Mzuzu Central Hospital (MCH), a tertiary hospital in the northern region that serves over 2 million people (Project Malawi, 2017). As part of Malawi's health system, MCH has limited capacity to deal with the additional burden of Covid-19. This is because of scarcity of ventilators nationwide, limited number of intensive care units, shortage

of staff and personal protective equipment's (PPE) (Torres, 2020). Apart from serving over 2 million people, site was selected because is close to the school of study of the researcher and also it had a Covid-19 isolation center where Covid-19 patients are referred to and were admitted.

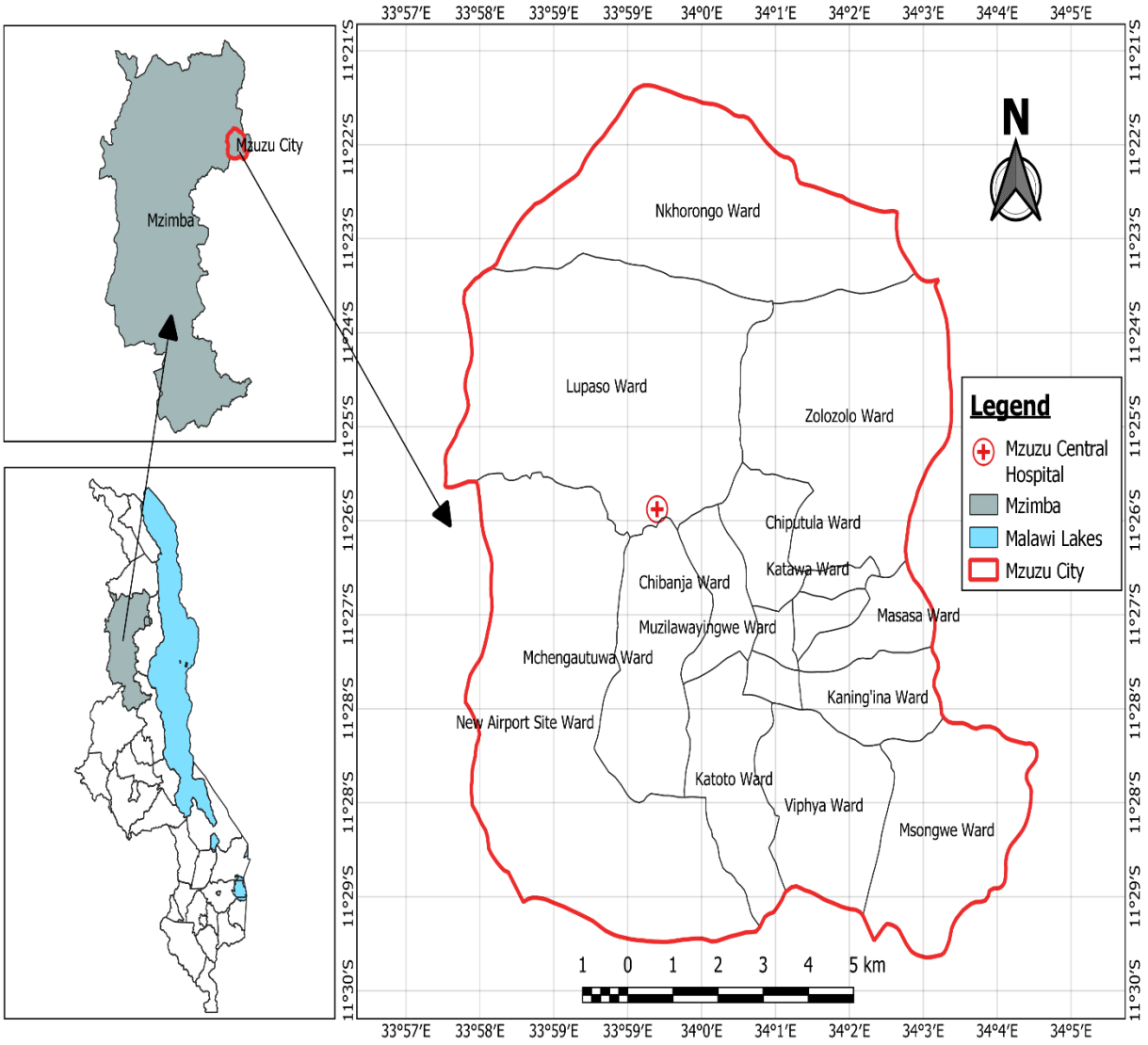

Figure 1.2: Map of Mzimba showing Mzuzu Central Hospital study area (Mapcarta, 2022).

3.3 Study Population

Population in research terminology can be described as a comprehensive group of individuals, institutions, and objects which have a common characteristic that is the interest of the

researcher (Pratap and Jadhav, 2023). In this study the target population were all nurses working at Mzuzu Central Hospital.

3.4 Sampling Technique

A sample represented a subset that stood for the whole population. For the qualitative aspect of the study, purposive sampling, a non-probability sampling technique, was employed to select participants. In this approach, the researcher relied on their judgment to identify and choose individuals who would be included in the study (Pratap and Jadhav, 2023). This meant the researcher was actively involved in identifying, evaluating, and selecting individual nurses who had substantial experience working in Covid-19 isolation centers at Mzuzu Central Hospital.

The quantitative component of the study utilized simple random sampling, ensuring that every member of the population (nurses) had an equal opportunity to be selected. This method promoted fairness and reduced bias in the selection process. To implement this, participants were assigned numbers corresponding to their positions in the population list, which consisted of a total of 451 nurses.

Once the numbering was completed, the researcher generated random numbers to select the sample. From this population, 208 participants were chosen based on the randomly generated numbers. This method not only enhanced the representativeness of the sample but also allowed for generalization of the findings to the larger population of nurses.

Ultimately, the combination of purposive and simple random sampling techniques provided a robust framework for the study. By leveraging both methods, the research aimed to capture a rich array of insights from experienced nurses while also ensuring that quantitative findings are representative of the broader nursing population at Mzuzu Central Hospital.

3.5 Sample Size

3.5.1 Qualitative Sample Size

Based on phenomenological design, the actual qualitative sample target was based on the acceptable range of 8-20 participants, and subject to the principle of data saturation, the actual sample was determined to be 11 participants.

3.5.2 Quantitative Sample Size

The target population for this study were nurses at Mzuzu Central Hospital. In total there were 451 nurses at Mzuzu Central Hospital. (236 nurse/midwives technicians, 94 senior nurse/midwives technicians and 121 registered nurse/midwives). The study utilized the formula as indicated in Krejcie and Morgan (1970).

$S = X2NP (1-P) \div d2 (N-1) + X2 P (1-P)$

whereby

S = required sample size

X2 = the table value of chi-square for 1 degree of freedom at the desired confidence level (3.841)

N = the population size.

P = the population proportion (assumed to be 0.50 since this would provide the maximum sample size).

d = the degree of accuracy expressed as a proportion (0.05).

calculation = 3.841x451x0.50x0.5/0.0025x450 t 3.841x0.50x0.5

= 433.07/2.0825

=207.21 which is approximately 208 participants

3.6 Inclusion criteria

The inclusion criteria for participants in this study were designed to ensure a robust and representative sample. Eligible participants were those nurses currently employed at Mzuzu Central Hospital, with a minimum of two years of clinical experience in nursing practice, including at least six months of experience in Covid-19 care or related environments. Additionally, participants who were willing to provide informed consent, indicating their understanding of the study's purpose and procedures. They were also available for the duration of the study and able to attend interviews or complete questionnaires as required.

3.6.1 Exclusion Criteria

The exclusion criteria for this study were designed to ensure the selection of appropriate participants. Individuals who were nurses, but currently in training were excluded. Additionally, nurses with less than two years of clinical experience, particularly those who had not worked for at least six months in Covid-19 care or related settings, were not eligible. Participants were required to provide informed

consent; those who declined were excluded. Furthermore, nurses who were unable to commit to the study duration or could not participate in interviews and questionnaires were not included. Lastly, nurses experiencing significant health issues or psychological distress that might have affected their participation were also excluded.

3.7 Data collection and Management

Data collection is the process of gathering and measuring information on variables of interest (Craddick et al, 2020). In an established systematic fashion that enables one to answer stated research questions, test hypotheses, and evaluate outcomes (Craddick et al, 2020). To ensure the trustworthiness of the data, several strategies were employed throughout the data collection process. These included prolonged engagement with participants to build rapport and ensure rich, in-depth responses.

3.7.1 Qualitative Data Collection

An interview guide was developed to conduct in-depth interviews aimed at collecting qualitative data. The interview tool was developed by an expert in the field and pre-tested in a different hospital prior to use. This method was chosen to foster a conversational dynamic between the researcher and individual participants, allowing for the exploration of diverse views, opinions, and experiences related to the impact of Covid-19 on patient care delivery. Through this approach, the researcher sought to gather rich, detailed accounts of the practice of nurses employed in patient care during the pandemic, as well as the specific challenges they faced in this context. The interview guide included open-ended questions designed to prompt discussion, encouraging participants to reflect on their experiences, coping strategies, and any changes they observed in their work environment. In-depth, one-on-one interviews were conducted with 11 participants using a structured interview guide. The interviews, which were conducted in English, lasted between 10 to 15 minutes and note taking was done. This thorough method aimed to provide a comprehensive understanding of the complexities of patient care delivery among nurses during the Covid-19 pandemic, ultimately enriching the data collected for the study.

3.7.2 Quantitative Data Collection

A questionnaire was developed by formulating questions based on the specific objectives of the study, which aimed to gather data from respondents about their perceptions, opinions, experiences, challenges, and practices during the Covid-19 pandemic. The questionnaires were employed to collect quantitative data and to ensure confidentiality respondents were not required to indicate their names. The research

tool consisted of both open and closed-ended questions designed to elicit valuable information from participants. Questionnaires were administered to nurses to assess their perceptions regarding the impact of Covid-19 on the provision of patient care and the effects on patient care delivery, providing a comprehensive overview of the situation. To ensure reliability and validity, a pilot test was conducted as a preliminary, small-scale rehearsal to evaluate the methods and procedures planned for the research project. Following the pilot study, the researcher made necessary modifications to the tool to enhance its effectiveness.

3.8 Data Analysis

Data analysis is defined as the process of cleaning, transforming, and modeling data to discover useful information for business decision making (Johnson, 2023). The purpose of data analysis is to extract useful information from data, meaning, data interpretation, and finding enablers for drawing conclusion based upon the data analysis (Johnson, 2023). Further to this Cooper, Blumberg & Schindler (2014) states that the purpose of data analysis is to reduce accumulated data to a manageable size, develop summaries, look for a pattern and apply statistical techniques to draw meaning from the data.

3.8.1 Qualitative Data Analysis

The process involves organizing, analyzing, and interpreting non-numeric, conceptual information and user feedback to capture themes and patterns, answer research questions, and identify actions to take (Hotjars, 2021). In this study, the data collected were analyzed using the NVivo software program for thematic analysis. This software was utilized to analyze the data from the interviews (McNiff, 2022). The transcripts that were developed were imported into NVivo in a manner that allowed the software to create a transcript entry for each paragraph. The researcher used heading styles to automatically organize the responses, gathering all responses for one question in one place for easier analysis. NVivo provided tools that helped the researcher create codes automatically. The researcher set up queries and saved the results as new codes by running text search queries to look for specific terms and then coding all occurrences into new codes. This meant that the researcher not only read the data repeatedly to become familiar with it but also examined the data for trends, repeated ideas, and topics of interest to identify potential codes. After coding, themes were identified, reviewed, defined, and named in relation to the research objectives and questions.

3.8.1.1 Table 1: Development of themes and sub-themes

Theme	Sub-Themes	Example Codes	Related Research Objective	Adaptation Model Element
1. Influence on Motive to Care	- Passion and dedication - Financial incentives - PPE availability	- Passion to care - Financial allowance - Motivation due to PPE availability	Explore practices in patient care delivery during Covid-19	Person, Nursing
2. Adaptation to Covid-19	- Faith and hope - Adherence to guidelines - Recovery experiences	- Trust in God - Patient recovery - Adjustment after infection	Explore practices in patient care delivery during Covid-19	Adaptation, Health, Person
3. Helping Patients Adapt	- Patient education - Psychological support - Counseling	- Information on Covid-19 - Emotional reassurance - Counseling and myth dispelling	Explore practices in patient care delivery during Covid-19	Nursing, Person, Health
4. Challenges in Patient Care Delivery	- Resource shortages - Social stigma and discrimination - Misdiagnosis and poor documentation - Communication difficulties	- Lack of PPE and oxygen - Community rejection - Missed diagnosis - Phone connectivity issues	Explore challenges nurses faced during Covid-19	Environment, Person, Health
5. Management of Challenges	- Teamwork and task sharing - Resource mobilization - Creative documentation - Continued training and communication	- Coordinated care - Improvised use of PPE - Segregation of patients - Staff updates and communication	Explore challenges nurses faced during Covid-19	Nursing, Adaptation, Health
6. Recommendations	- Infrastructure and supply readiness - Consistent financial support - Community sensitization - Continued staff training and vaccination	- Stock of resources - Fixed allowances - Public education - Training on protocols and vaccine campaigns	Explore challenges nurses faced and their proposed solutions	Environment, Nursing, Health

3.8.2 Quantitative Data Analysis

The study utilized descriptive and inferential quantitative data analysis using the Statistical Package for Social Sciences (SPSS) to analyze the collected quantitative data. The data were entered into Excel for cleaning, which involved checking for errors in both categorical and continuous variables. The cleaned Excel data file was then imported into SPSS in preparation for analysis.

The quantitative analysis plan was established using descriptive statistics targeting numerical and categorical variables, generating and presenting frequency tables (Cooper, Blumberg & Schindler, 2014). Analytical analysis involved assessing the impact of Covid-19 on nurses perceptions and patient care delivery. First, descriptive statistics were run for perception variables, such as the scarcity of resources, compromised services, and changes in patient visitation patterns, using the Frequencies option under Descriptive Statistics. Cross tabulations were performed to investigate relationships between perception variables and demographic factors (e.g., gender, qualification, department), using Chi-square tests to determine significant associations with patient care delivery. For assessing the effects of Covid-19 on patient care, frequencies were calculated for variables such as exhaustion, fear of contracting the virus, and the impact of vaccination. All independent variables were analyzed using Chi-Square Test against an outcome variable (change of care delivery of general patients due to Covid-19) and the variables that showed significance were analyzed through bivariate/univariate and those that displayed significance in a multivariate logistic regression to examine how independent variables influenced patience care delivery during the pandemic. These bivariate/univariate and multivariate techniques helped to summarize and understand the overall trends and variability in the data regarding impact on care delivery during the Covid-19 pandemic.

3.8.3 Table 2: Summary of Research Design.

Quantitative Study	Qualitative Study
Design: Analytical cross-sectional study Sampling: Simple random sampling was used by assigning numbers to participants.	Phenomenological study Sampling; used (non-probability sampling technique) to collect data.
Sample size: The study utilized the formula as indicated in Krejcie & Morgan (1970). S = X2NP (1-P) ÷d2 (N-1) + X2 P (1-P) to determine sample size	Sample was determined based on the principle of data saturation.
Data collection: A questionnaire was used to collect data on the specific objective 2 and 4	An interview guide was used to collect data on the specific objective 1 and 3
The collected data was entered into the SPSS and after cleaning, descriptive analysis and inferential analysis was done to investigate the impact of covid-19 on patient care delivery.	The collected data was analyzed using Nvivo software program for thematic analysis.

3.9 ETHICAL CONSIDERATIONS

Research ethics govern the standards of conduct for scientific researchers, emphasizing the importance of integrity and accountability throughout the research process. Adhering to ethical principles is crucial to protect the dignity, rights, and welfare of research participants, ensuring that their participation is voluntary and informed. This included obtaining informed consent, where participants were provided with comprehensive information about the study's purpose, procedures, risks, and benefits, allowing them to make knowledgeable decisions about their involvement. Additionally, researcher was obligated to maintain confidentiality and

anonymity, safeguarding personal information to prevent any potential harm or stigma. Ethical considerations also extended to the fair treatment of participants, ensuring equitable selection and avoiding exploitation, particularly of vulnerable populations. By following these ethical guidelines, researcher not only uphold the integrity of their work but also contribute to public trust in the research process (WHO, 2023).

Ethical Approval

Ethical clearance to conduct the study was sought from the Mzuzu University Research Ethics Committee (MZUNIREC **REF NO: MZUNIREC/DOR/23/110**), which reviewed the research proposal to ensure that it adhered to ethical standards and protocols designed to protect participants' rights and welfare. After a thorough evaluation, the committee granted approval, confirming that the study met the necessary ethical guidelines. Additionally, permission to carry out the study at Mzuzu Central Hospital was obtained from the hospital's authorities, who evaluated the study's objectives and methods to ensure they aligned with the hospital's policies and priorities. This process involved submitting a detailed research proposal outlining the study's purpose, methodology, and potential impacts on patient care, demonstrating a commitment to ethical research practices and collaboration with healthcare institutions. Such approvals were crucial in ensuring that the study was conducted responsibly and ethically within the healthcare setting.

Informed Consent

The researcher discussed the study in detail with the participants, explaining its purpose, aims, and duration, as well as any potential risks and benefits associated with their involvement. This conversation was designed to ensure that participants fully understood what participation entailed, including the procedures involved and their rights as participants. The researcher emphasized the importance of voluntary participation, reassuring them that they could withdraw at any time without any negative consequences. To formalize their understanding and agreement, participants were asked to sign a consent form, which served as documentation that they had made an informed choice to participate in the study without any coercion or undue influence. This process underscored the ethical commitment to participant autonomy and informed consent, fostering a trusting relationship between the researcher and participants while safeguarding their rights throughout the research process.

Privacy and confidentiality

Privacy and confidentiality were maintained at all levels throughout the study, ensuring that no names were used, thus preventing any participant from being linked to their responses or ideas. Data collected during the research were stored securely, accessible only to the research committee, the supervisor, and the researcher, thereby protecting participants' identities and responses. Strict protocols were

implemented to safeguard the information, including password protection and restricted access to data files. Additionally, it was established that all collected data would be destroyed after one year following the completion of the study, with physical documents incinerated to ensure complete elimination. This approach was designed to uphold the ethical standards of research, prioritizing the dignity and confidentiality of all participants involved in the study.

Beneficence/Non maleficence

The principle of beneficence and non-maleficence, which emphasizes the importance of doing good and avoiding harm to others, was carefully upheld throughout the study. The researcher ensured that ethical protocols and standard operating procedures were strictly followed to prioritize the well-being of participants. By providing clear information about the study's aims, duration, and potential risks and benefits, the researcher acted in the best interests of the participants, fostering an environment of trust and respect. Measures were implemented to protect and defend participants' rights, including obtaining informed consent and maintaining confidentiality. Additionally, the researcher was vigilant in identifying any signs of distress among participants, ready to intervene if necessary to prevent harm. This commitment to ethical conduct ensured that the research not only sought to benefit the participants but also actively worked to safeguard their welfare throughout the entire process.

Autonomy

In this study, the principle of autonomy was upheld by ensuring that participants were given the freedom to make their own decisions regarding their involvement without any influence or coercion from the researcher. Prior to their participation, the researcher thoroughly explained the study's purpose, procedures, and potential risks and benefits, allowing individuals to make informed choices about whether to participate. Participants were provided with a consent form that clearly outlined their rights, including the right to withdraw from the study at any time without facing any consequences. The emphasis on voluntary participation was reinforced through open discussions, where participants were encouraged to ask questions and express any concerns they might have had. This approach ensured that each participant felt empowered and respected in their decision-making process, thereby honoring their autonomy throughout the research.

CHAPTER FOUR

PRESENTATION OF FINDINGS

4.0 Introduction

In this mixed-methods study, the findings were organized to integrate both quantitative as dominant and qualitative data, providing a comprehensive understanding of the impact of Covid-19 on patient care delivery. The quantitative results focused on impact of Covid-19 on patient care delivery. In contrast, the qualitative findings emerged from in-depth interviews with nurses, highlighting themes such as adaptation to Covid-19. By combining these two, the study was able to present both generalizable trends and contextualized personal experiences, thereby enriching the understanding of how the pandemic affected patient care delivery.

4.1 Qualitative Findings

A total of eleven participants with two or more years of work experience were interviewed. There were seven females and four males and their ages ranged from 28 to 40 years. Among the participants, four were registered nurse/midwives, six were nurse/midwife technicians, and one was a registered nurse. Five participants were working in female surgical ward, three in the male surgical ward, and three in the male medical ward. The study aimed to qualitatively explore two objectives: the practices surrounding patient care delivery among nurses during the Covid-19 pandemic and the challenges faced by nurses in delivering care during this crisis. The process of theme development in this study followed a rigorous process, where data collected from the interviews were transcribed verbatim and analyzed using thematic analysis. This method allowed for the identification of patterns, recurring topics, and common experiences related to the practices surrounding patient care delivery among nurses during the Covid-19 pandemic, as well as the challenges they faced. Thematic analysis was used to group related responses into broader categories, which helped in capturing the key aspects of how nurses adapted to the crisis and managed patient care in the face of unprecedented challenges. To ensure a thorough examination of the participants' experiences, the data were read and re-read multiple times. Themes were identified through a systematic approach that focused on extracting significant patterns that reflected the core experiences of the nurses. The emerging themes were drawn directly from the participants' responses, reflecting their personal experiences, perceptions, and insights into the impact of Covid-19 on nursing practice. The selection of key themes including influence on motive of care, adaptation to Covid-19, helping

patient to adapt, the challenges nurses face when delivering patient care, management of challenges and recommendations was driven by the need to illustrate how nurses adapted to the unprecedented circumstances brought on by the Covid-19 pandemic. These themes were specifically chosen to demonstrate their connection to the five elements of the Adaptation Model of Nursing**:** Person, Environment, Health, Nursing, and Adaptation**:** The Adaptation Model provides a framework for understanding how individuals (nurses in this case) respond to changes in their environment and health status by adjusting their behaviors and practices. These two themes reflect how nurses navigated the physical, emotional, and practical challenges of caring for patients during the pandemic, aligning directly with the concepts of adaptation within the model.

4.1.1 Practices surrounding patient care delivery among nurses during the Covid-19 pandemic

Three themes emerged under this which included influence on motive to care, adaptation to Covid-19, and helping patient to adapt.

4.1.1.1 Influence on motive to care

The findings revealed varied motives to care but shared common narratives. The primary motivation identified was the passion and dedication the healthcare professionals had for their patients. Participants highlighted;

"*Passion to care for the patient and the allowance given when working in the isolation treatment center"* (A-40yrs-Female).

Also;

"*The patients were losing life, so I wanted to be there for them and give them comfort"* (B-30yrs-Female).

And;

"*It was the passion to care and save those in need as if they are my relatives and friends"* (G-34yrs-Female).

Additionally, several participants cited financial incentives, such as allowances, as influential factors behind their commitment to patient care. Their responses were;

"*It was allowance (package)"* (H-29yrs-Male).

Also;

"*Allowance and the desire to help others"* (J-35yrs-Male).

And;

"It was because of allowance and to help patients" (K-29yrs-Female).

On the other hand, one participant who did not work in an isolation center but attended to covid-19 patients in the ward, identified the availability of personal protective equipment (PPE) as a motivational factor. The response was;

"*It was because of availability of Personal protective equipment's"* (I-28yrs-Female)

4.1.1.2 Adaptation to Covid 19:

The findings revealed enormous fear expression among the participants. This was expressed by participants who acknowledged the initial difficulty of caring for patients due to the fearsome nature of the pandemic but noted that with time, the process became more manageable. One participant cited trust in God and adherence to Covid-19 guidelines as their adaptation strategy, highlighting the importance of both faith and following established protocols. Similarly, others mentioned that witnessing patient recoveries instilled hope and contributed to their adaptation;

"*well, it was difficult, because of people dying, it was fearsome to continue caring for patients but after some time it was fine"* (F-29yrs-Female).

Also;

"*At first it was difficult but by trusting in God and adhering to covid-19 guidelines"* (G-29yrs-Male).

And;

"*Initially it not easy, but seeing patients recover made me to have hope and by following infection prevention measures and covid-19 protocol and guidelines"* (K-29yrs-Female).

Many participants, initially expressed the difficulty of adapting to the challenges posed by the pandemic, such as fear. However, over time, there was a gradual adjustment and acceptance of the situation.

One participant shared a unique perspective, indicating a shift in adaptation from initial fear to acceptance after recovering from Covid-19. During the interview the participant said:

> "*At first it was not easy because of fear, then when I recovered after being diagnosed with covid-19 I took it as any other condition"* (B-30yrs-Female).

It was cited that after recovering from Covid-19, they began viewing the condition as they would view any other, demonstrating a resilient mindset and adaptability to the evolving situation.

4.1.1.3 Helping Patients Adapt

Participants described addressing patient anxiety by providing information about Covid-19, explaining recovery stories, and encouraging patients to adhere to treatment procedures. The participants recognized the importance of instilling confidence and hope in patients;

> ***"****Most patients had anxiety about the new disease and by giving them more information about covid-19 and explaining to them about those who were sick and were discharged gave them confidence and hope. And also encouraging them to obey all treatment procedures"* (F-29yrs-Female).

The participants views on helping patients adapt to Covid-19 during their practices revealed a patient-centered approach, emphasizing communication, education, and psychological support.

Similarly, other participants emphasized counseling patients about their conditions, educating them on COVID-19 signs and symptoms, and advising on the importance of adhering to protective measures;

> "C*ounselling patients about their condition"* (G-29yrs-Male).

The participant's approach involved both informational and emotional support, illustrating a holistic strategy to help patients adapt to the challenges posed by the pandemic.

In contrast, one participant, who did not work in an isolation center, focused on providing counseling to relieve patient anxiety. Additionally, they highlighted the significance of offering

education to patients, reinforcing preventive measures, and dispelling myths spread by the media;

"C*ounselling patients about their condition to relieve anxiety and giving education to patients"* (I-28yrs-Female).

Participant Mzuzu Central Hospital initiatives (MCHI's) responses reflected a proactive effort to empower patients with knowledge and dispel misconceptions.

4.1.2 Challenges encountered by nurses while delivering patient care during the Covid-19 pandemic

Three themes emerged under this objective which included; the challenges nurses face when delivering patient care, management of challenges and recommendations.

4.1.2.1 Patient Care Delivery challenges

The findings have provided insights into the many challenges participants encountered while delivering patient care during the Covid-19 pandemic. These challenges included, resource limitations, negative society reactions, environmental factors, diagnostic issues, and the overall impact on healthcare professionals.

A prominent theme in participants' responses was the shortage of critical resources. This included lack of oxygen concentrators, personal protective equipment, and other essential supplies. This is highlighted as below;

"*Shortage of resources like oxygen concentrators and gas cylinders"* (B-30yrs-Female).

Also;

"*Lack of resources, most things were not available"* (F-29yrs-Female).

And;

"Resourced were limited for example lack of resources like oxygen, personal protective equipment's among others" (H-29yrs-Male).

Another participant added;

"*There was shortage of staff and that staff became exhausted because of working extra hours"* (K-29yrs-Female).

In highlighting these shortages, participants emphasized the negative effects on patient care and the added stress it placed on healthcare workers.

Several participants shared experiences of discrimination and negative reactions from the community. Some participant faced isolation from the community, physical assaults, and discrimination.

"W*e were isolated from the community and we were not allowed to move and sometimes we were beaten as well by community members"* (B-30yrs-Female).

And;

"As nurses we were segregated not to come near to the community and were denied access to public transport and at some point, we could not wear uniform" (I-28yrs Female).

Furthermore, one participant mentioned that patients and guardians were denying the existence of Covid-19 during the first wave, accusing healthcare workers of intending to harm them;

"*At first during first wave patients and guardians were not accepting that Covid-19 was real. They were saying they don't have Covid-19 and nurses want to kill them"*

(F-29yrs-Female).

All these highlighted reactions added emotional stress to an already challenging situation.

During the interview, participants highlighted the challenge of limited space, which compounded the difficulties they faced in providing effective care. The inability to maintain proper cleaning due to the constraints of overcrowded spaces led to dust accumulation, further exacerbating the environmental challenges. This not only created an uncomfortable and potentially unsafe environment for both patients and healthcare workers but also hindered efforts to maintain necessary hygiene and infection control standards.

"*Personal protective equipment was available, food was good, and sleeping environment was good, however, the space was small to care for patients"* (K-29yrs-Female).

Environmental challenges were also brought to light. Participants noted that, despite having PPE and adequate food, the limited space in the treatment center posed challenges to effective patient care.

The issue of missed diagnoses and inadequate time for patient care emerged as significant challenges. Participants spoke about patients being misdiagnosed in screening areas;

"As nurses we came in contact with the patients in the ward who were missed diagnosis and only to realize that the patient had covid-19" (B-30yrs-Female and E-31yrs-Male).

Additionally, Participants highlighted the difficulty of documenting care under time constraints;

"*Documentation was also a challenge because we couldn't carry papers to avoid contaminating them with virus. Also walking in phases of 2-4 hours was not enough to provide comprehensive care. sometimes it was difficult to monitor patient accordingly due to shortage of staff and limited time"* (E-31yrs-Male).

The points raised indicated potential exposure for nurses to Covid-19 and risk of incomplete data collection which could hinder effective documentation.

The findings also revealed communication challenges, the participants stated that there were communication challenges particularly in providing results to patients after testing positive and phone connectivity problems;

"*Communication was poor to give results to patients after testing positive. Some patients were sent home to wait for results and using phones to communicate to them was difficult because phones were not connecting. Lack of information to the community about Covid-19, as such it was hard to convince patients and guardian that covid-19 was real"* (D-34yrs-Female).

According to one participant, some patients were sent home to wait for results, and the use of phones for communication was hindered by connectivity issues. This added layer of difficulty highlighted the need for improvements in result communication strategies to enhance patient care delivery.

During the interview, some participants raised the challenge of finding individuals unwilling to work, highlighting the broader issue of human resource scarcity;

"Human resource was a challenge due to shortage of staff and few people were willing to work and attend to covid-19 patients" (H-29yrs-Male).

A noteworthy addition to the challenges faced was the shortage of staff, compounded by a reluctance of individuals to attend to Covid-19 patients.

Fear, stress, and the lack of compensation for healthcare workers, even when diagnosed with Covid-19, were significant concerns;

> "*As nurses we were infected, had fears and stress because of covid-19", We were not compensated and if even when diagnosed with covid-19, we were asked to report for work especially during third wave.".* "*Guardians were saying we had the intention of killing their relatives"* (K-29yrs-Female).

The emotional toll on healthcare workers, especially during the third wave, where reporting to work even with a diagnosis was required, showcased the immense strain on the workers.

4.1.2.2 Management of challenges during Covid-19 Patient Care Delivery

The findings have revealed Participants different strategies and actions participants took to address the challenges encountered while delivering patient care during the Covid-19 pandemic. These responses reflected the adaptability, resilience, and collaborative efforts of healthcare workers in managing the complex issues associated with the pandemic.

Collaborative efforts emerged as a recurring theme in the participants' responses. Many participants highlighted the importance of working as a team to support patients. Participants specifically mentioned the coordination of tasks among healthcare workers to ensure comprehensive patient care. Two participants indicated;

> **"***By working as, a team and giving each other time to care for the patient. for example, nurses will do bed bath and feeding then after doctors will come to see the patients progress"* (B-30yrs-Female).

And;

> "*We continued to work as team to support patients***"** (K-29yrs-Female).

This collaborative approach was not only crucial in addressing resource shortages but also in managing the emotional and physical challenges associated with the pandemic.

Several participants took proactive measures to address resource shortages. One mentioned the active pursuit of resources, including personal protective equipment, medications, and gloves.

"*We had to look for resources and have positive attitude by using available resources to help patients"* (F-29yrs-Female).

This resource mobilization was a practical response to the challenges posed by insufficient supplies, reflecting a solution-oriented approach to enhance patient care delivery.

Participants mentioned using history on admission, physical examination, and progress of the patient to evaluate care. One participant, described the allocation of specific beds for patients exhibiting signs and symptoms of Covid-19, illustrating a systematic approach to patient management within limited resources. This is shown below;

> "*Used history on admission, physical examination and progress of the patient to evaluate care. double gloving so that you can remove the other pair and use the other for documenting. Asking a friend to be documenting on your behalf"* (H-29yrs-Male).

And;

> ***"****Patients with signs and symptoms of covid-19 were given the back bay beds"*
>
> (I-28yrs-Female).

In response to managing challenges related to patient care, participants employed strategies such as patient segregation based on symptoms and continuous monitoring.

Acknowledging the shortage of staff and the exhaustion experienced by healthcare workers, one highlighted the importance of ongoing training;

> "Training *about covid-19 should continue so that people are updated about covid-19 protocol and guide lines"* (H-29yrs-Male).

Training sessions were seen as a means to equip healthcare workers with the necessary skills, ensuring effective patient care despite the challenges posed by staff limitations.

In this study, some participants, emphasized the significance of communication with patients and their families, helping them understand the nature of the disease and fostering cooperation;

> "*During first wave patients could not understand about the new disease, but after explaining to them and guardian they understood"* (B-30yrs-Female).

Effective communication played a crucial role in managing challenges, particularly in situations where healthcare workers were isolated or faced discrimination.

Documentation also emerged as a practical strategy;

> *"Introduced to write on the papers and could paste it on the wall especially vitals sign and document later in the files"* (E-31yrs-Male).

Similarly, one participant noted the importance of documentation to keep patients record as highlighted below;

> *"Used history on admission, physical examination and progress of the patient to evaluate care. double gloving so that you can remove the other pair and use the other for documenting. Asking a friend to be documenting on your behalf"* (H-29yrs-Male).

This adaptive approach ensured that essential information about patient care was recorded, even in situations where time and resources were constrained.

Participants highlighted the provision of psychological support to patients. This involved counseling, education, and encouragement to alleviate anxiety and fear associated with COVID-19. One indicated;

> "*by giving them information about Covid-19 and giving them psychological support"*
>
> (A-40yrs-Female).

Addressing the psychological impact of the pandemic on both healthcare workers and patients was a key aspect of challenge management.

4.1.2.2 Recommendations

Participants provided a range of recommendations aimed at improving the healthcare system's response to future pandemics, particularly Covid-19. These recommendations focused on ensuring the availability of essential resources, financial support for healthcare workers, infrastructure improvements, and the need for continuous training and community engagement. The participants emphasized the importance of maintaining sufficient stock of resources to address the demands of patient care effectively. The respondents said;

> ***"****Equipment's should be readily available"* (A-40yrs-Female).

Also;

"*Resources like PPEs, medications, gloves should be readily available"*

(F-29yrs-Female).

And;

"*To be ready in terms of resources, building infrastructures for isolation and all resources needed should be readily available"* (H-29yrs-Male).

Another added;

"*There should be enough equipment like oxygen cylinders should be readily available"*

(K-29yrs-Female).

A consistent theme across participants' recommendations was the urgent need for an adequate supply of essential resources. This included ensuring the ready availability of equipment such as oxygen cylinders and personal protective equipment's.

Participants emphasized the significance of consistent allowances for healthcare workers. The financial aspect was deemed crucial, with Participants highlighting the fluctuation in allowances during different waves of the pandemic. Participants said;

"*Covid-19 allowance should be constant (fixed amount). For example, during first wave allowance was high and then during second and third wave allowance decreased"*

(A-40yrs-Female).

And;

"Allowance to be maintained and not changing but should be constant" (K-29yrs-Female).

There is need for constant and reliable allowance aimed to motivate nurses and ensure financial stability, especially during challenging times.

As advocated by Participants, it was seen as essential for creating a conducive environment for patient care. This includes having enough space, monitors for each bed, and facilities designed to handle the specific challenges posed by infectious diseases;

"To be ready in terms of resources, building infrastructures for isolation and all resources needed should be readily available" (H-29yrs-Male).

Another participant noted the need to build infrastructures for creating a conducive environment;

"*The government and the hospital management should reserve funding for epidemics and construct in fractures ready for epidemics and not disturbing other essential services to cater for other disease"* (B-30yrs-Female).

Several participants suggested improvements to healthcare infrastructure as a key recommendation. Constructing dedicated facilities for managing epidemics.

The participants emphasized the crucial role of the government in addressing and preventing epidemics by providing rich information;

"*The government after knowing or discovering the new epidemic should be the first to information and not the media which sometimes spreads rumors"* (B-30yrs-Female).

Participants recommended ongoing training programs to keep healthcare workers updated on Covid-19 protocols and guidelines. This suggestion underscores the importance of investing in the professional development of healthcare workers to ensure a well-prepared and knowledgeable workforce.

"*Trainings about covid-19 should continue so that people are updated about covid-19 protocol and guide lines"* (H-29yrs-Male).

During the interview, the need for continuous training and support for healthcare staff was highlighted.

Several participants stressed the importance of community sensitization. Recommendations included raising awareness about Covid-19, dispelling myths, and educating the public on preventive measures. This aligns with the broader goal of fostering understanding and cooperation between healthcare workers and the community.

The significance of ongoing vaccination campaigns was emphasized. This was shown during the interview as evidenced by the respondent saying:

"*Covid-19 vaccination should continue as some have not vaccinated"* (K-29yrs-Female).

This recommendation underlines the importance of maintaining and intensifying efforts to vaccinate populations, ensuring a higher level of immunity and potentially reducing the severity of future outbreaks.

The qualitative findings highlight the multifaceted experiences of nurses during the Covid-19 pandemic, focusing on their motivations, adaptation strategies, and challenges in patient care. Nurses were primarily motivated by a deep passion for patient care, a sense of duty, and financial incentives such as allowances, although the availability of personal protective equipment (PPE) also played a role. Despite initial fear, many adapted by relying on faith, adherence to safety protocols, and witnessing patient recoveries, with some demonstrating resilience after personal recovery from Covid-19. Helping patients adapt involved providing emotional support, education, and counseling to alleviate anxiety. The challenges nurses faced included resource shortages, societal stigma, misdiagnoses, limited space, and communication difficulties. Discrimination and the emotional toll of working under high stress further exacerbated these challenges. In managing these obstacles, nurses emphasized teamwork, resource mobilization, patient segregation, and ongoing training as critical strategies. They recommended improvements in healthcare infrastructure, consistent financial support for healthcare workers, and continuous community education to better prepare for future health crises. Additionally, the importance of maintaining vaccination efforts and updating healthcare staff on protocols was highlighted as essential for improving care and ensuring the safety of both patients and healthcare workers.

4.2 Quantitative Results

The section presents the perspectives of nurses regarding the pandemic’s effect on healthcare delivery. The study aimed to investigate nurses' perceptions of the impact of Covid-19 on patient care delivery. Specifically, it focused on assessing how the pandemic affected the provision of care by nurses, with a quantitative analysis based on the responses of 208 nurses.The variables in this analysis reflect different aspects of healthcare access and delivery during the Covid-19 pandemic.The dependent variables were viewed through the lens of how nurses perceived changes in care delivery such as disruptions in patient care delivery brought on by the pandemic.The analysis used short forms of variable names on some variables and their full meaning are described below;

ReScarcity refers to the lack of essential healthcare resources, while *SerCompromised* and *PraCompromised* indicate whether services or clinical practices were negatively affected. *VisitDisrupted* captures disruptions to medical appointments, and *ShiftPriority* refers to changes in healthcare focus due to the pandemic. *CareCompromised* assesses if the overall quality of care was impacted. Other variables include *Exhaustion* (emotional or physical fatigue, especially among healthcare workers), *FearInfection* (fear of contracting the virus), *LackInformation* (inadequate access to Covid-related information), and *FearSeekingCare* (avoidance of healthcare due to infection fears). Additionally, *ContCovid-19* notes if individuals contracted Covid-19, while *Covid-19AffCare* captures whether care was affected by the pandemic. Vaccine-related variables include *Covid-19VaccineAvailability*, *VaccineAffectscare,* and *Covid-19Vaccinated*, which address availability, perceived impact on care, change in general patient care and vaccination status, respectively.

4.2.1 Demographic Characteristics of Participants

The demographic characteristics of the 208 nursing participants are summarized below, providing insights on age, gender, professional qualifications, work experience and department distribution. These characteristics offer a broader context for understanding the impact of Covid-19 on the nursing workforce and the challenges they faced during the pandemic.

4.2.1.1 Gender: The sample consisted of 38.8%, (n = 81) male and 61.2%, (n = 127) nurses, which reflects the typical gender distribution in the nursing profession, where women predominantly occupy clinical care roles.

4.2.1.2 Age: The mean age of respondents was 32.72 years (SD = 5.51), range 20-50 with the largest age group being 30-39 years (36.06%). Nurses aged 40-49 years made up 26.44% of the sample, while those over 50 represented 13.94%. Nurses aged 20-29 comprised 23.56%, indicating a mix of young and mid-career professionals.

4.2.1.3 Professional Qualification: The majority of respondents n = 123 (58.9%) held a college diploma in nursing or midwifery. A smaller proportion, n = 65 (31.1%) had a nursing degree, while a few respondents n = 20 (10%) had other qualifications.

4.2.1.4 Work Experience: The experience ranged from 2-23 and the average work experience among respondents was 7 years (SD = 4.8).

4.2.1.5 Department Distribution: Nurses were distributed across various departments, with the Intensive Care Unit (ICU) and Emergency Department representing the largest proportions, 24.52% and 14.42% respectively.

Below is a summary of demographic characteristics and care delivery.

4.2.1.6 Table 3: Demographic Characteristics of Participants and patient care delivery

Variable	Category	Frequency(%)	χ^2	*p*
Gender				
	Male	81(38.8)	1.5731	0.210
	Female	127(61.2)		
Age Group				
	20-29 Years	49(23.56)	38.6026	0.030*
	30-39 Years	75(36.06)		
	40-49 Years	55(26.44)		
	50 + Years	29(13.94)		
Qualification				
	Diploma	123(58.9)	0.4597	0.928
	Degree	65(31,9)		
	Other	20(10.0)		
Experience				
	< 5 years	40(19.2)	2.6030	0.147
	5-10 years	85(40.9)		
	11+ years	83(39.9)		
Department				
	ICU	30(14.4)	5.5381	0.699
	Emergency	24(11.5)		
	Medical	51(24.4)		
	Surgical	28(13.9)		
	Other	75(36.1)		

***: p<0.05.**

4.2.2 Nurses Perception of the Impact of Covid-19 on Patient Care

The impact of Covid-19 pandemic had a profound effect on patient care was investigated. A significant majority of the nurses surveyed reported that resource scarcity service disruption, compromised clinical practices, changes in hospital visitation patterns, shifts in care priorities, and changes in community health-seeking behavior were all prominent challenges during the pandemic.

ReScarcity (Resource Scarcity): 76.1% (n = 158) of respondents perceived resource scarcity during Covid-19. The association is **statistically significant** ($\chi^2 = 7.9184$, $p = 0.005$), suggesting that resource scarcity was meaningfully perceived as an impact.

SerCompromised (Service Compromised): 80.77% (n = 168) reported services were compromised. Statistically significant ($\chi^2 = 6.7442$, $p = 0.009$), showing strong concern about service quality during the pandemic.

PraCompromised (Practice Compromised): 72.12% (n = 150) indicated clinical practice was compromised. Highly significant ($\chi^2 = 12.2682$, $p = 0.000$), pointing to major disruption in healthcare practices.

VisitDisrupted (Patient Visits Disrupted): 80.77% (n = 168) believed patient visits were disrupted. Highly significant ($\chi^2 = 4.3115$, $p = 0.038$), reflecting clear disruption in routine patient care.

ShiftPriority (Shift in Care Priorities): 73.56% (n = 153) reported a shift in care priorities. Very highly significant ($\chi^2 = 31.2321$, $p = 0.000$), indicating a widespread perceived shift in healthcare delivery focus.

CareCompromised (Overall Patient Care Compromised): 76.44% (n = 159) felt overall care was compromised. Highly significant ($\chi^2 = 12.2682$, $p = 0.000$), showing a general perception of reduced care quality.

4.2.2.1 Table 4: Perception of impact of Covid-19 on Patient Care Delivery

Variable	Category	Frequency(%)	χ^2	*p*
ReScarcity				
	Yes	158(76.1)	7.9184	0.005*
	No	50(23.9)		
SerCompromised				
	Yes	168(80.77)	6.7442	0.009*
	No	40(19.23)		
PraCompromised				
	Yes	150(72.12)	12.2682	0.000*
	No	58(27.88)		
VisitDisrupted				
	Yes	168(80.77)	4.3115	0.038*
	No	40(19.23)		
ShiftPriority				
	Yes	153(73.56)	31.2321	0.000*
	No	55(26.44)		
CareCompromised				
	Yes	159(76.44)	12.2682	0.000*
	No	49(23.56)		

***: p<0.05.**

4.2.2.2 Summary

The nurses surveyed consistently reported significant disruptions in patient care across various domains, most notably in resource availability, service provision, clinical practices, and health-seeking behaviors. This highlights the widespread nature of the challenges faced by healthcare workers during the Covid-19 pandemic.

4.2.3 Effects of Covid-19 on Patient Care Delivery

The Covid-19 pandemic had a significant impact on healthcare delivery, not only on the physical aspects of patient care but also on the mental and emotional well-being of healthcare professionals. Nurses, experienced exhaustion, fear, resource scarcity, and concerns regarding patient care-seeking behaviors.

Exhaustion: 76.0% (n = 158) of respondents reported feeling exhausted. This association is **highly significant** ($\chi^2 = 15.1622$, $p = 0.000$), suggesting that exhaustion was a common and significant effect during Covid-19.

Fear of Infection: 83.3% (n = 173) feared getting infected. Statistically significant ($\chi^2 = 7.6184$, $p = 0.006$), indicating widespread fear among healthcare workers or patients.

Resource Scarcity: 76.44% (n = 159) perceived resource shortages. Highly significant ($\chi^2 = 23.41$, $p = 0.000$), reinforcing earlier findings that resource limitations were a major issue.

Lack of Information: 60.1% (n = 125) felt there was a lack of information. Not statistically significant ($\chi^2 = 1.71$, $p = 0.191$), implying this was a less universally perceived problem.

Fear of Seeking Care: 87.0% (n = 181) reported patients were afraid to seek care. Despite the high percentage, the association is **not significant** ($\chi^2 = 1.1764$, $p = 0.2778$), possibly due to sample variation.

Contracted Covid-19 (ContCovid-19): 34.13% (n = 71) had contracted the virus. Not statistically significant ($\chi^2 = 1.8200$, $p = 0.177$), showing no strong association with perceived care effects.

Covid-19 Affected Care (Covid-19AffCare): 68.75% (n = 142) believed Covid-19 affected the care provided. Statistically significant ($\chi^2 = 29.26$, $p = 0.002$), underlining that many saw a direct negative impact on care delivery.

Vaccine Availability: 73.1% (n = 152) acknowledged vaccine availability. Significant ($\chi^2 = 10.7682$, $p = 0.001$), suggesting it was seen as a positive factor in care support.

Covid-19 Vaccinated: 68.27% (n = 142) were vaccinated. Not statistically significant (χ^2 = 0.0823, p = 0.774), indicating that vaccination status did not strongly correlate with perceived impact on care delivery in this context.

4.2.3.1 Table 5: Descriptive Statistics on the Effects of Covid-19 on Patient Care Delivery

Variable	Category	Frequency(%)	χ^2	*p*
Exhaustion				
	Yes	158(76.0)	15.1622	0.000*
	No	50(24.0)		
FearInfection				
	Yes	173(83.3)	7.6184	0.006*
	No	35(16.7)		
ReScarcity				
	Yes	159(76.44)	23.41	0.000*
	No	49(23.56)		
LackInformation				
	Yes	125(60.1)	1.71	0.191
	No	83(39.9)		
FearSeekingCare				
	Yes	181(87.0)	1.1764	0.2778
	No	27(13.0)		
ContCovid-19				
	Yes	71(34.13)	1.8200	0.177
	No	137(65.87)		
Covid-19AffCare				
	Yes	142(68.75)	29.26	0.002*
	No	66(31.25)		
Covid-19VaccineAvailability				
	Yes	152(73.1)	10.7682	0.001*
	No	56(26.9)		
Covid-19Vaccinated				
	Yes	142(68.27)	0.0823	0.774
	No	66(31.73)		

***: p<0.05.**

4.2.4 Bivariate/Univariate Analysis of the Impact of Covid-19 on Patient Care Delivery

In this section, the impact of variables on patient care delivery during Covid-19 pandemic was investigated.The bivariate analysis reveals several significant predictors of the perceived impact of COVID-19 on patient care delivery. Younger healthcare workers, particularly those aged 20–29 years, were over twice as likely to report disruptions in care compared to those aged 30–39 years (cOR = 2.29, p = 0.035), indicating a heightened sensitivity or vulnerability among younger staff. Emotional and physical exhaustion was also a strong predictor, with exhausted respondents being 2.5 times more likely to perceive compromised care delivery (cOR = 2.537, p = 0.004). Similarly, fear of infection significantly increased the odds of reporting negative impacts (cOR = 2.621, p = 0.019), highlighting the psychological burden faced by healthcare providers. Resource scarcity emerged as the strongest factor, with nearly four times higher odds of perceived care disruption (cOR = 3.879, p = 0.0005), underscoring the critical role of adequate supplies and support in maintaining care standards. Additionally, the availability of COVID-19 vaccines was significantly associated with perceived impact (cOR = 2.597, p = 0.002), possibly reflecting the operational changes and expectations around vaccination during the pandemic. Overall, the findings point to a complex interplay of emotional strain, systemic limitations, and demographic factors influencing how care delivery was experienced during the crisis.

4.2.4.1 Table 6: Impact on care delivery: Bivariate/Univariate Analysis

Variable	Category	Frequency(%)	Crude Odds Ratio(cOR)	(95%CI)	*p*
Age Group					
	30-39 Years (ref)	75(36.6)	1	-	-
	20-29 Years	49(23.56)	2.29	1.06-4.96	0.035*
	40-49 Years	55(26.44)	1.3	0.44-3.83	0.636
	50 + Years	29(13.94)	0	0	0
Exhaustion					
	Yes	158(76.0)	2.537	1.33-4.84	0.004*
	No	50(24.0)			
FearInfection			2.621	1.13-6.09	0.019*
	Yes	173(83.3)			
	No	35(16.7)			
ReScarcity					
	Yes	159(76.44)	3.879	1.84-4.21	0.0005*
	No	49(23.56)			
Covid-19VaccineAvailability					
	Yes	143(68.75)	2.597	1.54-4.42	0.002*
	No	65(31.25)			

***: p<0.05.**

To control for potential confounding variables and to better understand the independent effect of each factor on patient care delivery during the COVID-19 pandemic, a multivariate logistic regression analysis was conducted.

The multivariate analysis identified four key factors that independently influenced the perceived impact of COVID-19 on patient care delivery. Exhaustion remained a significant predictor, with respondents experiencing fatigue being nearly twice as likely to report disruptions in care (aOR = 1.984, p = 0.014), underscoring the role of burnout in shaping healthcare experiences during the pandemic. Fear of infection also had a notable impact (aOR = 1.778, p = 0.045), highlighting how concerns over personal safety contributed to perceived challenges in providing effective care. Resource scarcity was another strong factor, with those reporting shortages having more than twice the odds of perceiving compromised care delivery (aOR = 2.349, p = 0.004). Additionally, the availability of COVID-19 vaccines was significantly associated with perceived impacts (aOR = 2.6, p = 0.002), possibly due to operational changes and expectations related to vaccination rollout. Together, these findings suggest that both emotional strain and systemic issues independently affected how care delivery was experienced during the pandemic.

4.2.4.2 Table 7: Impact on care delivery: Multivariate Analysis

Variable	Category	Frequency(%)	Adjusted Odds Ratio(aOR)	(95%CI)	*p*
Exhaustion					
	Yes	158(76.0)	1.984	1.16-3.39	0.014*
	No	50(24.0)			
FearInfection					
	Yes	173(83.3)	1.778	1.01-3.13	0.045*
	No	35(16.7)			
ReScarcity					
	Yes	159(76.44)	2.349	1.30-4.23	0.004*
	No	49(23.56)			
Covid-19 vaccine availability					
	Yes	143(68.75)	2.6	1.54-4.42	0.002*
	No	65(31.25)			

***: p<0.05.**

CHAPTER FIVE

DISCUSSION, CONCLUSION AND RECOMMENDATIONS

5.0 Introduction

This section integrates both quantitative and qualitative discussions, focusing on the factors that significantly impacted patient care delivery during the Covid-19 pandemic. The quantitative discussion investigated factors such as exhaustion and burnout, fear of infection, resource scarcity, working environment, contraction of Covid-19, lack of information, and patients' reluctance to seek medical care. These factors were assessed through bivariate/univariate analysis, followed by multivariate analysis to adjust for potential confounding. Understanding these variables is essential for designing interventions to improve healthcare quality, particularly during public health crises like the Covid-19 pandemic. In addition to the quantitative analysis, the qualitative discussion evaluates the impact of the pandemic on care delivery from the perspective of nurses, examining their practices and coping strategies within the framework of the Adaptation Model.

5.1 Quantitative Discussion

A significant proportion of nurses (76%, n =158) reported experiencing exhaustion, which they believed compromised the quality of care they were able to deliver. The Chi-Square Test analysis (χ^2 = 15.16, p = 0.000) confirmed that exhaustion significantly influenced care delivery. Both univariate and multivariate models demonstrated a robust association, with the crude odds ratio (cOR) of 2.5 (95% CI: 1.3–4.8, p = 0.004) and the adjusted odds ratio (aOR) of 1.9 (95% CI: 1.2–3.4, p = 0.014), respectively. This finding aligns with the study by Arshid, Mumtaz, & Nazir (2020), which highlighted the psychological toll on healthcare workers during the Covid-19 pandemic, including symptoms of burnout, anxiety, and post-traumatic stress disorder (PTSD). The overwhelming workload, extended working hours, and emotional strain contributed significantly to the exhaustion reported by nurses in this study.

The data also correlate with global trends, where the pandemic led to significant mental health challenges for healthcare workers. For instance, Anadolu Agency (2021) reported that over 12,454 healthcare workers in the Asia-Pacific region were directly impacted by Covid-19. This

supports the notion that the psychological stress on healthcare workers during the pandemic led to reduced quality of care, as exhausted staff struggled to meet the demands of their roles.

The study found that, majority (83.3%, n= 173) feared contracting Covid-19, a factor that significantly hindered optimal care delivery. The chi-square value of 7.6 (p = 0.006) reinforced the association between fear and compromised care. Univariate and multivariate models also confirmed that fear of infection was a major barrier, with a crude odds ratio (cOR) of 2.6 (95% CI: 1.1–6.1, p = 0.019) and an adjusted odds ratio (aOR) of 1.78 (95% CI: 1.01–3.0, p = 0.045). These findings are consistent with those of Alkhaldi, Aljiraiban, and Alshaikh (2021), who found that fear of infection was widespread among healthcare workers in Saudi Arabia, with 74% of participants expressing concern about contracting the virus.

Further studies revealed elevated levels of depression, anxiety, and distress among healthcare workers directly caring for Covid-19 patients, which was linked to fear of infection and concerns about personal safety (Peter et al.,2020). In this study, fear of infection also mirrored findings from previous research, showing how it negatively impacted healthcare workers' ability to deliver effective care. The fear of transmission to loved ones and the risk to personal health created a psychological barrier to providing care, which is consistent with the Adaptation Model's emphasis on the interplay between stressors and coping mechanisms.

A major concern for majority, (76.44% n =159) of nurses in this study was the scarcity of resources, including personal protective equipment (PPE) and essential medical supplies. This factor significantly impacted care delivery, as evidenced by a Chi-Square Test value of 23.4 (p = 0.000). The univariate and multivariate models confirmed that resource scarcity was a critical determinant of care quality, with a crude odds ratio (cOR) of 3.8 (95% CI: 1.8–8.2, p = 0.0005) and an adjusted odds ratio (aOR) of 2.3 (95% CI: 1.3–4.2, p = 0.004). These findings are consistent with the research by Choon-Looi Bong et al. (2020), who reported similar shortages of hospital beds, healthcare staff, and essential medical supplies during the pandemic. The shortage of PPE and medical resources not only affected healthcare workers' ability to provide care but also exacerbated anxiety and fear among both patients and healthcare staff. The lack of sufficient resources led to compromised infection control practices, making it harder for nurses to deliver optimal care, particularly in high-risk settings like the ICU and emergency departments.

A considerable proportion of participant (60%, n = 125) reported insufficient information to manage Covid-19 patients, particularly during the early phases of the pandemic. Although the chi-square test showed a value of 1.7 (p = 0.191), suggesting no significant effect on care delivery. This finding is aligned with the research by Banda et al. (2021), which revealed knowledge gaps in Covid-19 among healthcare workers, especially in resource-limited settings. Lack of clear guidelines, evolving treatment protocols, and misinformation contributed to a sense of confusion and insecurity, further impeding the delivery of quality care.

The study revealed a good proportion (87%, n = 181) of participants reported patients being reluctant to seek medical care. This was a critical factor in patient care delivery. However, a Chi-Square Test value of 1.18 (p = 0.2778), indicating no direct association between patient reluctance to seek care and compromised care. These findings reflect the broader trend during the pandemic where patients avoided hospitals due to fear of infection, exacerbating delays in the treatment of non-Covid-19 health issues. This is consistent with the findings that highlighted that healthcare workers faced challenges in addressing patients' concerns about Covid-19 exposure during hospital visits(Peter et al.,2020).

The study revealed age 20-29, (23.56% n =49), 30-39 (36.6%n =75), 40-49 (26.44%n =55) and 50 above, 29 (13.94% n =29) was statistically significant in Chi-Square test with a value of 38.6026 (p = 0.030). In univariate/bivariate model, participants aged 20–29 had significantly higher odds (OR = 2.29, 95% CI: 1.06–4.96) of reporting change in quality of care compared to those aged 30–39. No significant differences were observed for the 40–49 and 50+ age groups.

The availability of Covid-19 vaccines played a significant role in patient care delivery where (53.37%. n=111) of participants reported that the availability of vaccines influenced care delivery. The Chi-Square value of 10.76 (p = 0.001) highlighted the association between vaccination availability and improved care outcomes. The univariate analysis confirmed that the availability of vaccines had a significant impact on care delivery, with a crude odds ratio (cOR) of 2.6 (95% CI: 1.54–4.42, p = 0.002). In the multivariate model, the association remained significant with aOR of 2.60 (95% CI: 1.54–4.42, p = 0.002).

Approximately, (34.13%, n = 71) reported contracting Covid-19 during the pandemic, which led to significant personal health repercussions and disrupted care delivery. Nurses who contracted Covid-19 were temporarily isolated, which resulted in staffing gaps and increased

workloads for remaining staff. While the Chi-Square Test ($\chi^2 = 1.8$, $p = 0.18$) did not confirm a sustained association. However, other studies revealed that healthcare workers were at high risk of contracting Covid-19 due to their direct exposure (Arshid et al.,2021).

Several variables in this study did not show a significant association with patient care delivery during the Covid-19 pandemic. These included the department in which nurses worked, their qualifications, and their level of experience. Regardless of whether nurses worked in high-pressure areas like ICUs or in general wards, the challenges they faced appeared to affect care delivery similarly. Similarly, both nurses with a diploma and those with a degree, as well as those with varying years of experience, were impacted by the same factors, indicating that these characteristics did not significantly influence the quality of care provided. Gender also did not play a role in care delivery outcomes, as both male and female nurses faced comparable challenges.

In summary, the results of both bivariate/univariate and multivariate analyses highlight the multifaceted impact of the Covid-19 pandemic on patient care delivery. Factors such as exhaustion, fear of infection and resource scarcity were critical in influencing care delivery during the pandemic. Importantly, resource scarcity emerged as the most significant factor, highlighting an urgent need for policy adjustments and resource allocation to support healthcare workers, improve patient care delivery, and address the psychological and material challenges posed by future pandemics.

5.2 Qualitative Discussion

Findings of this this study shows that, Covid-19 pandemic introduced diverse challenges that directly impacted the way nurses delivered care. Participants provided insights into many challenges they encountered while delivering patient care during the Covid-19 pandemic such as resource limitations fear, exhaustion, negative society reactions, environmental factors, diagnostic issues, and the overall impact on healthcare professionals. This means that the challenges significantly affected caregivers' ability to provide effective care. Other similar studies in Malawi showed that the practice was faced with a number of challenges ranging from limited test kits and centered to stigmatization of Covid-19 suspects. Shortage of staff resulted from more Malawian health care workers being quarantined after exposure to Covid-19 and some died due to Covid-19 infection.

On the other hand, a study on the role of uncertainty in the experiences of nurses during the Covid-19 Pandemic by Nelson et al. (2021), showed that nurses suffered emotional challenges which included stress, anxiety, exhaustion, frustration, guilt, and loneliness. Arshid et al.(2021), indicated that health care workers were at an increased risk of infection and death because of their direct exposure to Covid-19.

In this study, participants expressed the difficulty of adapting to the challenges posed by the pandemic, such as fear, limited resources, and patient anxiety. However, over time, there was a gradual adjustment and acceptance of the situation. For instance, one Participant acknowledged the initial difficulty of caring for patients due to the fearsome nature of the pandemic but noted that with time, the process became more manageable.

Similarly, prior studies indicated that nurses were direct workers in patient care and as a consequence, fear of the new disease, social distancing, lack of protective equipment, workload, high mortality rate, concern for their health status and that of their family members, economic situation, among others, affected nursing care practices.

According to the Adaptation Model of Nursing, individuals must adjust their behavior to respond effectively to environmental changes. The adaptation strategies employed by nurses were central to their ability to provide care during the pandemic. Many nurses reported initially struggling with the fear of caring for Covid-19 patients but gradually adapting through experience, training, and personal recovery from the virus. Nurses used various methods to manage their stress and adapt to the pandemic, including reliance on personal faith, support networks, and adherence to public health guidelines. Witnessing patient recoveries also provided emotional support and helped nurses develop resilience. This adaptive process was essential in helping nurses continue to provide high-quality care despite the uncertain and often dangerous environment.

In this study, the primary motivation identified was the passion and dedication the nurses had to provide care to patients. The passion for patient care suggests a strong personal commitment to the role despite the challenges posed by the pandemic. This indicates that in the current study despite the challenges, nurses were able to provide care in line with adaptation model of nursing which was not mentioned in other studies. According to the Adaptation Model, these motivations represent the "person" component of adaptation, where nurses are influenced by both internal drives (passion and compassion for patients) and external factors (financial

support and resources). These dual factors shaped their ability to persist in their roles and adapt to the pandemic's unique demands.

However, a study conducted by Sarango et al. (2021) and a cross-sectional, mixed method survey study conducted by Wood et al. (2021), raised concern about patient not receiving routine care during the crisis as a consequence of fear of the new disease, social distancing, lack of protective equipment, workload, high mortality rate, concern for their health status and that of their family members, economic situation, among others.

The results of this study indicated that, participants' responses regarding their adaptation to Covid-19 during their practices revealed a multi-layered approach including emotional resilience, adherence to guidelines, and evolving perspectives over time. In addition, one participant cited trust in God and adherence to Covid-19 guidelines as their adaptation strategy, highlighting the importance of both faith and following established protocols. This meant that despite the fact that nurses experienced stress and psychological fatigue, they used different coping strategies to provide care to patients. The approach to patient care during the pandemic was multifaceted, addressing not only the physical aspects of Covid-19 management but also the emotional and psychological well-being of patients. This holistic approach is essential in providing effective care during a public health crisis. This also indicates the utilization of one of aspects as highlighted in adaptation model of nursing.

The strategies used by nurses to manage the challenges of patient care delivery during the pandemic reflected their adaptability and resilience. One of the key management strategies was collaboration among healthcare professionals. Nurses emphasized the importance of working as a team to divide tasks and support each other, which was crucial in mitigating the effects of resource shortages and staff limitations. This collaborative approach, which focused on pooling resources and skills, reflects the "nursing" component of the Adaptation Model, where nurses utilize their collective resources to foster adaptation in both themselves and their patients. Additionally, some nurses proactively sought out resources, such as PPE and medical supplies, to address the gaps in healthcare delivery. Training and education also played a significant role in improving nurses' ability to adapt to the evolving situation, ensuring that they remained equipped to provide high-quality care despite the challenges they faced. Similarly, a prior study by Sehularo et al. (2021) in Malawi, indicated the use of Covid-19 protective measures, avoidance strategy, social support, faith-based practices, psychological support and

management support as some of the strategies used by nurses in coping up with the Covid-19 pandemic during their practice.

In addition to managing their own stress and fears, nurses also played a critical role in helping patients adapt to the Covid-19 pandemic. Given the anxiety surrounding the disease, many nurses took on the additional responsibility of educating patients about the virus, explaining recovery stories, and providing emotional support. This patient-centered approach aligned with the "person" and "health" components of Roy's Adaptation Model, emphasizing the nurse's role in helping patients understand and cope with their changing health status. Nurses actively counseled patients, provided information on treatment procedures, and helped them adhere to necessary protocols to prevent the spread of the virus. This emotional and informational support helped patients navigate the uncertainties of their condition, enhancing their ability to cope with the psychological and physical challenges posed by Covid-19.

In the face of the many challenges encountered during the pandemic, nurses made several key recommendations to improve the response to future health crises. The most pressing of these recommendations was the need for better resource allocation, including a reliable supply of PPE, medications, and medical equipment. Nurses also highlighted the importance of consistent financial support and allowances to motivate healthcare workers, as fluctuations in compensation during the pandemic added to their stress. Furthermore, participants emphasized the importance of continuous training to keep healthcare workers updated on new protocols and guidelines. This aligns with the Adaptation Model's emphasis on the need for ongoing learning and adaptation to changing circumstances. Improved healthcare infrastructure, particularly the construction of dedicated facilities for epidemic management, was another recommendation, underscoring the need for a more robust healthcare system that can effectively respond to future pandemics.

In summary nurses were at the forefront of this crisis, facing unprecedented challenges while providing critical care to patients. By applying the Adaptation Model of Nursing, it is clear that nurses adapted to these challenges by drawing on their internal motivations, external support systems, and collaborative efforts. Their ability to manage stress, overcome resource shortages, and provide patient-centered care during such a tumultuous time speaks to the adaptability of the nursing profession. However, the lessons learned from this crisis underscore the importance of improved resource allocation, continuous training, and better healthcare infrastructure to ensure that nurses are better prepared to manage future healthcare emergencies.

The findings from both the quantitative and qualitative analyses underscored the critical role of collaboration among healthcare workers in mitigating the challenges faced during the Covid-19 pandemic. Quantitatively, the significant impact of resource scarcity on care delivery, as evidenced by the Chi-square analysis and odds ratios, reflected the struggle of nurses to provide optimal care in the face of limited supplies. Qualitative responses reinforced this by highlighting how nurses actively worked together to manage these shortages, dividing tasks, pooling resources, and supporting each other emotionally and professionally. This collaborative spirit helped alleviate some of the stress related to exhaustion and fear, allowing nurses to persist in their roles. Similar findings were observed in other settings, where teamwork was essential to coping with the strain of high patient volumes and limited resources. For instance, studies in Italy reported that interdisciplinary collaboration, particularly among nurses, physicians, and support staff, was pivotal in maintaining care standards during the early phases of the pandemic (Poggiali et al., 2020 and Chesney et al., 2021). Additionally, the univariate and multivariate models confirmed that fear of infection and the emotional toll it took on healthcare workers was mitigated by supportive workplace environments and strong interpersonal relationships within healthcare teams. These findings resonate with previous research from other countries such as Spain and South Africa, where collective coping strategies and clear communication among team members were highlighted as crucial in managing personal and professional stressors during the pandemic (Lopez et al., 2021 and Mabuza et al., 2021). Nurses collective efforts to adapt to the evolving crisis not only facilitated more effective patient care but also demonstrated the power of teamwork and mutual support in overcoming adversity. The collaborative nature of these strategies fueled by both professional duty and personal motivation further aligned with global findings, emphasizing that collaboration and solidarity were key to navigating the pandemic's challenges across diverse healthcare systems.

5.3 Conclusion

The results from both the quantitative and qualitative strands of this study emphasize the profound impact of the Covid-19 pandemic on healthcare workers and patient care delivery. Quantitatively, exhaustion, fear of infection, and resource scarcity emerged as the most significant factors contributing to compromised care delivery, as confirmed by both bivariate and multivariate analyses. These findings highlighted the critical need for adequate resources and mental health support for nurses. Qualitative data further illuminated the emotional and psychological toll of the pandemic, with nurses describing feelings of fear, exhaustion, and anxiety but also showcasing their resilience and adaptability. The significant finding resource shortages in quantitative analysis and heightened fear of infection among others affected the quality of care that nurses were able to provide. Despite these obstacles, nurses demonstrated remarkable resilience and adaptability, driven by their dedication to patient care. The adaptation model of nursing played a crucial role in shaping their responses, as it emphasizes not only the physical aspects of patient management but also the psychological and emotional dimensions of care.

Participants exhibited a range of coping strategies, including emotional resilience, adherence to established guidelines, and reliance on faith, which facilitated their ability to navigate the uncertainties and stresses associated with the pandemic. This holistic approach to patient care was essential in maintaining a sense of normalcy and hope, both for the nurses and their patients. However, the study also highlighted the need for improved support systems and resource allocation to address the gaps revealed during the crisis.

The study's findings align with the Adaptation Model of Nursing by demonstrating how the five key concepts **Person**, **Environment**, **Health**, **Nursing**, and **Adaptation**, interact during the Covid-19 pandemic. Nurses, as the persons in this context, faced significant challenges such as fear of contracting the virus, contracting the virus, resource shortages, and overwhelming emotional stress, impacting their health and ability to provide care. The environment of limited PPE, societal stigma, and the prioritization of Covid-19 patients over non-Covid care created a stressful atmosphere that compromised both nurse and patient safety. Despite these challenges, nurses adapted by using resilience strategies, such as faith, support networks, and adherence to safety protocols, while their nursing role evolved to prioritize pandemic care. The adaptation process was marked by gradual adjustments to increased

workloads, with some nurses finding hope in patient recoveries. Meanwhile, patients' health suffered as many avoided care, leading to delayed treatments and worsened conditions. These findings underscore the complex interplay between individual, environmental, and health-related factors, highlighting the need for targeted support in future health crises to facilitate effective adaptation by healthcare workers and ensure quality care for patients.

In summary, the challenges faced by nurses during the Covid-19 pandemic illuminate critical areas for future improvement in healthcare delivery. Understanding these experiences is vital for developing targeted interventions that can enhance nurse well-being and enhance patient care in times of crisis. It is imperative that healthcare systems prioritize strategic planning, adequate resources, and a supportive environment, ensuring that healthcare professionals can effectively adapt to and manage future public health emergencies.

5.4 Recommendations

This chapter emphasizes the crucial need for resilient nursing practices that are capable of adapting to crises such as pandemics. The findings highlight that factors like resource scarcity, exhaustion, and fear of infection were not only pervasive challenges but also significant barriers to effective care delivery during the Covid-19 pandemic. These challenges underscore the importance of developing a resilient nursing workforce one that is well-equipped both physically and emotionally to navigate high-pressure situations. Resilience, as identified in the study, is not only about managing the emotional toll of crises but also about having the flexibility and support to adapt care delivery methods when traditional systems are overwhelmed. Training healthcare workers in flexible care models, as well as implementing psychological support programs, are essential components of this resilience-building process.

In education, the study emphasizes the need for nursing curricula must integrate pandemic preparedness, infection control, crisis management, and mental health training to better equip nurses for future emergencies. In addition there is need for continuous professional development and training for healthcare workers, particularly in managing public health emergencies.

In practice, nurses must be well-versed in infection control practices, crisis management, and the psychological aspects of patient care, especially under pressure. Continuous education and timely updates in treatment protocols ensure that healthcare staff remain confident and

prepared, even in the face of uncertainty. The integration of pandemic preparedness into nursing curricula and the inclusion of mental health support training are key steps in this direction, equipping nurses with the knowledge and emotional resilience to handle future crises.

From an infrastructure perspective, participants stressed the importance of improving healthcare facilities to effectively manage pandemics. Constructing dedicated spaces for epidemic management, equipped with sufficient resources like monitors for each bed and adequate PPE, was deemed essential for ensuring that healthcare workers can operate in a safe and efficient environment. In addition, these improvements should extend to the community level, with an emphasis on educating the public about infectious diseases and dispelling misinformation. Creating a cooperative environment between healthcare workers and the broader community will facilitate more effective responses to health emergencies.

Additionally, engaging nurses and other healthcare professionals in policy development and implementation is critical. Their first-hand experience in patient care offers invaluable insights into the systemic challenges faced during pandemics. Policymakers should collaborate closely with frontline workers to address issues such as resource allocation, staffing shortages, and ensuring adequate support mechanisms are in place during future public health crises.

Lastly, this study underscores the need for comprehensive healthcare policies that guarantee adequate PPE supplies, sufficient staffing, and ongoing emotional and psychological support for healthcare workers. Policymakers and governments must also be proactive in disseminating accurate, timely information during outbreaks, ensuring that staff are adequately compensated, and that necessary infrastructure and resources are readily available.

In terms of resilience development, addressing the emotional and physical burdens of healthcare workers is vital. Resource scarcity, exhaustion, and the fear of infection had a profound impact on the ability of nurses to provide optimal care. Building resilience in this context involves not only addressing material shortages but also offering robust emotional and mental health support. Nurses' ability to adapt to the pandemic was often facilitated by a sense of duty and solidarity, yet the burden of fear and burnout remained significant. Resilience, therefore, must be seen as multi-faceted rooted in both structural changes (e.g., infrastructure improvements, resource allocation) and personal support systems (e.g., psychological services,

peer support). Developing a culture of resilience requires ongoing efforts to balance these elements, ensuring that healthcare workers are equipped to face future challenges effectively.

In research, the study emphasize the need to focus on the long-term effects of the pandemic on nurse well-being, especially in terms of burnout and mental health. Additionally, exploring the role of technology in enhancing care delivery resilience could provide valuable insights into how technology can be leveraged to strengthen future healthcare responses.

5.5 Study Limitations

Limitations refer to restrictions or defects that hinder a study and its findings (Oxford Languages, 2022). One of the primary limitation encountered in this study was the timing of data collection, as the Covid-19 pandemic was gradually subsiding at the time of the research. As a result, the respondents were no longer actively engaged in caring for Covid-19 patients, and their responses were based on their retrospective experiences. This reliance on past recollections introduces the possibility of recall bias, where respondents might not accurately remember specific details or events related to their experiences. The passage of time may have led to the distortion or omission of certain elements of their experiences, which could potentially affect the accuracy and depth of the data collected. Additionally, the cross-sectional design of the study presents another limitation. This design captures a snapshot of participants' experiences at a single point in time, making it difficult to assess the evolution of their practices, perceptions, or challenges over the course of the pandemic. The lack of longitudinal data means that the study cannot track how their responses might have changed or adapted in response to the varying phases of the pandemic. Consequently, this limits the ability to draw conclusions about long-term trends or the sustained impact of Covid-19 on nursing practice. A critical aspect of this study is how most independent variables, such as exhaustion, fear of infection, and resource scarcity, were defined and measured. These variables were primarily assessed based on the personal experiences and self-reported responses of the nurses, reflecting their individual perceptions of the challenges faced during the pandemic. For example, exhaustion was defined not just as physical tiredness but also as emotional and mental strain, which nurses self-reported as impacting their ability to deliver quality care. Similarly, resource scarcity was evaluated based on nurses' direct observations and reports of inadequate supplies, such as personal protective equipment (PPE) and medical resources. The dependent variable, which was the quality of care delivery, was similarly defined based on personal assessments of how

well they felt they were able to provide care during the pandemic. Despite these limitations, conducting the study remained essential, as the insights derived from participants' reflections offered valuable lessons and recommendations. These findings could play a crucial role in shaping future strategies for mitigating the impact of pandemics or similar health crises.

5.6 Dissemination

The results were disseminated through a printed thesis, with copies submitted to several key institutions. One copy was provided to the Mzuzu University Library, ensuring that the findings were accessible to the academic community and future researchers. Another copy was submitted to the Nursing and Midwifery Department to inform faculty and students about the study's insights and implications for nursing practice. Additionally, a copy was given to Mzuzu Central Hospital, allowing healthcare practitioners to utilize the findings in improving patient care strategies. To further extend the reach of the research, a manuscript was developed and submitted for publication in a peer-reviewed journal. This step aimed to contribute to the broader discourse on nursing practices during the COVID-19 pandemic and share valuable lessons learned with a wider audience in the healthcare field.

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APPENDIXES

APPENDIX 1: RESEARCH CONSENT

Introduction

I am Vitumbiko Munthali a student at Mzuzu University pursuing master of science in Nursing education/ Clinical teaching. I will be collecting data from Nurses at Mzuzu Central Hospital for two weeks. You have been chosen to take part in this study because you're a nurse working at Mzuzu Central Hospital. Please note that your participation in this study is entirely voluntary. This exercise has nothing to do with your political background or affiliations. However, you are encouraged to participate and provide the needful information. Thank you for your time.

Purpose

The main aim of this study is to investigate the impact of Covid-19 Pandemic on patient care delivery among Nurses at Mzuzu Central Hospital. Thus, I will be grateful if you could spend some time attending to this study.

Type of Research Intervention

This research will not involve any research intervention and shall only need your participation in an individual interview.

Participant selection

You are being invited to take part in this research because you're a nurse working at Mzuzu Central Hospital and eligible to participate this study.

Voluntary Selection

Please note that your participation is entirely voluntary. This exercise has nothing to do with your politics and religious background. However, you are encouraged to participate and provide the needful information.

Ethics and confidentiality

The data collected will be treated confidentially and is purely for academic purposes and the names of the participants will not be used in this study. The data collected will be available to the supervisors and the researcher only. The data will be kept in a lockable cabinet where only the researcher has access to it. You are kindly requested to provide accurate information for your profession practices.

Duration and risks

The duration of the whole study shall be 9 months. However, it is expected to take 1 weeks for those attending to the questionnaires. On the other hand, those that shall be interviewed, once the interview is over then they are done on their part. There are no risks in participating in this inquiry. However, you may benefit from this study in that when the results will be known you will have knowledge on how Covid-19 has impacted on patient care delivery. If you feel that some questions are too personal or if taking them makes you uncomfortable you do not have to answer them. You are also free to withdraw at any point during data collection.

Reimbursements

There is no reward nor any incentive when taking part in the study. However, your participation will be highly appreciated and an acknowledgment of participating in this study will be sent to each participant.

Sharing the Results

The knowledge that shall be obtained from this research shall be shared with the participants and the community before being made widely available to the public. The results shall be published for journal review so that other interested parties may see the results.

Who to contact

This proposal will be reviewed and approved by Mzuzu University Research Ethics Committee(MZUNIREC) which is a committee whose task is to make sure that research participants are protected from harm. If you wish to know more about the committee, contact Mr. Gift Mbwele, Mzuzu University Research Ethics Committee (MZUNIREC)Administrator. Mzuzu University, p/bag 201. Luwinga, Mzuzu 2. Phone 0999404008/0888641486. In addition If you wish to ask questions later or seek clarification, you may contact Dr. N.W.B Chimbatata (Deputy dean of the Faculty of Health Science) at Mzuzu University and is the one supervising this research project (Email, wchimbatata@gmail.com, phone number 0992391134), research co supervisor Dr. T. Phiri (Email, tameerap@yahoo.com, phone number, 0993863790/0885657330) Department of Nursing and Midwifery, P/Bag 201, Mzuzu.

Declaration and certificate of consent

I have been contacted to participate in this study about the impact of Covid-19 on patient care delivery. I have read the above information, and I consent voluntarily to participate in this study by participating in in depth interview or responding to questionnaires

I agree…… I disagree……...

Signature (respondent)…….

Signature (interviewer)…….

APPENDIX 2: RESEARCH QUESTIONNAIRE

*The questionnaire is designed to collect quantitative information on the impact of Covid-19 pandemic among nurses at Mzuzu Central Hospital on the perception of Covid-19 and effects of Covid-19 on nursing care practices. This questionnaire has three sections (**A, B** and **C**). This questionnaire will take approximately **Ten** minutes to complete it.*

SECTION A: DEMOGRAPHIC CHARECTERISTICS

This section intends to collect your demographic information please choose what is applicable to you.

i. What is your gender?

(a) Male (b) Female

ii. What is your age?.....

iii. What is your professional qualification?

(a) Collage diploma in nursing/ midwifery (b) Degree in nursing/midwifery (c) Degree in nursing d) Registered diploma

iv. What is your work experience….. (*please write*)

V. Which department do you work? *Choose all that apply*

a) Intensive Care Unit b) pediatric ward c) maternity ward d) surgical ward

e) other ……. (please *specify*)

SECTION B: PERCEPTION OF COVID-19 ON PATIENT CARE

*This section intends to ask about your perception of Covid-19 and how it has affected your practice. (Please choose **yes or no** to the questions below).*

1. Were resources scarce due to covid-19? a) yes b) No

2. Were there any other services that would otherwise be offered but were not or compromised because of covid-19? a) Yes b) No

3. Were good clinical practices compromised because of covid-19? a) Yes b) No

4. Were good clinical practices enforced because of covid-19? a) Yes b) No

5. Did patient hospital visitation pattern change because of covid-19 that affected care i.e. clients missing scheduled visits? a) Yes b) No

6. Did resources came in due to covid-19? a) Yes b) No

7. Did care givers die due to covid-19? a) Yes b) No

8. Did patients die without dignity due to covid-19? a) Yes b) No

9. Did priority of care shift to covid-19 patients than other diseases? a) Yes b) No

10. Were you motivated to provide patient care during covid-19? a) Yes b) No

11. Were the health care seeking behaviors among the community compromised due to covid-19? a) Yes b) No

12. Was the environment in general conducive to provide care to covid-19 patients? a) Yes b) No

13. Did quality of care of covid-19 patients change due to covid-19? a) Yes b) No **(outcome variable)**

14. Did quality of care of general patients change due to covid-19? a) Yes b) No **(outcome variable of interest)**

SECTION C: EFFECT OF Covid-19 ON NURSING CARING PRACTICES

This section intends to ask you about the effect of Covid-19 on nursing caring practices (Please choose all that apply).

15.Did you become exhausted due to working extra hours and this compromised quality care delivery? a) Yes b) No

16. Were you afraid of contracting the virus and this affected quality care delivery?

a) Yes b) No

17.Did resources became scares due to Covid-19? a) Yes b) No

18.Did you Lack enough information on management of the patient? a) Yes b) No

19.Were Patients afraid to seek medical care and this affected quality care delivery? a) Yes b) No.

20. Did you contract covid-19 and was isolated and this affected care delivery? a) Yes b) No

21. Did contracting or not contracting covid-19 affect the care delivery? a) Yes b) No

22. Did you receive covid-19 vaccine? a) Yes b) No

23. Did receiving or not receiving covid-19 vaccine affect care delivery? a) Yes b) No

END OF RESEARCH QUESTIONNAIRE

APPENDIX 3: INTERVIEW GUIDE

*The interview guide tool is designed to guide the researcher to collect qualitative information on the impact of Covid-19 pandemic among nurses at Mzuzu Central Hospital on challenges of nurses on patient care delivery during Covid-19 pandemic. This tool has two sections (**A** and **B**). This interview will take approximately **Ten to fifteen** minutes to be completed.*

SECTION A: DEMOGRAPHIC CHARACTERISTICS

I. What is your gender?.....

ii. What is your age? …….

iii. What is your professional qualification?.....

vi. Which section of ward do work? ……

SECTION B: PRACTICES DURING Covid-19 ON PATIENT CARE

This section intends to ask about your practice as a nurse during Covid-19 pandemic on patient care

1. Have you ever practiced as a nurse in covid-19 isolation center during the pandemic?

2. As a Care giver working in either general ward or isolation Centre or both was there any influence on your motive to care? (*if any probe more*)

4. As a care giver how did you adapt to Covid-19 during your practice?

5. How did you help patients to adapt to Covid-19 during your practice?

SECTION C: CHALLENGES OF Covid-19 ON PATIENT CARE DELIVERY

This section intends to ask about the challenges nurses meet during patient care delivery and how they addressed them.

6. As a care giver what were some of the challenges that you meet during Covid-19 when delivering care to patients?

7. Can you tell me the environmental challenges that you meet during patient care delivery? (probe more on how conducive was the working environment).

8. What challenges did you encounter when helping patient to adapt to Covid-19?

9. What did you do to manage the challenges?

10. What recommendations can you give to improve patient care?

END OF INTERVIEW. Thank you for your time

Annex A: LETTER OF PERMISSION APPLICATION TO MZUZU CENTRAL HOSPITAL

Vitumbiko Munthali

Mzuzu University

P/bag 201

Luwinga Mzuzu 2

Phone # 0884983407

Email:

vitumbikomunthali100@gmail.com

25th April, 2023.

The Chair Person,

Mzuzu Central Hospital Research and Ethics committee

P.O Box 209

Luwinga, Mzuzu 2.

Dear sir/Madam,

Application for a place to conduct data collection

I am Vitumbiko Munthali a master's student at Mzuzu university. I am doing master of science in nursing education (Clinical teaching) In the department of nursing and midwifery. I would like to apply for a place to conduct data collection of my study titled '**Impact of COVID-19 on patient care delivery among nurses at Mzuzu Central Hospital in, Northern Malawi'**. I would like to collect data between the month of May and June.

Looking forward to hearing from you.

Yours faithfully,

Vitumbiko Munthali.

Telephone: 01320916/878
Fax: 320223/320973/878
Email: mzuzucentraldirector@gmail.com

In reply please quote No. ....

The Hospital Director
Mzuzu Central Hospital
P/Bag 209
Luwinga
Mzuzu 2

8th November, 2023

Vitumbiko Munthali,
Mzuzu University
Private Bag 201,
Luwinga
Mzuzu 2

Cell: 0884983407
Email: vitumbikomunthali100@gmail.com

Dear Vitumbiko Munthali,

PERMISSION TO CONDUCT A RESEARCH STUDY AT MZUZU CENTRAL HOSPITAL

Reference is made to your Letter received on 20th July, 2023 in which you are seeking permission to conduct a research study titled ***"Impact of Covid-19 on Patient Care Delivery among Nurses"*** *at* Mzuzu Central Hospital (MCH). MCH Research Committee has now reviewed your study ethical clearance and I am pleased to inform you that permission has been granted. You can use this letter as evidence of support from an institution (MCH) when seeking ethical clearance from **COMREC/NHSRC/NCST** or any other recognized Institutional Review Board (IRB).

Note: Please take note that MCH policy requires that you pay a financial contribution to the institution which is pegged at 5% of your total research budget before you can start implementing your study at the facility. If the study will be implemented in multiple sites an appropriate amount shall be determined taking into account the number of sites in which the study is to be implemented. Payment is strictly through National Bank of Malawi, Mzuzu Central Hospital Research and Partnership Account, Current account number **1004797902**.

When you are ready for data collection at MCH you will be required to present this letter, ethical approval letter from a recognized ethical review body and evidence of payment of the stipulated fees to the Chairperson of MCH Research Committee before you can begin data collection. We trust that you shall strictly adhere to study procedures as outlined in your study protocol.

Dr. Ted Bandawe
The Hospital Director

THE DIRECTOR
MZUZU CENTRAL HOSPITAL
07 NOV 2023
PRIVATE BAG 209
LUWINGA, MZUZU 2

Annex B: Research Ethics and Regulatory Approval

MZUZU UNIVERSITY

DIRECTORATE OF RESEARCH

Mzuzu University
Private Bag 201
Luwinga
Mzuzu 2
MALAWI
TEL: 01 320 722
FAX: 01 320 648

MZUZU UNIVERSITY RESEARCH ETHICS COMMITTEE (MZUNIREC)

Ref No: MZUNIREC/DOR/23/110 **27/10/2023.**

Vitumbiko Munthali,
Mzuzu University,
P/Bag 201,
Luwinga,
Mzuzu 2.

vitumbikomunthali100@gmail.com

Dear Vitumbiko,

RESEARCH ETHICS AND REGULATORY APPROVAL AND PERMIT FOR
PROTOCOL REF NO: MZUNIREC/DOR/23/110: IMPACT OF COVID-19 ON PATIENT CARE DELIVERY AMONG NURSES AT MZUZU CENTRAL HOSPITAL IN, NORTHERN MALAWI.

Having satisfied all the relevant ethical and regulatory requirements, I am pleased to inform you that the above referred research protocol has officially been approved. You are now permitted to proceed with its implementation. Should there be any amendments to the approved protocol in the course of implementing it, you shall be required to seek approval of such amendments before implementation of the same.

This approval is valid for one year from the date of issuance of this approval. If the study goes beyond one year, an annual approval for continuation shall be required to be sought from the Mzuzu University Research Ethics Committee (MZUNIREC) in a format that is available at the Secretariat. Once the study is finalised, you are required to furnish the Committee with a final report of the study. The Committee reserves the right to carry out compliance inspection of this approved protocol at any time as may be deemed by it. As such, you are expected to properly maintain all study documents including consent forms.

Committee Address:

Secretariat, Mzuzu University Research Ethics Committee, P/Bag 201, Luwinga, Mzuzu 2; Email address: mzunirec@mzuni.ac.mw

Wishing you a successful implementation of your study.

Yours Sincerely,

Gift Mbwele

SENIOR RESEARCH ETHICS ADMINISTRATOR

For: CHAIRMAN OF MZUNIREC

Annex C: GANT CHART

Time / Activity	MAR	APRIL	MAY	JUNE/ JULY	AUG	SEP	OCT	NOV	DEC
Proposal development									
Presentation & Review									
Ethical Clearance Application									
Data collection									
Data Analysis									
Thesis Defense and Review									
Dissemination									

Annex D: BUDGET AND BUDGET JUSTIFICATION

ITEM	**QUANTITY**	**COST PER ITEM**		**TOTAL**	
STATIONERY		K	T	K	T
Reams of paper	1	20,000	00	20,000	00
Ball point pens	4	1000	00	4,000	00
Pencils and Eraser	2	1,000	00	2,000	00
Envelopes	4	1000	00	4,000	00
Writing pad	1	5,000	00	5,000	00
PRINTING, PHOTOCOPYING & BINDING					
Printing of proposal	4	30,000	00	120,000	00
Photocopying of proposal	4	20,000	00	80,000	00
Binding of proposal	4	2000		8,000	00
MISCELLANEOUS					
Transport	During data correction.			200, 000	00
Food				20,000	00
Internet				20,000	00
Incidentals	Charge hikes due to devaluation of kwacha and need for extra copies.			30,000	00
MZUNIREC application fee				164,000	00
Compliance fee				67,700	00
TOTAL				**744,700**	**00**

BUDGET JUSTIFICATION

The total budget of K744,700 is justified was required to support the successful execution of the research project. Stationery items such as reams of paper, pens, pencils, envelopes, and a writing pad (K35,000) will facilitate data collection, note-taking, and organization of physical documents. Printing, photocopying, and binding costs (K208,000) are necessary for producing multiple hard copies of the research proposal and final reports for submission to supervisors, ethics committees, and institutional stakeholders. Miscellaneous expenses (K501,700) include transport costs for follow-ups and data correction (K200,000), food and internet for fieldwork efficiency (K20,000 each), and incidentals (K30,000) to cover unplanned costs such as charge hikes due to devaluation of the kwacha. Furthermore, the budget includes mandatory institutional payments, such as the MZUNIREC application fee (K164,000) and compliance fee (K67,700), which are essential for securing ethical clearance and adhering to university research regulations. These costs collectively ensure the smooth and compliant implementation of the study from preparation to final reporting.