ASSESSMENT OF BURDEN OF CARE AS A PREDICTOR OF QUALITY OF LIFE AMONG CARE GIVERS OF HYPERTENSIVE PATIENTS ATTENDING A TERTIARY HEALTH FACILITY IN BENIN CITY, EDO STATE

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IN PARTIAL FULFILLMENT OF THE AWARD OF THE DEGREE OF BACHELOR OF NURSING SCIENCE, FACULTY OF NURSING SCIENCES, UNIVERSITY OF BENIN, BENIN CITY

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DECLARATION

This is to declare that this research project titled **"ASSESSMENT OF BURDEN OF CARE AS A PREDICTOR OF QUALITY OF LIFE AMONG CARE GIVERS OF HYPERTENSIVE PATIENTS ATTENDING A TERTIARY HEALTH FACILITY IN BENIN CITY, EDO STATE"** was carried out by **IWEKUBA, VICTOR CHUKWUEMEKA** and is solely the result of my work except where acknowledged as being derived from other person(s) or resources.

EXAMINATION NUMBER: _____

DEPARTMENT/SCHOOL: DEPARTMENT OF MEDICAL-SURGICAL NURSING, FACULTY OF NURSING SCIENCES, UNIVERSITY OF BENIN, BENIN CITY.

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CERTIFICATION/APPROVAL

This is to certify that this project was carried out by IWEKUBA, VICTOR CHUKWUEMEKA with Mat. No. BMS2005101 in the Department of Medical-Surgical Nursing, Faculty of Nursing Sciences under the supervision of DR.T.A. EHWARIEME

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Supervisor Sign & date

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Head of Department Sign & date

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External Examiner Sign & date

DEDICATION

This work is dedicated to GOD ALMIGHTY who is providing me with the strength to complete my academic journey and my beloved parents for their unwavering support, love, and encouragement throughout my academic journey. I am deeply grateful.

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ABSTRACT

This study assessed the burden of care as a predictor of quality of life among care givers of hypertensive patients attending a tertiary health facility in Benin City, Edo State. A cross-sectional survey was conducted with 195 caregiver-patient pairs with data collected using structured questionnaires, the Zarit Burden Interview (ZBI), and the WHO Quality of Life-BREF (WHOQoL-BREF) instrument that assessed their demographic characteristics, burden of care among caregivers, health realted quality of life (HRQoL) of caregivers and hypertensive patients, and the factors associated with burden of care among caregivers. The findings revealed that about 56.4% of caregivers experienced a high level of burden, with a mean ZBI score of 44.07 (SD = 6.30), and 13.8% reported severe burden. Moreso, having no formal education (compared to tertiary education) was associated with significantly lower odds of experiencing a higher burden of care (OR = 0.362, 95% CI [0.148, 0.885], p = 0.026). Furthermore, caregivers who desired to continue caregiving (compared to not desiring to continue) were significantly more likely to report a high burden of care (OR = 2.431, 95% CI [1.297, 4.556], p = 0.006). Additionally, multivariate analysis examining the relationship between quality of life domains and the likelihood of experiencing a high burden of care revealed that reporting a low psychological quality of life (compared to high psychological QoL) significantly increased the odds of high burden (OR = 6.474, 95% CI [1.369, 30.616], p = 0.018), and reporting a low environmental quality of life (compared to high environmental QoL) also significantly increased the odds of high burden (OR = 6.168, 95% CI [1.069, 35.596], p = 0.042). However, the study concluded on the need for targeted caregiver education, psychosocial support, and strategies to improve patient adherence to mitigate caregiver burden and enhance their quality of life.

Keywords: Burden of care, Quality of life, Caregivers, Hypertensive patients

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CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND TO THE STUDY

Hypertension remains one of the most prevalent chronic conditions affecting global health. Inadequate treatment adherence and poor blood pressure control significantly increase the risks of complications such as coronary artery disease, stroke, and renal impairment, thereby contributing to a substantial global disease burden (Sudayasa *et al.,* 2020; Susanty *et al.,* 2022). Historically, the assessment of health status among individuals with hypertension has focused primarily on blood pressure regulation and the extent of target-organ damage (Kurnianto *et al.,* 2020; Bangu *et al.,* 2021). Clinically, hypertension is characterized by a sustained elevation in systolic blood pressure (≥140 mmHg) and diastolic blood pressure (≥90 mmHg) (Timmis *et al.,* 2019).

Globally, approximately one in every three adults lives with hypertension, yet fewer than one-third of these individuals achieve adequate blood pressure control (Beatney *et al.,* 2020). Controlled hypertension is typically defined as maintaining blood pressure levels below 140/90 mmHg while on treatment (Mills *et al.,* 2020). Hypertension represents a major, though preventable, contributor to cardiovascular-related morbidity and mortality worldwide, with a particularly high burden in low- and middle-income countries (LMICs) such as Nigeria, and among Black populations (Tapela *et al.,* 2021). Nevertheless, effective management of hypertension through lifestyle modification and appropriate pharmacological therapy can significantly minimize the risk of cardiovascular, cerebrovascular, and renal complications, which are major causes of disability, reduced productivity, and premature death.

Despite the availability of effective antihypertensive medications and adherence to both national and international management guidelines, achieving sustained blood pressure control in outpatient settings remains a significant challenge (Kadiri *et al.,* 2020). With the shift from a purely biomedical model to a biopsychosocial approach, assessing chronic conditions like hypertension has become more complex, as traditional indicators such as incidence, mortality, cure rates, and life expectancy no longer provide a complete picture. Consequently, health-related quality of life (HRQoL) has gained increasing global attention as an essential component of chronic disease evaluation (Susanti *et al.,* 2020; Zheng *et al.,* 2021). Quality of life (QoL) is a multidimensional concept influenced by an individual's physical health, psychological well-being, degree of independence, social connections, personal values, and the broader environment in which they live. Although numerous effective antihypertensive drugs exist and clinical guidelines are well established, maintaining optimal blood pressure control among patients in ambulatory care remains difficult (Kadiri *et al.,* 2020).

The transition from the traditional biomedical model to the broader biopsychosocial model has also made the assessment of chronic illnesses like hypertension more complicated, as conventional measures such as incidence, mortality, cure rate, and life expectancy are no longer sufficient for full evaluation. As a result, health-related quality of life (HRQoL) has become an increasingly important focus in the global assessment of chronic diseases (Susanti *et al.,* 2020; Zheng *et al.,* 2021). Quality of life (QoL) encompasses multiple dimensions, shaped by an individual's physical condition, mental and emotional state, level of independence, social interactions, personal beliefs, and the characteristics of their surrounding environment.

Furthermore, the SF-12, a shorter version of the SF-36, has been recognized as an efficient alternative for evaluating HRQoL among individuals with hypertension. While several studies

have reported significantly reduced HRQoL in hypertensive patients, others have found no meaningful differences across multiple assessment domains (Zheng *et al.,* 2021). Another emerging HRQoL assessment tool is MINICHAL, developed in Spain in 2002 specifically for individuals with hypertension. Research has demonstrated its effectiveness in assessing quality of life, particularly among older adults with hypertension enrolled in supplementary health programs, and has shown that elderly individuals who engage in physical activity tend to experience less HRQoL impairment (Pequeno *et al.,* 2020).

Despite advances in patient assessment, caregivers (CGs) remain central to the management of hypertension in many communities (Tamizi *et al.,* 2020). Caregivers shoulder substantial responsibility for ensuring the well-being of hypertensive patients. In many developing countries, financial constraints and family structures limit the use of professional caregivers. As a result, informal caregivers provide essential emotional support, assist with daily activities, help manage behavior, offer financial help, and maintain communication with healthcare personnel (Peng *et al.,* 2022). However, caregiving can expose them to considerable stress, especially when dealing with patients' behavioral or cognitive changes. Prolonged caregiving responsibilities may also drain family resources and contribute to feelings of exhaustion, helplessness, and emotional distress.

1.2 STATEMENT OF THE PROBLEM

Hypertension and its related complications remain significant global health challenges, particularly among older adults (Mancia *et al.,* 2023). This chronic condition affects more than one-quarter of the world's population (Cai *et al.,* 2022), and its prevalence rises markedly with advancing age. While systolic hypertension accounts for most cases across the lifespan, increases in diastolic blood pressure and isolated diastolic hypertension are more frequently observed in

younger individuals (Williams *et al.,* 2018). Among adults aged 60 years and above, hypertension affects roughly 60%, and this figure rises to about 75% in those older than 75 years (Cai *et al.,* 2022). In many developing countries, including Nigeria, hypertension represents a major contributor to mortality. Beyond its clinical implications, the condition imposes substantial economic strain on households and national health systems (Datta *et al.,* 2019). Moreover, it negatively influences the physical, social, and psychological well-being of individuals living with the disease.

Moreover, reduced mental and physical health has been documented as a significant contributor to increased disease burden and a decline in overall life quality (Xie *et al.,* 2020). Hypertension requires comprehensive and continuous patient care because of its long-term impact on the body and its potential to diminish patients' quality of life. If not adequately controlled, it can lead to severe but preventable complications (Manica *et al.,* 2023). The burden of care is further compounded by persistent health system challenges such as inadequate health personnel, limited resources, and poor infrastructure, which hinder optimal hypertension management (WHO, 2020). Over the past decade, research attention has increasingly shifted towards caregiving, recognizing that caregiver responsibilities may negatively affect physical health, impose financial strain, limit employment opportunities, and ultimately influence patients' quality of life (Susanti *et al.,* 2020; Xie *et al.,* 2020). Hypertension control is shaped by multiple interacting factors operating at government, community, health system, healthcare team, and patient levels. Nonetheless, patient-related factors often constitute the final common pathway determining the level of blood pressure control (Tapela *et al.,* 2021). Therefore, the relevance and currency of context-specific local data remain crucial in guiding evidence-based hypertension control strategies (Van-der-Linden *et al.,* 2021).

Conversely, reports on health-related quality of life (HRQoL) among hypertensive individuals have been inconsistent. Some studies have documented poorer HRQoL among hypertensive patients compared to the general population (Mills *et al.,* 2020). In sub-Saharan Africa, previous research has largely focused on identifying factors associated with uncontrolled hypertension (Aberhe *et al.,* 2020; Jeemon *et al.,* 2021), with limited attention given to positive patient-related factors that facilitate effective hypertension control. Furthermore, there remains a paucity of studies examining care burden as a predictor of quality of life among individuals living with hypertension.

1.3 OBJECTIVE OF THE STUDY

The general objective of this study was to assess the burden of care as a predictor of quality of life among caregivers of hypertensive patients attending tertiary health facilities in Benin City, Edo State. The specific objectives are;

i. To assess the burden of care among caregivers of hypertensive patients attending tertiary health facilities in Benin City, Edo State
ii. To assess the healh-related quality of life (HRQoL) domains among caregivers of hypertensive patients attending tertiary health facilities in Benin City, Edo State.
iii. To assess the health-related quality of life (HRQoL) domains among hypertensive patients attending tertiary health facilities in Benin City, Edo State.
iv. To ascertain influencing factors associated with the burden of care among caregivers of hypertensive patients attending tertiary health facilities in Benin City, Edo State.

1.4 RESEARCH QUESTIONS

This study was guided by the following research questions:

i. What are the burden of care among caregivers of hypertensive patients attending tertiary health facilities in Benin City, Edo State?

ii. What are the health-related quality of life (HRQoL) domains among caregivers of hypertensive patients attending tertiary health facilities in Benin City, Edo State?

iii. What are the health-related quality of life (HRQoL) domains among hypertensive patients attending tertiary health facilities in Benin City, Edo State?

iv. What are the influencing factors associated with the burden of care among caregivers of hypertensive patients attending tertiary health facilities in Benin City, Edo State?

1.5 HYPOTHESIS

The study tested the following hypothesis in their null form:

i. There is no significant association between the caregivers burden of hypertensive patients and their socio-economic characteristics.

ii. There is no significant association between the health related quality of life (HRQoL) among caregivers of hypertensive patients and their socio-demographic characteristics.

iii. There is no significant association between the burden of care among care givers and the health related quality of life (HRQoL) among hypertensive patients.

1.6 SIGNIFICANCE OF THE STUDY

Although hypertension, especially in mild to moderate stages, is usually considered as an asymptomatic condition, its association with alterations in well-being and health-related quality of life (HRQOL) is still a controversial issue. The relationships between patient, disease, treatment variables, symptoms, and HRQOL were described in previous studies. This model proposes that physiologic changes due to illness or treatment, lead to symptoms, which in turn influences functional status or HRQOL. These relationships are influenced by patient and environmental variables that may affect patient perception of symptoms and changes in HRQOL. This general model can be applied to data from clinical studies to ascertain the strength of relationships between HRQOL and patient, disease, and treatment variables.

However, an additional focus on the care of burden by care givers as a predictor to quality of life among hypertensive patients in this study will provide valuable insights into the burden of care experienced by caregivers of hypertensive patients and its potential impact on the quality of life of the patients themselves. By assessing the relationship between caregiving burden and health-related quality of life (HRQoL) among hypertensive patients, the study will contribute to the growing body of knowledge in healthcare management, particularly in chronic disease care. In addition, findings on the burden of care will help healthcare providers, policymakers, and hospital administrators to develop targeted interventions aimed at reducing caregiver stress while improving patient outcomes. The study findings will also inform healthcare professionals on how to provide better support systems for caregivers, which may include counseling services, caregiver training, and social support programs.

Furthermore, this study will be beneficial to hypertensive patients by identifying the key factors that influence their quality of life, enabling the development of patient-centered care strategies. It

will also provide empirical evidence that can guide policy formulation and implementation of more effective management strategies for hypertension in tertiary health facilities in Benin City and beyond, as the study has the potential to enhance the overall well-being of both caregivers and hypertensive patients by advocating for a more comprehensive and supportive approach to hypertension care.

1.7 SCOPE OF THE STUDY

This study will focus on assessing the burden of care as a predictor of quality of life among hypertensive patients attending a tertiary health facility in Benin City, Edo State. The study will specifically examine the socio-demographic characteristics of caregivers and hypertensive patients, evaluate their health-related quality of life (HRQoL) across various domains, and analyze the burden profile of their caregivers. Additionally, it will identify the factors influencing the burden of care among caregivers of hypertensive patients. However, the research will be conducted within selected tertiary healthcare facility in Benin City, ensuring that the sample represents a diverse group of hypertensive patients receiving treatment at the hospital. Albeit, the study will be limited to hypertensive patients and their caregivers, excluding individuals with other chronic conditions that may independently affect their quality of life.

Furthermore, data collection will involve the use of structured questionnaires and interviews to obtain relevant information from both hypertensive patients and their caregivers. The study will not extend to other cities or healthcare facilities outside Benin City, nor will it examine hypertension management at the community level.

1.8 OPERATIONAL DEFINITION OF TERMS

Burden of Care: This refers to the physical, emotional, financial, and psychological strain experienced by caregivers of hypertensive patients in a tertiary health facility.

Predictor: This refers to a variable that is used to determine or estimate the possible impact of one condition on another, in this case, the burden of care as a determinant of the quality of life of hypertensive patients.

Quality of Life (QoL): This is a multidimensional measure that assesses an individual's overall well-being, including physical health, emotional state, social relationships, and ability to perform daily activities, particularly in relation to hypertensive patients.

Hypertension: This refers to a chronic medical condition characterized by persistently high blood pressure (≥140/90 mmHg) that may lead to severe health complications if not managed effectively.

Hypertensive Patients: These are individuals diagnosed with hypertension who are receiving medical care and management at a tertiary health facility.

Tertiary Health Facility: This refers to a specialized hospital that provides advanced medical care, including hypertension management, and serves as a referral center for primary and secondary healthcare facilities.

CHAPTER TWO

LITERATURE REVIEW

Hypertension is a chronic condition that affects millions of people worldwide, imposing a significant burden on caregivers. The management of hypertension however requires ongoing care and support. As of such, this chapter comprises the conceptual review, theoretical review and empirical review of previous body of literature in assessing burden of care as a predictor of quality of life among caregivers of hypertensive patients.

2.1 CONCEPTUAL REVIEW

2.1.1 Overview of Hypertension

Hypertension is a leading risk factor for cardiovascular and kidney diseases globally, contributing to more than 10 million deaths annually (WHO, 2023). As one of the most pervasive chronic conditions, hypertension (HTN) poses a formidable public health challenge, affecting an estimated 1 billion individuals worldwide (NCACCH, 2024). With its prevalence steadily increasing, HTN remains a major risk factor for adverse cardiovascular outcomes, including stroke, myocardial infarction, and renal failure (WHO, 2020). Its burden is disproportionately higher among Black populations in Africa, the Caribbean, and North America, where long-standing associations with cardiovascular morbidity have resulted in significantly elevated mortality rates, particularly among adults over 40 years old (Adeloye & Headley, 2024). In Africa, the magnitude of the problem is striking, with approximately 900,000 deaths attributed to hypertension in 2016, representing an 82% increase since 1990 and underscoring the escalating prevalence and severe consequences of uncontrolled HTN (WHO, 2021). Sub-Saharan Africa faces a substantial hypertension burden, with an overall prevalence estimated at approximately

30.8%, according to the Framingham study. The study further projects that 90% of normotensive individuals who reach the age of 55 are likely to develop hypertension, underscoring its widespread impact across various demographic groups, including rural populations, low-income households, and younger adults (Chen *et al.,* 2023). Certain populations particularly Black individuals, older adults, and persons with diabetes, experience the highest prevalence rates, exacerbating disparities in disease burden and healthcare outcomes (Ansa & Chiu, 2023). In Nigeria, hypertension prevalence has steadily increased over the past decades, with recent estimates ranging between 22% and 44%, depending on the region (Adeloye *et al.,* 2021). Despite this rising prevalence, awareness, treatment, and control rates of hypertension remain suboptimal.

A 2021 meta-analysis revealed that among Nigerians with hypertension, only 29% were aware of their condition, 12% were receiving treatment, and just 3% had achieved blood pressure control (Adeloye *et al.,* 2021). Some other studies have reported slightly higher control rates (NCD, 2021). These suboptimal control levels markedly increase the risk of severe complications, including myocardial infarction, stroke, heart failure, and kidney disease. Consequently, there is an urgent need to implement comprehensive prevention and management strategies tailored to the specific needs of affected populations (Airhihenbuwa *et al.,* 2021). Such strategies should include improving access to quality healthcare services, promoting lifestyle modifications to reduce hypertension risk factors, and deploying targeted interventions to reduce disparities in disease burden and health outcomes (Chen *et al.,* 2023; Smith *et al.,* 2023).

2.1.2 Classification of Hypertension

Classifying hypertension is crucial for accurate diagnosis, assessing risk, and guiding treatment decisions, as it provides clinicians with a structured understanding of the condition's severity and

complexity (Carey *et al.,* 2022). Typically, hypertension is categorized based on blood pressure readings, the presence of coexisting medical conditions, and evidence of target organ damage, enabling individualized management plans and risk mitigation strategies (Elendu *et al.,* 2024). The most commonly used system classifies hypertension according to blood pressure values measured in millimeters of mercury (mm Hg), as recommended by professional organizations including the American Heart Association (AHA), the European Society of Cardiology (ESC), and the National Institute for Health and Care Excellence (NICE) (Smith *et al.,* 2020). These guidelines delineate hypertension into specific categories based on systolic and diastolic blood pressure measurements recorded during clinical assessments (Carey *et al.,* 2021).

Normal blood pressure is defined as a systolic blood pressure (SBP) below 120 mm Hg and a diastolic blood pressure (DBP) below 80 mm Hg, reflecting optimal cardiovascular health and a minimal risk of complications associated with hypertension (Parati *et al.,* 2023). A recently introduced category, elevated blood pressure, is characterized by an SBP of 120–129 mm Hg and a DBP under 80 mm Hg, indicating a higher likelihood of developing hypertension and cardiovascular disease (CVD) if no interventions are implemented (Al-Makki *et al.,* 2022). This category acts as an early warning, emphasizing the importance of lifestyle changes and preventive measures to reduce the risk of progression to hypertension and related cardiovascular complications (Verma *et al.,* 2021). Stage 1 hypertension is characterized by a systolic blood pressure (SBP) between 130 and 139 mm Hg or a diastolic blood pressure (DBP) between 80 and 89 mm Hg, reflecting mild to moderate elevation in blood pressure (Hong & Shan, 2021). Stage 2 hypertension, representing a more severe condition, is defined by an SBP of 140 mm Hg or higher, or a DBP of 90 mm Hg or higher, indicating a significant increase in blood pressure and heightened risk of complications (Pugh *et al.,* 2019). Additionally, a hypertensive crisis is a life-

threatening state requiring immediate medical intervention, identified by an SBP of 180 mm Hg or greater and a DBP of 120 mm Hg or greater, often accompanied by acute target organ damage such as hypertensive encephalopathy, myocardial infarction, or acute kidney injury (Elendu *et al.,* 2023). Management of a hypertensive crisis involves urgent administration of antihypertensive therapy and close monitoring to prevent further organ damage and serious complications (Olvera-Lopez *et al.,* 2024).

Beyond blood pressure readings, hypertension classification also takes into account comorbid conditions and evidence of target organ damage, offering a more comprehensive understanding of disease severity and complexity (Fuchs & Whelton, 2020). Hypertension is commonly categorized as either primary (essential) or secondary, depending on its underlying cause (Hunter *et al.,* 2021). Primary hypertension, which represents the majority of cases, involves elevated blood pressure without a specific identifiable cause and is generally linked to a combination of genetic, lifestyle, and environmental factors (Muntner *et al.,* 2020). Conversely, secondary hypertension, though less frequent, is potentially reversible and results from underlying medical conditions such as renal artery stenosis, primary aldosteronism, pheochromocytoma, or Cushing syndrome (Elendu *et al.,* 2024). Identifying and managing these secondary causes is critical for effective blood pressure control (WHO, 2020). Additionally, assessing target organ damage is an important aspect of classification, as it reflects the effects of sustained hypertension on organs and overall health (Pugh *et al.,* 2019).

Target organ damage can affect multiple organ systems, such as the heart, brain, kidneys, and blood vessels, and is linked to a heightened risk of cardiovascular events and mortality (Campbell *et al.,* 2021). Typical manifestations include left ventricular hypertrophy (LVH), ischemic heart disease, heart failure, stroke, transient ischemic attack (TIA), chronic kidney

disease (CKD), proteinuria, retinopathy, and peripheral artery disease (PAD) (WHO, 2021). Evaluating target organ damage offers important prognostic insights and informs clinical management, aiding in the prevention of cardiovascular complications and improving long-term outcomes for individuals with hypertension (Cheung *et al.,* 2021).

2.1.3 Barriers and Challenges to Hypertension Care

In Nigeria, hypertension control faces multiple challenges at the individual, institutional, societal, and healthcare provider levels. These obstacles largely contribute to the rising incidence of complications among hypertensive patients, despite ongoing advancements in antihypertensive therapies over the years (CDC, 2024). Improvements in patient outcomes have not matched the growth in understanding of the disease's pathophysiology. A significant factor is the persistent gap between clinical guidelines and actual practice. Additionally, research indicates that many primary care physicians are not fully aware of these guidelines, further hindering effective hypertension management (WHO, 2024). Primary healthcare facilities are crucial in many countries for the detection, risk assessment, and management of hypertension (Ansah & Chiu, 2023).

In Nigeria, however, hypertension detection and management at the primary care level remain suboptimal (World Population Prospects, 2019). Contributing factors include a shortage of adequately trained healthcare personnel and insufficient medical infrastructure in these centers. Even at secondary and tertiary facilities, the number of skilled professionals is inadequate (CDC, 2024). This shortage has significant implications for the health system. Firstly, it results in a high patient-to-doctor ratio. In 2021, Nigeria, with an estimated population of 211,400,708, had only about 35,000 practicing doctors, equating to roughly one doctor per 6,040 people, far below the World Health Organization's recommended ratio of 1:1,000, and a decline from 1.95 per 1,000

reported in 2014 (CDMP, 2024). This disproportion places an immense workload on the limited doctors available and is further compounded by the ongoing migration of Nigerian doctors to more favorable opportunities abroad.

Current data indicate that approximately one in four doctors trained in Nigeria are now practicing in developed countries (Nica *et al.,* 2024). The severe shortage and uneven distribution of medical personnel are major contributors to limited access to quality healthcare, particularly in rural areas. Another consequence of the depleted healthcare workforce is the reduced time available for doctor–patient interactions, often due to high workloads and less-than-ideal clinical environments (Rodriguez *et al.,* 2024). Meaningful interaction between doctors and patients is vital, as it can positively influence individual and public health and enhance various aspects of healthcare delivery, including quality and outcomes. Also, inadequate knowledge of hypertension among healthcare providers, alongside other factors, has been identified as a key reason for suboptimal hypertension control. Previous research has highlighted a substantial gap between hypertension management guidelines and actual clinical practice in Nigeria, a situation compounded by limited awareness of current guidelines among primary care physicians. Additionally, the absence of an effective two-way referral system across the different levels of care in the Nigerian healthcare system contributes to poor follow-up of hypertensive patients, thereby increasing the risk of hypertension-related complications (Grace *et al.,* 2024).

A crucial patient-related factor influencing hypertension control is adherence to prescribed therapy, with studies in Nigeria reporting compliance rates ranging from 29% to 50% (Grace *et al.,* 2024). Individual factors, including patients' beliefs and perceptions about hypertension and available treatments, also play a significant role in adherence. Many patients, concerned about the chronic nature of essential hypertension and the requirement for long-term therapy and

lifestyle modifications, often turn to alternative medicines, dietary supplements, or local remedies in search of a "cure." Moreover, adherence is strongly affected by socio-cultural and economic determinants such as traditional practices, illiteracy, and poverty (Chen *et al.,* 2023).

2.1.4 Effects of Hypertension Prevalence on Health

Cardiovascular disease is the most frequent and serious complication associated with hypertension, encompassing conditions such as coronary artery disease, heart failure, cardiac arrhythmias, and peripheral vascular disease (PVD) (Smith *et al.,* 2020). Elevated blood pressure contributes to the development of atherosclerosis, endothelial dysfunction, and arterial stiffness, thereby increasing the likelihood of myocardial infarction, angina, and sudden cardiac death (Carey *et al.,* 2021). Persistent pressure overload on the heart can result in left ventricular hypertrophy (LVH), diastolic dysfunction, and impaired myocardial contractility, which in turn elevates the risk of heart failure and cardiovascular mortality (Parati *et al.,* 2023). Furthermore, hypertension is a major predisposing factor for atrial fibrillation, ventricular arrhythmias, and other cardiac rhythm disorders, adding to cardiovascular morbidity and mortality (Al-Makki *et al.,* 2022). Stroke, including both ischemic and hemorrhagic types, represents a severe outcome of hypertension and contributes significantly to the global burden of cerebrovascular disease (Verma *et al.,* 2021). Chronic hypertension also induces cerebrovascular remodeling, endothelial impairment, and small vessel pathology, thereby heightening the risk of thrombotic and embolic events within cerebral circulation (Hong & Shan, 2021).

Hypertension-related intracerebral hemorrhages frequently occur due to the rupture of weakened blood vessels caused by chronic hypertension-induced vascular remodeling and disrupted cerebral autoregulation, resulting in serious neurological deficits and elevated mortality (Pugh *et al.,* 2019). Hypertension also increases the risk of transient ischemic attacks (TIAs), cognitive

decline, and vascular dementia, further adding to the burden of cerebrovascular disease (Elendu *et al.,* 2023). Kidney dysfunction is another common consequence, as prolonged uncontrolled hypertension can lead to progressive renal injury, proteinuria, and impaired renal function (Olvera-Lopez *et al.,* 2024). Hypertensive nephropathy marked by glomerulosclerosis, tubulointerstitial fibrosis, and narrowing of renal arterioles, remains a leading contributor to end-stage renal disease (ESRD) worldwide (Fuchs & Whelton, 2020). Persistently elevated blood pressure promotes renal microvascular damage, glomerular hypertension, and podocyte injury, culminating in proteinuria, glomerular scarring, and gradual loss of kidney function (Hunter *et al.,* 2021). Moreover, hypertension accelerates the progression of diabetic nephropathy, chronic kidney disease (CKD), and other renal disorders, heightening the risk of ESRD and cardiovascular complications (Muntner *et al.,* 2020). Peripheral vascular disease (PVD) is another major hypertensive complication, characterized by reduced blood flow to the extremities, impaired wound healing, and an increased risk of limb amputation (Carey *et al.,* 2022).

Chronic hypertension also accelerates atherosclerosis, damages the endothelium, and increases arterial stiffness in peripheral vessels, resulting in complications such as claudication, ischemic ulcers, and gangrene (WHO, 2020). The condition is linked to a higher risk of abdominal aortic aneurysms, carotid artery disease, and other peripheral vascular disorders, which further contribute to morbidity and mortality. Beyond its cardiovascular effects, hypertension influences metabolic, inflammatory, and neuroendocrine pathways, leading to adverse systemic outcomes (Campbell *et al.,* 2021). Insulin resistance, dyslipidemia, and obesity frequently co-occur with hypertension, promoting the development of type 2 diabetes, metabolic syndrome, and heightened cardiovascular risk (Cheung *et al.,* 2021). Chronic inflammation, evidenced by elevated proinflammatory cytokines such as IL-6, TNF-α, and CRP, worsens endothelial

dysfunction, insulin resistance, and atherosclerosis, compounding cardiovascular risk in hypertensive individuals (Elendu *et al.,* 2024). In addition to its physical health impacts, hypertension significantly affects psychosocial well-being and quality of life, contributing to stress, anxiety, depression, and reduced social functioning (Hong & Shan, 2021). Individuals with hypertension often experience diminished quality of life, decreased work productivity, and increased healthcare utilization, imposing substantial economic burdens on healthcare systems and society (Muntner *et al.,* 2020). Moreover, hypertension-related complications, including stroke, heart failure, and renal impairment, place considerable caregiving demands on family members, further intensifying the psychosocial and financial impact of the disease (Smith *et al.,* 2020).

2.1.5 Burden of Care in Chronic Disease Management and their Health Related Quality of Life (HRQoL)

In the management of illness, caregivers play a multifaceted role by providing physical, medical, financial, and emotional support to the patients under their care (Loo *et al.,* 2022). However, these responsibilities can exact a significant toll, as caregivers frequently face considerable stress and adverse health effects (Vadivelan *et al.,* 2020). The concept of caregiver burden refers to the physical, psychological, emotional, social, and financial strain experienced while caring for individuals with illness or functional limitations (Syed *et al.,* 2020). While this term can apply to all caregivers, it is most commonly associated with unpaid caregivers, typically family members of patients. These informal caregivers are often overlooked and have been described as “the informal patient” due to the neglect of their own needs and well-being (Lucijanić *et al.,* 2020; Roy *et al.,* 2020).

Chronic diseases, also known as non-communicable diseases (NCDs), are described by the World Health Organization (WHO) as conditions that persist over a long period and typically progress slowly, resulting from a combination of genetic, physiological, environmental, and behavioral factors (Ali, 2022). Similarly, the Centers for Disease Control and Prevention (CDC) defines chronic diseases as conditions lasting at least one year that require continuous medical care, restrict daily activities, or both (CDC, 2024). In low- and middle-income countries, the caregiving experience is further complicated by unique challenges such as restrictive gender roles, financial difficulties, social stigma, and inadequate or non-inclusive governmental policies (Sun *et al.,* 2022; Beatie & Restaino, 2023; Chauhan *et al.,* 2023).

Chronic illnesses are significant contributors to global morbidity and mortality, often necessitating long-term management and imposing substantial financial burdens on patients, their families, and healthcare systems (CDC, 2024). Conditions such as diabetes, cardiovascular diseases, chronic respiratory illnesses, and cancer are typically chronic but, in many cases, preventable or manageable (Smith *et al.,* 2023). The rising prevalence of chronic diseases has placed considerable strain on healthcare systems, prompting efforts to develop more effective management strategies (Mohammad *et al.,* 2024a; Mohammad *et al.,* 2023a; Mohammad *et al.,* 2024b). These diseases are marked by their prolonged course, complexity of care, and potential to diminish quality of life while increasing mortality (Alrabei & Ababnehi, 2021). Hypertension, a common cardiovascular condition, is a major risk factor for cardiovascular disease, which remains a leading cause of death worldwide (Tsao *et al.,* 2022).

Caregiving is a source of chronic stress, disproportionately affecting women, who constitute the majority of informal caregivers and often experience greater negative consequences than men, including reduced productivity and diminished employment opportunities (Ahn *et al.,* 2022;

Chinn *et al.,* 2021). Family caregivers play a crucial role in managing chronic illnesses, with caregiving responsibilities largely falling on unpaid relatives who typically have limited education and training (Zhou & Yang, 2021; Huang *et al.,* 2020). These caregivers frequently face increasing demands that leave little time for personal needs, career development, or daily life activities, often resulting in a range of physical and psychological symptoms (Hareendran *et al.,* 2020). Studies indicate that many family caregivers lack professional knowledge, caregiving skills, and social support, since they are not formally trained for these roles (Tianjin, 2022). This deficit not only compromises the patient's physical rehabilitation and quality of life but also negatively impacts the caregiver's own physical and mental health. Consequently, the well-being of caregivers is closely linked to the quality of life of dependent older adults. Establishing sustainable support systems for family caregivers is essential, as future healthcare systems will need to meet increasing long-term care demands through family-based care.

The concept of health-related quality of life (HRQoL) was initially introduced in the context of health status measurement, particularly to quantify a year lived in full health as part of the "quality-adjusted life years" metric. HRQoL reflects a direct connection to health conditions, emphasizing an individual's perception of their health status (Niu *et al.,* 2023). Unlike clinical measures, HRQoL captures broader dimensions of health, including overall functioning and well-being, making it appropriate to consider HRQoL as an assessment of self-perceived health status. It is widely employed to evaluate the combined physical and psychological well-being of family caregivers. Competence in caregiving is critical, as research has shown that a caregiver's skills and capabilities significantly influence both the physical and mental health of care recipients and the caregivers themselves (Macchi *et al.,* 2020).

In 1986, Zarit offered a widely cited definition of caregiver burden, describing it as "the extent to which caregivers perceive that providing care has negatively affected their emotional, social, financial, physical, and spiritual well-being" (Zeng *et al.,* 2019). Subsequent studies have expanded this concept, viewing caregiver burden as the cumulative effect of physical, psychological, and social demands on caregivers' quality of life, encompassing persistent stress, hardships, and adverse experiences associated with caregiving (Niu *et al.,* 2023). Consequently, caregiver burden may serve as a mediator between a caregiver's competence and their health-related quality of life (HRQoL). Exposure to chronic stress can result in depressive symptoms for some caregivers, while others may experience deteriorating physical health (NBS, 2021). Sociocultural stress and coping frameworks of caregiving further support that caregiver burden mediates the impact of stress on outcomes such as psychological and physical health (Nasr *et al.,* 2021; Hareendran *et al.,* 2020). Accordingly, caregivers' health status and caregiving competence evolve dynamically with increasing caregiving demands, potentially influencing one another. The burden of care thus reflects caregivers' experiences during challenging caregiving situations and can significantly affect their mental and physical well-being (World Health Organization, 2021; Rahamneh *et al.,* 2023).

2.1.6 Quality of Life in Hypertensive Patients

Hypertension is among the most prevalent chronic conditions posing significant threats to human health. Inadequate adherence to treatment and poor blood pressure control are major risk factors for coronary heart disease, stroke, and kidney dysfunction, contributing substantially to the global disease burden (Sari *et al.,* 2018; Sudayasa *et al.,* 2020; Susanty *et al.,* 2022). Traditionally, the assessment of hypertensive patients has relied primarily on blood pressure measurements or the extent of target organ damage (Kurnianto *et al.,* 2020; Bangu *et al.,* 2021).

With the transition from a purely biomedical model to a biopsychosocial approach, evaluating chronic conditions like hypertension has become more complex, as conventional indicators such as incidence, mortality, cure rates, and life expectancy no longer provide a complete picture. Consequently, health-related quality of life (HRQoL) has emerged as a crucial metric for assessing patient outcomes, gaining increasing global attention (Susanti *et al.,* 2020; Zheng *et al.,* 2021).

Quality of life (QoL) is a multidimensional concept influenced by an individual's physical health, psychological state, autonomy, social interactions, personal beliefs, and their engagement with the surrounding environment (Xie *et al.,* 2020). Health-related quality of life (HRQoL) has become an important measure in hypertension, as it can be negatively impacted both by the condition itself and by side effects from antihypertensive medications. Evidence regarding HRQoL among hypertensive patients has been inconsistent; some studies report poorer HRQoL in hypertensive individuals compared to the general population, while others find little or no difference across various domains (Muntner *et al.,* 2022; Martin *et al.,* 2024). Evaluating QoL is therefore essential, as it not only serves as an outcome measure in clinical studies but also helps to understand the physical and psychosocial burden of disease on patients and their adaptation to chronic illness (Bahari *et al.,* 2019). Instruments commonly used to assess HRQoL in hypertensive populations include the EuroQOL five-dimension questionnaire, WHO QoL-100, and the SF-36 (Medical Outcomes 36-Item Short-Form Health Survey), with SF-36 being the most widely used and reliable. Additionally, the SF-12, a shorter version of the SF-36, has proven to be an effective alternative for measuring HRQoL in hypertension.

While numerous studies have reported a significantly lower HRQoL among patients with hypertension, some research indicates little or no difference across certain domains (Mohammad

et al., 2023b). One tool that is increasingly being used to assess quality of life in hypertensive populations is MINICHAL. Developed in 2002 by a research group in Spain, MINICHAL is specifically designed for individuals with hypertension and has been shown to effectively measure HRQoL, particularly highlighting lower impairment among elderly hypertensive patients who engage in regular physical activity (Zheng *et al.,* 2021; Pequeno *et al.,* 2020). Furthermore, research on QoL has expanded in recent years, driven by efforts to promote studies and to adapt and validate assessment tools across different languages and cultural contexts. Despite this growth, there remains limited evidence regarding the most commonly used instruments within the framework of contemporary demographic and epidemiological trends (Tsao *et al.,* 2022; Jaeger *et al.,* 2023).

2.2 THEORETICAL FRAMEWORK

2.2.1 Caregiver Stress Model (Zari Burden Index)

The caregiver stress model, particularly as articulated through the Zarit Burden Interview (ZBI), provides a comprehensive framework for understanding the multifaceted challenges faced by caregivers, particularly in the context of chronic conditions. This model was developed by Zarit, Reever, and Bach-Peterson in 1980, the ZBI is designed to assess the burden experienced by individuals who provide care to others, with specific attention to emotional, physical, and financial strain (Zarit *et al.,* 1980). The model explains that caregiver burden is not merely a function of the level of caregiving required but also the psychological and emotional resources available to the caregiver. This interactional perspective emphasizes the significance of both external demands, such as the complexity of care associated with managing hypertension and the internal capacity of the caregiver to cope with those demands.

Caregivers of hypertensive patients often face considerable pressure due to the chronic nature of the condition, which requires ongoing management of medication, lifestyle changes, and regular medical appointments, thereby intensifying the caregiving experience (Gonzalez *et al.,* 2017). Moreover, one of the core components of the ZBI is its ability to differentiate between objective burden (the concrete tasks involved in caregiving) and subjective burden (the emotional response to those tasks). Studies have indicated that subjective burden is often a more significant predictor of caregivers' quality of life than objective burden alone. This distinction is critical, as it suggests that even caregivers who have relatively manageable caregiving tasks can still experience high levels of stress and diminished quality of life if they perceive their caregiving role as overwhelming (Nations *et al.,* 2020). Furthermore, the correlation between caregiver burden and quality of life in hypertensive patients have been examined in previous studies. Research has shown that caregivers who report high levels of burden often experience greater rates of anxiety, depression, and social isolation, which in turn can affect their own health and well-being. This reciprocal influence explains the potential for comprehensive interventions that address the needs of not only patients but also their caregivers. For example, collaborative care models that incorporate support services for caregivers might improve both caregiver well-being and patient outcomes in managing hypertension.

In terms of measurement, the ZBI remains one of the most widely utilized tools for assessing caregiver burden. The index captures various dimensions of caregiving stress, including emotional strain and the impact on social life, while also allowing for the identification of specific areas needing intervention (Zarit *et al.,* 1980). This makes it especially relevant in clinical settings, where healthcare providers seek to understand the holistic challenges caregivers face. As such, integrating the caregiver stress model into the assessment of quality of life among

hypertensive patients offers a nuanced view that acknowledges the interconnectedness of patient health and caregiver well-being (Zhong *et al.,* 2020).

2.2.2 Quality of Life Model (WHOQOL Framework)

The World Health Organization's Quality of Life (WHOQOL) framework represents a significant advancement in the understanding and measurement of quality of life (QoL), particularly in relation to health. Developed in the 1990s by the World Health Organization, the WHOQOL framework encompasses a multidimensional perspective that goes beyond traditional health measures to incorporate a broad spectrum of factors that influence an individual's overall well-being (World Health Organization, 1995). This model emphasizes that quality of life is not merely the absence of disease or disability but a complex interplay of physical, psychological, social, and environmental domains. The WHOQOL framework is built on four primary domains: physical health, psychological health, social relationships, and environmental factors. This structure highlights the multifaceted nature of quality of life, encouraging healthcare providers and researchers to consider not only the physical aspects of health but also how psychological well-being and social support contribute to overall life satisfaction (Farquhar, 1995). For individuals with hypertension, this model is particularly relevant, as the management of blood pressure often requires lifestyle modifications and ongoing support, which can profoundly affect all four domains of the WHOQOL framework.

Physical health is the most straightforward domain, focusing on aspects such as pain, discomfort, energy levels, and mobility, which are critical for hypertensive patients managing their condition (Azeez *et al.,* 2019; Spruli *et al.,* 2019). Effective blood pressure management can enhance physical health, thereby improving the overall quality of life. However, beyond physical capabilities, psychological health encompasses feelings such as anxiety and depression, which

can be prevalent among those with chronic conditions like hypertension (Barlow, 2018). The stress of managing a chronic illness, combined with the burdens placed on caregivers, can profoundly impact psychological well-being, resulting in lower quality of life scores. On the other hand, the social relationships domain acknowledges the importance of interpersonal connections and support networks, which play a crucial role in the well-being of both hypertensive patients and their caregivers. Studies have shown that social support can mitigate the effects of stress and enhance coping strategies, ultimately leading to improved quality of life outcomes (Miller and Bartsch, 2018). Family dynamics, friendships, and community connections contribute to a supportive environment that fosters better management of hypertension and encourages adherence to treatment plans.

In addition, the environmental domain considers external factors, such as access to healthcare services, financial resources, and living conditions, which can significantly affect quality of life. For hypertensive patients, access to medical care, medication, and lifestyle resources are critical for effective disease management. Disparities in these areas can lead to increased caregiver burden and diminished quality of life not only for patients but also for those providing care (McGrail and Privé, 2017). Howbeit, the WHOQOL framework is noteworthy for its applicability across diverse populations and cultures, allowing for a comprehensive understanding of quality of life from a global perspective. This adaptability makes it an ideal tool for assessing the quality of life among hypertensive patients and their caregivers, enabling healthcare providers to design interventions that address the specific needs identified within each domain.

2.3 EMPIRICAL REVIEW

2.3.1 Empirical Review on Related Articles on Burden of Care among Among Caregivers

Ahn *et al.* (2022) investigated the caregiving burden among family members of hypertensive patients in South Korea. The study utilized the Zarit Burden Interview (ZBI) to measure caregiver burden and the General Health Questionnaire (GHQ-12) to evaluate psychological distress. Findings indicated that caregivers experienced a moderate burden, with a mean ZBI score of 27.8 (SD = 12.5), reflecting considerable stress linked to caregiving duties. Notably, over 40% of caregivers reported high levels of burden, scoring above 30 on the ZBI, highlighting the substantial emotional and physical impact of caregiving. Further analysis demonstrated that certain factors were associated with increased burden: caregivers of patients with more severe hypertension (systolic BP >140 mmHg) had significantly higher burden scores (mean ZBI = 31.2, SD = 11.7) compared to those caring for patients with controlled hypertension (mean ZBI = 24.6, SD = 13.1; $p < 0.01$). The study underscores a clear link between the severity of the patient's hypertension and the level of burden perceived by caregivers. Caregivers also exhibited notable psychological distress, with a mean GHQ-12 score of 8.3 (SD = 4.2), and 37% scoring above the threshold (≥4), suggesting significant mental health needs ($p < 0.01$). Analysis revealed a strong positive correlation between caregiver burden (ZBI) and psychological distress (GHQ-12) ($r = 0.64$, $p < 0.001$), indicating that higher caregiving burden is closely associated with elevated anxiety and depressive symptoms. The study further explored the influence of social support on caregiver burden, finding that caregivers with greater perceived social support, as measured by the Multidimensional Scale of Perceived Social Support (MSPSS), experienced significantly lower burden (mean ZBI = 23.5, SD = 11.5) compared to those with less support (mean ZBI =

30.1, SD = 12.3; $p < 0.01$). This suggests that strong social networks may help mitigate caregiving stress and improve overall well-being.

Arabadjian *et al.* (2025) investigated the relationship between caregiving-related stress and the responsibility of caring for high-needs dependents with the development of hypertension among reproductive-age women in the Jackson Heart Study (JHS), a cohort of community-dwelling Black adults. The study enrolled 453 women aged 21 to 44 years who had baseline blood pressure below 140/90 mm Hg and were not using antihypertensive medications between 2000 and 2004. Caregiving stress over the previous 12 months was measured using a single item from the global perceived stress scale, while caregiving for high-needs dependents was assessed based on the number of hours per week spent caring for children aged five years or younger, children with disabilities, or older adults. Incident hypertension was defined as a systolic blood pressure ≥140 mm Hg, a diastolic blood pressure ≥90 mm Hg, or self-reported use of antihypertensive medication during follow-up examinations conducted from 2005 to 2008 and 2009 to 2013. The study results indicated that over a median follow-up period of 7.4 years, 43.5% of the participants developed hypertension. Women experiencing moderate to high caregiving stress had a greater incidence of hypertension compared to those with no or low caregiving stress (51.7% vs. 40.6%). After adjusting for sociodemographic factors, clinical characteristics, health behaviors, and depressive symptoms, higher caregiving stress remained significantly associated with incident hypertension (hazard ratio = 1.39; 95% CI: 1.01–1.94). In contrast, caregiving for a high-needs dependent was not linked to incident hypertension (adjusted hazard ratio = 0.88; 95% CI: 0.64–1.21). The study concluded that elevated caregiving stress in reproductive-age Black women increases the risk of developing hypertension, suggesting that hypertension prevention strategies for this population should incorporate interventions to manage caregiving-related stress.

Saeed *et al.* (2024) examined the burden experienced by caregivers of children with chronic medical conditions at a tertiary hospital in Pakistan. The study reported a mean caregiver burden score of 35.35 ± 15.14, with nearly half of the participants (46%, n = 177) experiencing mild burden and 37% (n = 140) reporting moderate-to-severe burden. Cancer was the most common diagnosis (24%, n = 92), while the highest burden was observed among caregivers of children with congenital cardiac disease (42.97 ± 15.47). Higher burden levels were significantly associated with lower caregiver education, younger age of the child at diagnosis, and increased frequency of hospital visits ($p < 0.05$). Caregivers identified financial strain, psychosocial challenges, and disruption to lifestyle and relationships as key difficulties. They emphasized the need for better medical coordination, financial assistance, and enhanced hospital services. The study concluded that caregiver burden in pediatric chronic illnesses is multifaceted, highlighting the importance of interventions focused on financial and educational support as well as systemic improvements to enhance access to resources and care coordination. These findings underscore the need for policy and practice measures to effectively support caregivers.

Gobourne *et al.* (2025) investigated the relationship between caregiver strain and hypertension self-care among hypertensive caregivers. In a sample of 2,128 caregivers with hypertension, 18.1% reported experiencing high caregiver strain. Those with high strain, compared to caregivers with none or low strain, demonstrated lower adherence to the DASH diet (38.9% vs. 50.8%, $P < 0.002$), were more physically inactive (44.4% vs. 36.2%, $P < 0.009$), had higher rates of current smoking (19.7% vs. 13.9%, $P < 0.004$), and scored lower on overall self-care measures (mean = 6.6 ± 1.7 vs. 7.0 ± 1.7, $P < 0.001$). In age-adjusted analyses, high caregiver strain was associated with poorer hypertension self-care ($\beta = -0.37$, 95% CI: −0.61 to −0.13). This association remained significant, albeit attenuated, after adjusting for sociodemographic

variables (β = −0.35, 95% CI: −0.59 to −0.11), comorbidities (β = −0.34, 95% CI: −0.57 to −0.10), caregiving intensity (β = −0.34, 95% CI: −0.59 to −0.10), and psychological factors (β = −0.26, 95% CI: −0.51 to 0.00).

Nath *et al.* (2023) evaluated the knowledge, attitude, and practice (KAP) of caregivers of hypertensive patients to determine their level of involvement in patient care and assess related caregiving attributes. Of the 949 caregivers surveyed, 541 (57.0%) were female, and 479 (50.5%) were aged between 18 and 25 years. The mean percentage scores for overall knowledge, attitude, and practice were 54.83 ± 17.95, 47.95 ± 24.05, and 61.26 ± 17.50, respectively. Caregivers' education level, personal history of hypertension, residence, age, relationship to the patient, occupation, and duration of caregiving were all significantly associated with their KAP scores. Furthermore, factors such as patient relationship, age, educational level, occupation, residence, and daily caregiving hours were significantly correlated with different types of caregiver burden. The study highlights the importance of implementing targeted awareness programs for caregivers of hypertensive patients to bridge gaps in knowledge, attitude, and practice, ultimately enhancing their physical and mental well-being.

Rezaei *et al.* (2020) assessed the overall burden of care among caregivers of Iranian patients with chronic conditions. Their findings indicated that the mean burden of care was 53.28% (95% CI: 46.13–60.43). The highest levels of caregiver burden were observed among those caring for patients undergoing dialysis (62.75%; 95% CI: 56.11–69.38), patients with mental disorders (58.69%; 95% CI: 49.70–67.69), and patients with Alzheimer's disease (57.07%; 95% CI: 46.23–67.92), while the lowest burden was associated with caring for patients with diabetes (34.92%; 95% CI: 18.01–51.82). The study concluded that caregivers of patients with chronic illnesses in Iran experience substantial care-related burdens, particularly those managing dialysis,

mental disorders, and Alzheimer's disease. The authors recommended that healthcare authorities implement strategies to alleviate the caregiving burden.

Omoikhefe and Emeka (2024) investigated the extent of caregiver burden and its associated factors among primary caregivers of women with gynaecological cancers. The caregivers had a mean age of 40.4 ± 11.6 years, and the average Zarit Burden Interview (ZBI) score was 31.75 ± 19.14. About one-third (33.3%) frequently experienced stress balancing caregiving and other responsibilities, nearly half (45.1%) sometimes lacked sufficient privacy, and 47.1% often performed more tasks for the patient, with a similar proportion of patients being moderately dependent on their caregivers. Overall, 68.6% of caregivers reported a high burden of care. Significant factors associated with higher burden included missing work due to caregiving (χ^2 = 9.495, P = 0.002), caregivers' place of residence (χ^2 = 7.556, P = 0.006), and menopausal status (χ^2 = 24.238, $p < 0.001$). The study concluded that caregivers of women with gynaecological cancers bear substantial caregiving burdens, emphasizing the need for support and attention to enhance the well-being of both patients and caregivers.

Olowookere *et al.* (2019) evaluated the burden experienced by family caregivers and the factors associated with it at an ophthalmic clinic in a university teaching hospital in southwest Nigeria. The caregivers included parents (23.5%), spouses (20.1%), siblings (3.3%), children (35.9%), and other relatives (14.2%), with a mean age of 38.9 ± 14.9 years (range 8–79 years). A large proportion (81.2%) reported experiencing caregiver burden, with prayer (89%) being the most common coping strategy. Financial support was identified as a major need by 56% of caregivers, while the majority (59.3%) expressed satisfaction with the hospital care provided to their relatives.

None of the patients or their caregivers were enrolled in a health insurance scheme. Factors significantly associated with increased caregiver burden included younger age (AOR = 4.63, 95% CI = 1.55–13.90; p = 0.01), higher educational attainment (AOR = 5.51, 95% CI = 2.30–13.2; p = 0.01), being employed (AOR = 1.72, 95% CI = 1.30–4.76; p = 0.04), longer duration of caregiving (AOR = 3.37, 95% CI = 1.27–7.02; p = 0.02), and caring for patients who were admitted in the hospital (AOR = 1.90, 95% CI = 1.26–3.09; p = 0.02). In conclusion, family caregivers of ophthalmic patients experienced considerable burden and require additional support from healthcare institutions, the community, and policymakers. Participation in social health insurance schemes could help reduce out-of-pocket expenses and ease the financial strain of caregiving.

Kondeti *et al.* (2021) investigated the caregiving burden of family caregivers (FCs) and their satisfaction with dedicated inpatient palliative care (IPC) services provided to patients. The overall mean ZBI-12 score for FCs was 20.26 ± 5.92, indicating a moderate to high level of caregiving burden. Caregivers from below-poverty-line (BPL) families had significantly higher burden scores (p = 0.025), highlighting greater challenges among lower-income groups. Male, unmarried, unemployed, and rural-residing FCs also reported higher caregiving burden, though these differences were not statistically significant. The mean FAMCARE-2 score was 74.01 ± 4.34, reflecting high satisfaction with the palliative care services received. While FAMCARE-2 scores were slightly lower among BPL families, the difference was not statistically significant. The study concluded that FCs from lower-income households experienced greater caregiving burden, but the IPC services effectively enhanced caregiver satisfaction and overall quality of life.

Ofovwe and Osasona (2022) investigated the prevalence of caregiving burden among caregivers of patients with severe mental illness, exploring its relationship with caregivers' socio-demographic characteristics, patients' socio-demographics, and clinical variables. The study found that approximately 37.6% of caregivers experienced moderate to severe caregiving burden. A weak positive correlation was observed between the duration of caregiving and burden of care ($r = 0.298$, $p = 0.004$). After adjusting for other variables, longer duration of caregiving (OR = 1.163, $p = 0.017$, 95% CI = 1.027–1.317) and poor social support (OR = 0.438, $p = 0.047$, 95% CI = 0.194–0.199) remained independently associated with higher caregiving burden, accounting for about 16% of the variance. The study concluded that providing social support to caregivers and subsidizing medication and hospitalization costs could help alleviate the burden experienced by caregivers of individuals with mental illness.

2.3.2 Empirical Review on Related Articles on Health-Related Quality of Life Among Caregivers

Al-Awad *et al.* (2024) examined the quality of life (QoL) of family caregivers (FCGs) and how patient clinical characteristics and caregivers' sociodemographic factors influenced their QoL. In a cross-sectional, questionnaire-based study, 340 FCGs of persons with schizophrenia (PwS) attending outpatient clinics in two major psychiatric hospitals in Saudi Arabia's eastern province were surveyed using convenience sampling. Among the 216 respondents analyzed, 127 (58.8%) were men, 117 (54.2%) were over 45 years old, 91 (42.1%) were siblings of a PwS, and 82 (38%) were parents. The mean QoL score was 78.2 ± 21.24 out of 120, indicating a mid-range QoL. Lower QoL was significantly associated with longer daily caregiving hours, lower educational levels of FCGs, and recent inpatient admissions of the PwS. The study concluded that caregivers of PwS experience moderate financial burden and limited support from healthcare professionals.

Interventions such as targeted support from healthcare providers, engagement in community support groups, and individualized attention for caregivers could help reduce stress and improve their QoL.

Amir *et al.* (2021) assessed the perceived caregiving burden and quality of life (QoL) among family caregivers of patients with chronic illnesses in home care centers in Jeddah. The study found that caregivers of patients with mental illnesses experienced a higher burden compared to caregivers of patients with cardiac or other systemic disorders. These caregivers also reported the lowest QoL scores, particularly in the physical and psychological domains. Female caregivers, those who were unemployed, and those with lower levels of education were more likely to experience adverse effects from caregiving responsibilities.

Similarly, Liu *et al.* (2025) investigated the relationships among caregiving burden, social support, coping styles, and QoL in caregivers of children with cerebral palsy using mediation effect models. Among 189 caregivers, 59.26% were mothers, 64.55% had a high school education or lower, and 62.96% were unemployed. Caregiving burden negatively impacted both physical and mental QoL. Social support and positive coping strategies were positively associated with both aspects of QoL. Mediation analyses revealed that social support significantly mediated the relationship between caregiving burden and QoL, while positive coping alone was not statistically significant. However, a serial mediation pathway combining social support and positive coping was significant. The study concluded that caregivers of children with cerebral palsy experience substantial burden and reduced QoL, and emphasized the importance of interventions aimed at enhancing social support to improve caregivers' well-being.

Zimbudzi *et al.* (2024) examined factors contributing to low quality of life (QoL) among caregivers of patients with chronic kidney disease (CKD), including those on dialysis. QoL was

measured using the validated Adult Carer Quality of Life Questionnaire. The study included 278 caregiver-patient pairs, with mean ages of 56.6 ± 15.2 and 63.7 ± 15.3 years, respectively. Across the eight QoL domains, 37% to 73.3% of caregivers reported low to mid-range scores, with 48% experiencing low to mid-range overall QoL. While the severity of CKD did not significantly affect overall QoL, caregivers of patients on dialysis had worse scores in the personal growth and carer satisfaction domains compared to those caring for pre-dialysis patients. Factors associated with lower QoL scores included female gender of caregivers and patients, longer caregiving duration, patient diagnosis of diabetes, and lower socioeconomic status. The study concluded that understanding these factors is critical for designing targeted interventions aimed at improving the QoL of CKD caregivers.

Duah *et al.* (2024) investigated the association between caregiver burden and health-related quality of life (HRQoL) among informal caregivers of older adults in Ghana. The mean ages of caregivers and care recipients were 39.15 and 75.08 years, respectively. The analysis revealed a significant negative relationship between caregiver burden and HRQoL ($\beta = -0.286$, SE = 0.0123, $p = 0.001$), indicating that higher caregiving burden corresponded to poorer HRQoL. Socioeconomic, cultural, demographic, and healthcare factors were also significantly associated with HRQoL. Caregivers with no formal education ($\beta = -1.204$, SE = 0.4085, $p = 0.01$), primary education ($\beta = -2.390$, SE = 0.5099, $p = 0.001$), or junior high education ($\beta = -1.113$, SE = 0.3903, $p = 0.01$) had significantly lower HRQoL compared to those with tertiary education. Conversely, younger caregivers aged 18–24 ($\beta = 2.960$, SE = 0.6306, $p = 0.001$), 25–34 ($\beta = 1.728$, SE = 0.5794, $p = 0.01$), and 35–44 years ($\beta = 1.604$, SE = 0.5764, $p = 0.01$) reported higher HRQoL compared to caregivers aged 65 years and above. Additionally, caregivers who had not utilized healthcare services in the year prior to the survey exhibited significantly higher

HRQoL than those who used healthcare services five or more times (β = 4.786, SE = 0.4610, p = 0.001).

Niu *et al.* (2022) investigated the relationship between caregiver competence and health-related quality of life (HRQoL) among family caregivers of disabled elderly adults, while also examining the mediating role of caregiver burden. The results indicated that caregivers of moderately and severely disabled elderly adults had significantly lower scores on the Physical Component Summary ($F = 20.463$, $p < 0.05$) and Mental Component Summary ($F = 17.062$, $p < 0.05$) compared with caregivers of older adults with mild disabilities. These caregivers also reported higher caregiving burden ($F = 19.533$, $p < 0.05$) and caregiving difficulties ($F = 16.079$, $p < 0.05$). Structural equation modeling demonstrated good model fit ($\chi^2/df = 1.175$, $p = 0.261$; NFI = 0.970; RFI = 0.949; IFI = 0.995; CFI = 0.995; GFI = 0.963; TLI = 0.992; AGFI = 0.920; RMSEA = 0.036). The total effect of Family Caregiver Task Inventory scores on HRQoL was −0.980, comprising a direct effect of −0.645 and a mediating effect through caregiver burden of −0.335. The study concluded that caregivers' HRQoL is strongly influenced by caregiving difficulties and burden, highlighting the need for early identification and interventions to alleviate these challenges.

Timur *et al.* (2021) explored coping strategies, caregiver burden, and quality of life among caregivers of patients in palliative care units. The study reported a mean Zarit Caregiver Burden Scale score of 50.7, reflecting a moderate burden. Among the COPE inventory subscales, the highest score was observed for religious coping (COPE 7 = 15.7), while the lowest was for substance use (COPE 12 = 4.4). A significant negative correlation was found between caregiver burden and caregivers' education level ($R = −0.291$, $p = 0.025$). The study concluded that caregiver burden encompasses the full range of physical, psychological, social, and financial

responses arising from caregiving. In the study context, caregivers were primarily women, unemployed, and with low educational attainment. Despite providing care to chronically and severely ill patients, participants reported only moderate burden, suggesting that palliative care centers may offer supportive medical, social, and psychological interventions for caregivers.

Karakurt *et al.* (2018) investigated caregiver burden and quality of life among caregivers of stroke patients. The patients reported poor health status on the SF-36, with a mean score of 52.91 ± 14.25. Caregivers had an average burden score of 48.66 ± 10.61. A significant negative correlation was observed between caregiver burden and quality of life ($p < 0.001$), indicating that higher caregiving burden was associated with lower quality of life. The study emphasized that nurses providing care to stroke patients should equip caregivers with relevant information and guidance for both clinical and home care, which could improve the quality of life for both caregivers and care recipients.

Galvan *et al.* (2019) examined the level of burden experienced by primary family caregivers and identified predictors of caregiver burden among relatives providing home-based palliative care. A descriptive-correlational cross-sectional study was conducted with 77 caregivers, 66.2% of whom were women, with a mean age of 61.5 years. Most caregivers (62.3%) were providing care for cancer patients. Notable findings included the presence of anxiety in 48.1% of caregivers, a high average fatigue score (FAS = 23.0, SD = 8.5), and 41.6% experiencing intense caregiver burden. Statistically significant correlations were found between caregiver burden, fatigue, post-traumatic growth, anxiety, and depression, with anxiety and depression identified as the main predictors of burden. Additionally, caregiver burden was associated with worsening health. The study concluded that identifying factors influencing caregiver burden can help healthcare

providers assess the specific needs of caregivers and provide appropriate emotional support within the healthcare environment.

Cui *et al.* (2024) investigated the mediating effect of psychological distress on the relationship between caregiver burden and quality of life (QoL), as well as the moderating role of family resilience. The study included 290 caregivers and confirmed that psychological distress significantly mediated the relationship between caregiver burden and QoL ($P < 0.001$). Both overall family resilience and the specific dimension of family communication and problem-solving (FCPS) significantly moderated the pathways from psychological distress/anxiety to QoL ($P < 0.05$). Additionally, the utilization of social and economic resources (USER) significantly moderated the association between depression and QoL ($P < 0.05$). These findings highlight the crucial role of psychological distress in linking caregiver burden to QoL and demonstrate the buffering effect of family resilience. The study underscores the importance of interventions aimed at reducing psychological distress and enhancing family resilience, with a particular focus on improving FCPS and USER, to promote caregivers' well-being and overall QoL.

Bello *et al.* (2021) examined the correlation between burden of care and quality of life (QoL) among informal caregivers of cancer patients in teaching hospitals in Osun State, Nigeria. The study revealed an overall low level of perceived burden among caregivers, with a mean score of 1.54, and a moderate level of QoL, with a mean score of 3.17 on a 5-point scale. A significant negative relationship was observed between perceived burden and QoL ($r = -0.412$, $P < 0.05$). Additionally, there were significant differences in caregiver burden between OAUTHC and LAUTECH hospitals ($t = -3.051$, $P < 0.05$), as well as gender-based differences in burden (mean difference = -10.514). Differences in QoL were also observed between caregivers from OAUTHC, Ile-Ife, and LAUTECH, Osogbo ($t = 2.399$, $P < 0.05$). The study concluded that

while the burden of care among caregivers of cancer patients is generally low, their QoL is moderate. The authors recommended that family members and friends be prepared to share caregiving responsibilities to support informal caregivers, thereby improving the overall well-being of the family unit.

Vashistha *et al.* (2019) investigated the quality of life (QoL) of lower-income caregivers of cancer patients in Delhi, India, and conducted a systematic review of similar studies worldwide. The findings indicated that caregivers from households earning below the median annual per capita income at the study center ($p < 0.01$), and those providing care for four months or more ($p < 0.01$), experienced significantly lower QoL. Caregiving burden was identified as the primary contributor to overall QoL scores ($p < 0.01$). The systematic review included eleven studies and showed that lower-income caregivers in Asia and the Middle East face diminished QoL and increased caregiving burden, whereas evidence from Europe and North America did not demonstrate a similar decline in QoL. The study concluded that lower-income caregivers, particularly in developing countries, experience substantial reductions in QoL, highlighting the need for targeted interventions to alleviate caregiver burden.

Lin *et al.* (2023) investigated and compared the quality of life (QoL) of primary family caregivers (PFCs) for inpatients with advanced cancer versus PFCs of home hospice patients with advanced cancer, and identified factors influencing their QoL. The findings showed that among PFCs of inpatients, caregiver age ($t = 2.411$, $p < 0.05$), relationship to the patient ($F = 2.985$, $p < 0.05$), and family economic status ($F = 3.423$, $p < 0.05$) significantly affected QoL. For PFCs of home hospice patients, family economic status ($F = 3.757$, $p < 0.05$) and prior caregiving experience ($t = 2.021$, $p < 0.05$) were significant determinants. Multiple stepwise linear regression identified that for inpatient PFCs, family economic status and being an

immediate family member of the patient predicted QoL, whereas for home hospice PFCs, family economic status and caregiving experience were the main predictors of QoL.

2.3.3 Empirical Review on Related Articles on Health-Related Quality of Life Among Hypertensive Patients

In a cross-sectional study, Al-Amin *et al.* (2022) assessed the health-related quality of life (HRQoL) of 350 hypertensive patients using the EQ-5D-5L and WHOQOL-BREF instruments. Participants were recruited from urban outpatient clinics and completed questionnaires capturing health status, quality of life, and socio-demographic characteristics. The overall mean EQ-5D-5L score was 0.76 (SD = 0.15), with significant differences based on age and sex. Older patients (≥60 years) had lower HRQoL (mean = 0.68, SD = 0.12) compared to younger participants (mean = 0.80, SD = 0.16; $p < 0.001$), and females reported lower HRQoL (mean = 0.72, SD = 0.14) than males (mean = 0.79, SD = 0.15; $p = 0.014$). The study also found that patients with well-controlled blood pressure had higher HRQoL than those with uncontrolled hypertension (mean EQ-5D = 0.81 vs. 0.72; $p < 0.01$).

Kaczmarek *et al.* (2021) investigated the effect of comorbidities on HRQoL among 500 hypertensive patients in Poland using the SF-36 to measure both physical and mental health components. The results indicated that comorbidities substantially reduced HRQoL, particularly in the physical domain, with patients having a single comorbidity scoring an average of 46.5 (SD = 12.4) compared to 35.8 (SD = 11.2) for those with multiple comorbidities ($p < 0.001$). Mental health scores also varied, with participants without comorbidities reporting 52.3 (SD = 9.9), while those with two or more comorbidities scored 42.7 (SD = 10.5; $p < 0.0001$). Correlation analyses revealed a strong negative association between the number of comorbidities and

HRQoL for both physical ($r = -0.68$, $p < 0.001$) and mental health components ($r = -0.55$, $p < 0.001$), highlighting the compounded burden of multiple chronic conditions.

In a longitudinal study, Moser *et al.* (2020) assessed changes in HRQoL over one year in 350 hypertensive patients in the United States enrolled in a lifestyle modification program. Using the PROMIS scale, baseline physical and mental health scores averaged 45.2 (SD = 8.9) and 50.1 (SD = 9.5), respectively. After one year, significant improvements were observed, with physical health scores rising to 52.8 (SD = 7.6; $p < 0.001$) and mental health scores to 56.4 (SD = 8.2; $p < 0.001$). Multivariate analysis identified regular exercise and dietary modifications as significant predictors of enhanced physical and mental HRQoL.

Ipinnimo *et al.* (2022) evaluated and compared health-related quality of life (HRQoL) and its determinants among hypertensive patients in two government hospitals in Ekiti State, Nigeria. The study found that patients in the federal government teaching hospital generally reported better HRQoL across all domains, with statistically significant differences observed only in the physical ($T = -7.932$, $p < 0.001$) and overall ($T = -2.783$, $p = 0.006$) domains. An inverse relationship between cost and HRQoL was identified in both hospitals (State: $r = -0.224$, $p = 0.001$; Federal: $r = -0.378$, $p < 0.001$). Key predictors of HRQoL across both hospitals included age, residential locality, income, number of complications, exercise, and smoking. Additional predictors specific to the state government teaching hospital were marital status, living arrangement, occupation, number of medications, and engagement in religious and spiritual activities, while household size, length of diagnosis, and indirect costs were predictors among patients in the federal hospital. The study concluded that targeted support is necessary for hypertensive patients in state government teaching hospitals to address disparities in HRQoL,

and that the identified predictors should inform policy strategies aimed at improving patient well-being.

Joseph *et al.* (2022) investigated the impact of education on HRQoL among hypertensive patients in two tertiary facilities in Bayelsa State, Nigeria (FMC Yenagoa and NDUTH Okolobiri). A total of 425 patient responses were initially analyzed, and an educational intervention consisting of weekly interactive health talks on hypertension was conducted for six weeks at the cardiology clinic. Two months post-intervention, 297 responses were analyzed and compared. HRQoL was measured using the MINICHAL scale (best = 0, worst = 51), with pre- and post-intervention scores in FMC Yenagoa improving from 12.96 to 8.00 and in NDUTH Okolobiri from 8.70 to 8.55. Although the changes were not statistically significant ($p = 0.3998$), the results indicated a positive trend in HRQoL following the educational sessions. Age, marital status, and education were strong determinants of HRQoL. The study emphasized that continuous patient education and counseling are crucial tools for improving the quality of life of hypertensive patients.

Snarka *et al.* (2020) assessed the quality of life (QoL) among hypertensive patients and the factors influencing it. The study population included individuals aged 30–89 years, predominantly men and urban residents, with an average BMI of 28.4 kg/m². The mean duration of hypertension among participants was 7 ± 6.34 years. Using the WHOQOL-BREF questionnaire, the highest-rated QoL domain was physical health, while the lowest was social relationships. Overall, patients reported good to moderate QoL across the physical, psychological, social, and environmental domains. Adherence to recommendations addressing modifiable risk factors was identified as a key contributor to improvements in QoL in all domains.

Bhat *et al.* (2020) investigated the QoL and perceived burden among caregivers of family members diagnosed with schizophrenia. The mean age of caregivers was 40.49 ± 12.65 years, while patients' mean age was 37.45 ± 9.55 years. Caregivers' mean score on the Schizophrenia Caregiver Quality of Life (S-CGQoL) questionnaire was 44.8 ± 8.67, with 76% scoring below 50, indicating low QoL. QoL was negatively correlated with caregiver burden ($r = -0.478$, $p = 0.0001$) and positively correlated with the duration of illness in patients ($r = 0.243$, $p = 0.014$). The mean caregiver burden on the Zarit Burden Interview (ZBI) was 38.28% ± 11.19, with 64% experiencing mild-to-moderate burden. Caregiver burden was significantly associated with patients' negative symptom scores ($r = 0.287$, $p = 0.013$), which were the only significant predictor of burden. The study concluded that caregivers of schizophrenia patients experience considerable burden, and low QoL among caregivers is closely related to patient symptomatology and the duration of illness.

Crepaldi *et al.* (2024) examined the associations between psychological factors including Type A and Type D personality traits, locus of control (LoC), self-esteem, and trait anxiety as well as both subjective well-being (SWB) and health-related quality of life (HRQoL) in patients with hypertension and comorbid metabolic syndrome. The study enrolled 185 volunteers (130 males, 70.3%; mean age 54 ± 10.93 years) who completed assessments of HRQoL, SWB, LoC, and self-esteem at three time points, while Type A and D behaviors and trait anxiety were assessed only at baseline. Using two-level hierarchical mixed models with repeated measures nested within participants and controlling for sociodemographic and clinical variables, the study found no significant changes in HRQoL or SWB over time. However, patients with higher self-esteem and a more internal LoC (and lower external LoC) exhibited improvements in SWB and HRQoL up to one year. Additionally, higher Type A behavior and trait anxiety at baseline predicted

longitudinal increases in most outcome variables. The findings indicate that interventions tailored to these psychological characteristics may help enhance HRQoL and SWB in hypertensive patients.

Ngoc *et al.* (2023) investigated the health-related quality of life (HRQOL) among hypertensive patients. The study reported mean scores of 43.3 (SD = 7.9) for physical health (PCS-12) and 56.3 (SD = 6.5) for mental health (MCS-12). Older age was associated with lower physical health scores, while individuals living in low-population-density areas had higher mental health scores than those in high-density areas. The presence of comorbidities and use of multiple medications negatively impacted both physical and mental health components. Participation in social activities was linked to higher mental health scores. Overall, hypertensive patients demonstrated a moderate level of HRQOL, independent of treatment status. The study suggested that regular screening, effective management of comorbidities, and encouragement of active employment and social engagement could improve HRQOL in this population.

Ehwarieme *et al.* (2020) assessed the quality of life of hypertensive patients attending outpatient clinics in selected private hospitals in Obosi, Anambra State. Results showed that 88.1% of respondents had low quality of life, while 11.9% had moderate quality of life. Patients with no formal or primary education were 65% less likely to have a good quality of life compared to those with a university degree (OR = 0.35, CI = 0.07–1.68). Married respondents were twice as likely to report good quality of life compared to widowed individuals (OR = 2.25, CI = 0.25–20.41), and those earning less than ₦100,000 were 41% less likely to have good quality of life compared to higher earners (OR = 0.59, CI = 0.20–1.72). Multivariate analysis identified age (p = 0.013), educational level (p = 0.000), marital status (p = 0.001), monthly income (p = 0.007), and occupation (p = 0.002) as significant predictors across all quality of life domains. The study

concluded that early diagnosis and treatment, alongside accessible national health insurance, could reduce the burden of hypertension and improve patients' quality of life.

2.3.4 Empirical Review on Related Articles on Influencing Factors Associated with Quality of Life

Adamu *et al.* (2022) investigated factors affecting the quality of life among hypertensive patients. The findings indicated that with each additional year of age, patients' physical health-related quality of life (HRQOL) decreased by an average of 0.26 units, after controlling for other variables [−0.26, 95% CI: −0.40 to −0.11]. Similarly, for each additional year of antihypertensive treatment, physical HRQOL declined by 0.94 units [−0.94, 95% CI: −1.82 to −0.07]. Patients with low social support had a 16.58-unit lower physical HRQOL compared to those with high social support [−16.58, 95% CI: −20.55 to −12.61]. Additionally, the presence of comorbidities was associated with a 7.16-unit reduction in physical HRQOL relative to patients without comorbid conditions [−7.16, 95% CI: −10.59 to −3.74].

In addition, several factors were found to be significantly associated with psychological health-related quality of life (HRQOL) among hypertensive patients. Being widowed was associated with an average decrease of 5.16 units in psychological HRQOL compared with married individuals, after controlling for other variables [−5.16, 95% CI: −10.17 to −0.15]. Hypertensive patients who chew khat had 7.63 units lower psychological HRQOL than non-chewers [−7.63, 95% CI: −13.99 to −1.26], while those with low social support experienced a 19.59-unit reduction compared to those with high social support [−19.59, 95% CI: −23.99 to −15.19].

Regarding social health-related quality of life, being single and having low social support were significant predictors. Single patients had, on average, 12.42 units lower social HRQOL

compared with married patients [−12.42, 95% CI: −20.57 to −4.27], while patients with low social support had 13.81 units lower social HRQOL than those with high social support [−13.81, 95% CI: −18.49 to −9.14].

For environmental health-related quality of life, physical exercise, low social support, and the presence of comorbidities were identified as significant factors influencing HRQOL among hypertensive patients. For environmental health-related quality of life among hypertensive patients, lack of physical exercise, low social support, and presence of comorbidities were significant factors. Patients who did not engage in physical exercise had, on average, 8.18 units lower environmental HRQOL compared with those who exercised [−8.18, 95% CI: −11.33 to −5.04]. Those with low social support experienced a 15.47-unit reduction compared to patients with high social support [−15.47, 95% CI: −18.94 to −11.99]. Additionally, hypertensive patients with comorbid conditions had 5.25 units lower environmental HRQOL than those without comorbidities [−5.25, 95% CI: −8.24 to −2.27].

Adeke *et al.* (2020) investigated factors associated with hypertension in Nigeria. Among the participants, 56.3% were women, 65.8% were married, 52.5% lived in rural areas, and 33.9% had attained tertiary education. The mean age of hypertensive participants was 53.1 ± 13.6 years, compared with 39.2 ± 15.0 years for normotensive individuals. Regarding lifestyle, 30.7% reported low physical activity, 4.1% were current tobacco users, and 35.4% consumed alcohol. The study found that, relative to unmarried individuals, being married (OR = 1.88, 95% CI: 1.41–2.50) or widowed (OR = 1.57, 95% CI: 1.05–2.36) was significantly associated with hypertension. Higher educational attainment was also linked to hypertension, with primary (OR = 1.44, 95% CI: 1.12–1.85), secondary (OR = 1.37, 95% CI: 1.04–1.81), and tertiary education (OR = 2.02, 95% CI: 1.57–2.60) showing increased risk compared with no formal education.

Additionally, low physical activity (OR = 1.23, 95% CI: 1.05–1.42), alcohol consumption (OR = 1.18, 95% CI: 1.02–1.37), and unemployment (OR = 1.42, 95% CI: 1.07–1.88) were associated with higher odds of hypertension.

Aslam *et al.* (2022) investigated socio-demographic, economic, and clinical variables (SDECVs) influencing the health-related quality of life (HRQoL) of hypertensive patients. A total of 350 patients participated, with 211 (60.28%) classified as stage 1 hypertension and 139 (39.7%) as stage 2. None of the participants reported severe problems on any domain of the EQ-5D-5L. Using a Generalized Linear Model (GLM), the mean utility score was 0.64 (±0.15) and the mean VAS score was 63.17 (±11.01). Stage 1 hypertensive patients had significantly better scores across all domains compared to stage 2 patients. Among socio-demographic factors, males, non-smokers, those with shared income, and patients with otherwise healthy status reported higher HRQoL. Lower treatment costs were also associated with improved HRQoL. Clinically, stage 1 hypertension patients fared better than stage 2, while the number of prescribed antihypertensive medications had no significant effect. Non-pharmacologic interventions such as reducing salt, oil, and beverage intake, and increasing water consumption, were associated with better QoL. Patients experiencing dizziness, cardiac problems, or diabetes reported lower HRQoL, with female patients with comorbidities (renal, respiratory, visual issues, or dizziness) showing lower utility scores than males. The study highlights key determinants of HRQoL that should be considered in efforts to improve the well-being of hypertensive patients.

Bhagat *et al.* (2023) compared the quality of life (QoL) of adult hypertensive patients with healthy individuals and examined factors linked to poor QoL among hypertensive subjects. The results showed that overall QoL and general health scores were significantly lower in hypertensive patients, indicating a decline in well-being compared to healthy participants ($P <$

0.001). Key factors associated with poorer QoL included low educational attainment, being a homemaker, lower socioeconomic status, and the presence of comorbidities (all $P < 0.001$). The study concluded that hypertension negatively impacts QoL compared to healthy individuals.

Gholami *et al.* (2022) conducted a cross-sectional study with 400 hypertensive patients in Iran to explore the relationship between self-efficacy, social support, and QoL. Using the WHOQOL-BREF and a self-efficacy scale, they found that patients with higher self-efficacy reported better QoL scores (mean = 71.5, SD = 12.3) compared to those with lower self-efficacy (mean = 59.3, SD = 11.7; $p < 0.001$). Furthermore, social support showed a strong positive correlation with QoL ($r = 0.60$, $p < 0.001$), suggesting that well-established social networks enhance the well-being of hypertensive patients.

Akinci *et al.* (2021) examined how health literacy and treatment adherence affect quality of life among 250 hypertensive patients in Turkey. Using the EQ-5D scale and a health literacy assessment tool, the study found that patients with adequate health literacy reported significantly higher quality of life scores (mean = 0.78, SD = 0.14) compared to those with inadequate literacy (mean = 0.63, SD = 0.16; $p < 0.01$). Additionally, adherence to treatment was positively correlated with quality of life ($r = 0.55$, $p < 0.001$), emphasizing the role of patient understanding in improving health outcomes.

In South Korea, Choi *et al.* (2020) conducted a longitudinal study with 500 hypertensive participants to evaluate the impact of lifestyle factors on quality of life. Using the EQ-5D-5L scale, results showed that individuals engaging in regular physical activity had higher quality of life scores (mean = 0.74, SD = 0.13) compared to sedentary participants (mean = 0.66, SD = 0.14; $p < 0.005$). Non-smokers also reported significantly better quality of life than smokers (mean =

0.77 vs. 0.68; $p < 0.01$), highlighting the beneficial effects of healthy lifestyle behaviors on well-being in hypertensive patients.

Kwan *et al.* (2021) investigated the influence of psychological factors, specifically anxiety and depression, on the quality of life among 300 hypertensive patients in Hong Kong. Using the Hospital Anxiety and Depression Scale (HADS) and WHOQOL-BREF, the study revealed that higher anxiety and depression scores were associated with lower quality of life. Patients experiencing moderate to severe anxiety had a mean WHOQOL-BREF score of 56.4 (SD = 11.5), compared to 73.2 (SD = 9.7) for those without anxiety ($p < 0.001$). Similarly, participants with moderate to severe depression scored lower on quality of life (mean = 57.0) than those without depression (mean = 74.5; $p < 0.001$), highlighting the significant psychological burden on hypertensive patients.

Noh *et al.* (2020) examined the effect of socio-economic status on quality of life in 600 hypertensive patients in Japan. Using the SF-36, they found that patients in higher income brackets reported better physical component scores (mean = 52.3, SD = 8.4) compared to lower-income patients (mean = 42.5, SD = 10.2; $p < 0.001$). The study emphasized that financial stability and access to healthcare resources are crucial determinants of health-related quality of life.

Visser *et al.* (2021) performed a systematic review and meta-analysis on the impact of chronic pain on quality of life among hypertensive patients. Across 15 studies, chronic pain was shown to significantly reduce quality of life, with a pooled mean difference of -12.7 (95% CI: -15.9 to -9.5) between patients experiencing chronic pain and those without. The review highlighted the importance of managing comorbidities like chronic pain to enhance overall quality of life.

2.4 Summary of Literature Review

In summary, the role of caregivers in disease management are diverse, particularly noting the significant burden and adverse health outcomes they often face, primarily among unpaid, informal caregivers who are frequently overlooked despite their critical contributions. Chronic diseases, such as hypertension, pose unique challenges, especially in low- and middle-income countries where systemic issues exacerbate the caregiving experience. Hypertension, a prevalent global health issue, contributes substantially to cardiovascular disease and kidney failure, affecting an estimated 1 billion individuals globally, with particularly alarming rates among black populations, indicating a dire need for tailored interventions and support systems. The classification of hypertension is essential for effective diagnosis and management, utilizing guidelines based on blood pressure metrics and associated comorbidities while highlighting disparities in awareness and treatment, particularly in Nigeria where significant gaps in healthcare provision persist.

Moreover, barriers to effective hypertension care include a lack of trained healthcare providers, inadequate facilities, and low patient adherence to treatment, all of which contribute to higher complication rates. The review emphasizes that the psychosocial impacts of hypertension extend to caregivers, who experience varying degrees of burden that affect their health-related quality of life (HRQoL). The assessment of HRQoL has shifted to recognize the importance of the psychosocial dimensions of health, with instruments like WHOQOL providing a comprehensive understanding of well-being among hypertensive patients and their caregivers. In addition, the empirical studies illustrated the correlations between caregiver burden and HRQoL, emphasizing the influence of socio-demographic factors, social support, and healthcare access on overall well-being.

CHAPTER THREE

RESEARCH METHODOLOGY

This chapter described the research design, population, sampling techniques, data collection methods, and the analytical techniques that were employed in assessing burden of care as a predictor of quality of life among caregivers of hypertensive patients attending tertiary health facilities in Benin City, Edo State. The methodology was designed to ensure that the study objectives are met through a systematic, accurate, and reliable process.

3.1 RESEARCH DESIGN

The study adopted a quantitative cross-sectional design. This design was deemed suitable as it enabled the collection of data at a single point in time, making it appropriate for assessing the burden of care as a predictor of quality of life among hypertensive patients. This approach facilitated the identification of patterns, relationships, and associations between variables, such as the caregivers' and patients' socio-demographic characteristics, their health-related quality of life (HRQoL), and influencing factors associated with the burden of care among caregivers of hypertensive patients..

3.2 RESEARCH SETTING

The study was conducted in the University of Benin Teaching Hospital (UBTH), Edo State, Nigeria. The University of Benin Teaching Hospital was a tertiary institution founded in 1973 (UBTH, 2019). It was located on the Benin-Lagos expressway. Its boundaries were the University of Benin, the Federal Government Girls' College road, and the Benin-Lagos express road. In addition to providing healthcare services, the institution provided necessary facilities for training high and middle-level health practitioners, offered research opportunities for staff and

interested persons. It comprised many departments, among which was the Consultant Out-Patient Department (COPD) of University of Benin Teaching Hospital, where respondents for this study were gathered (UBTH, 2019).

3.3 TARGET POPULATION

The target population for this study comprised caregivers of hypertensive patients receiving treatment in the consultant outpatient department at the University of Benin Teaching Hospital (UBTH), Benin City, specifically on Mondays and Fridays (the designated clinic days for the Cardiology Unit), from January 2025 to February 2025. This population included both old and new patients, totaling 638 individuals (UBTH, Cardiology clinic record, March 2024).

	January 2025						
Cardiology Unit							
	Old		**New**		**NHIS**		
	M	**F**	**M**	**F**	**M**	**F**	**Total**
	23	48	6	4	15	29	125
	14	52	3	2	6	16	93
	17	24	2	2	7	8	60
	20	26	4	6	3	4	57
Total							335
	February 2025						
Cardiology Unit							
	Old		**New**		**NHIS**		
	M	**F**	**M**	**F**	**M**	**F**	**Total**
	22	57	3	3	14	12	111
	11	25	1	1	5	15	58
	16	25	2	2	5	7	57
	21	32	5	10	1	8	77
Total							303

Statistics for the month of January 2025 to March 2025 (MOP Clinic UBTH)

The average number of hypertensive patients seen for the period of January 2025 to February 2025 was 319.

3.4 SAMPLING TECHNIQUE

This study adopted a convenience sampling technique to select caregivers of hypertensive patients receiving treatments in the consultant outpatient department at the University of Benin Teaching Hospital (UBTH). Convenience sampling is a non-probability sampling method in which participants are selected based on their accessibility, availability, and willingness to participate. This approach was chosen due to its practicality in accessing respondents who are readily available at the hospital setting and who meet the inclusion criteria. Given the often busy and sensitive nature of caregiving for chronically ill patients such as those with hypertension, this method allowed engagement with caregivers during routine clinic visits or hospital stays without imposing additional burdens on them.

The target population for the study comprised caregivers attending to hypertensive patients who were registered for treatment at UBTH between January and Febuary 2025. Hospital records indicated that a total of 638 hypertensive patients were treated during this two-month period, yielding an average monthly population of 319 patients. This average was used to estimate the sample size required for the study using Yamane's formula (1967) with 10% attrition rate of work as below.

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

Where; n = sample size; N = population size (319); e = margin of error (0.05). Therefore;

$$n = \frac{319}{1 + 319\ (0.05^2)}$$

$$n = \frac{319}{1 + 319\ (0.0025)}$$

$$n = \frac{319}{1 + 0.80}$$

$$n = \frac{319}{1.80} = 177$$

Include 10% of the sample size, which served as the attrition rate of the work:

$\frac{10}{100}$ x 177 = 17.7

n = 177 + 17.7

n = 194.7 ≈ 195

Thus, a final sample size of 195 caregivers was targeted for data collection.

3.5 INCLUSION AND EXCLUSION CRITERIA

Inclusion Criteria:

- Primary caregivers who were directly responsible for assisting hypertensive patients in managing their condition.
- Patients and caregivers who were willing to participate and complete the survey or interview.
- Hypertensive patients on visitation to receive treatment at the University of Benin Teaching Hospital (UBTH).
- Patients diagnosed with hypertension for at least six months to ensure they had experienced the long-term effects of the condition.
- Adult hypertensive patients aged 18 years and above who could provide informed consent.

Exclusion Criteria:

- Caregivers who were not directly responsible for assisting hypertensive patients in their daily care.
- Hypertensive patients who were critically ill or unable to communicate effectively.
- Patients with severe cognitive impairments or psychiatric disorders that might have affected their ability to provide accurate responses.
- Patients and caregivers who declined to participate or withdrew consent during the study.
- Patients diagnosed with other chronic conditions that could have independently impacted their quality of life, thereby confounding the study results..

3.6 DATA COLLECTION INSTRUMENTS

The study employed quantitative data collection instruments to gather comprehensive information on the burden of care and quality of life among hypertensive patients and their caregivers. A self-structured questionnaire served as the primary tool for data collection, designed to capture in-depth information from patients. The questionnaire comprised five sections: Sections A, B, C, D, and E.

Section A: This section comprised the socio-demographic characteristics of the respondents.

Section B: This section comprised questions to assess the caregiver burden among caregivers of hypertensive patients undergoing treatment at the University of Benin Teaching Hospital. This section adopted the Zarit Burden Interview (ZBI) standardized instrument for assessing caregiver burden. ZBI, as used by Bhat *et al.* (2020), was a 22-item self-report, used to assess the perceived burden of rendering care. Response options in each item ranged from 0 to 4. The 22-item ZBI encompassed questions related to caregiver health and psychological well-being,

finances, impact on social life, and relationship with the individual with the disease. Accordingly, the cumulative score ranged from 0 to 88. The score was interpreted as 0–21: Little or no burden, 21–40: Mild-to-moderate burden, 41–60: Moderate-to-severe burden, 61–88: Severe burden.

Section C: This section comprised questions to assess the health-related quality of life (HRQoL) among caregivers of hypertensive patients undergoing treatment at the University of Benin Teaching Hospital. This section adopted the brief version (26-items) of the WHO Quality of Life Questionnaire, which was a valid and reliable short version of the 100-item version "WHOQOL-100." This instrument yielded four dimensions of quality of life: physical, psychological, social relations, and environmental. Caregivers' self-reported answers were classified into these four dimensions of quality of life, with the total score ranging between 26 and 130, and a higher score indicating a better QOL.

Section D: This section comprised questions to assess the health-related quality of life (HRQoL) among hypertensive patients undergoing treatment at the University of Benin Teaching Hospital. This section adopted the brief version (26-items) of the WHO Quality of Life Questionnaire, which was a valid and reliable short version of the 100-item version "WHOQOL-100." This instrument yielded four dimensions of quality of life: physical, psychological, social relations, and environmental. Patients' self-reported answers were classified into these four dimensions of quality of life, with the total score ranging between 26 and 130, and a higher score indicating a better QOL.

Section E: This section comprised questions to assess the influencing factors associated with caregiver burden among caregivers of hypertensive patients undergoing treatment at the University of Benin Teaching Hospital.

3. 7 DATA COLLECTION PROCEDURE

The respondents were provided with comprehensive information about the purpose and significance of the study before participation. Informed consent was obtained prior to conducting the interviews. Anonymity was ensured, as no identifying details were requested or recorded.

Efforts were made to ensure that all interview questions were thoroughly answered, and the completed questionnaires were securely stored to maintain confidentiality. The questionnaires were primarily self-administered following a detailed explanation of the relevant sections by clinic staff. For non-literate respondents, the questions were explained in their local language by clinic staff, who assisted them in completing the questionnaire to ensure accurate responses.

3.8 VALIDITY OF RESEARCH INSTRUMENT

To ensure the credibility of the study, the validity of the research instruments was assessed. Validity referred to the extent to which the instruments measured what they were intended to measure, while reliability ensured consistency of the results. To establish validity, the structured questionnaire and standardized tools such as the Zarit Burden Interview (ZBI) for caregiver burden and the WHO Quality of Life (WHOQOL-BREF) questionnaire underwent content and face validity checks. Experts in public health, epidemiology, and medical research reviewed the instruments to ensure they comprehensively covered all relevant aspects of the study variables..

3.9 RELIABILITY OF RESEARCH INSTRUMENT

For the reliability test, a pilot study was also conducted using a small sample of hypertensive patients and their caregivers in a tertiary healthcare facility similar to the study setting. Afterwards, the internal consistency of the questionnaire was measured using Cronbach’s alpha coefficient. A reliability score of 0.7 or higher was considered acceptable, indicating a strong

level of consistency in responses. Feedback from the pilot study helped refine the questionnaire to improve clarity, relevance, and appropriateness.

3.10 METHOD OF DATA ANALYSIS

Quantitative data from the questionnaires were analyzed using Statistical Package for Social Sciences (SPSS) version 25. Descriptive statistics (mean, frequency, and percentages) was used to summarize the demographic characteristics of the respondents and other objectives.

Inferential statistics, such as Chi-square tests and logistic regression, were employed to test the hypothesis. A significance level of $p < 0.05$ was considered statistically significant.

3.11 ETHICAL CONSIDERATIONS

Ethical approval for the study was sought and obtained from the Ethics Committee of the University of Benin Teaching Hospital (UBTH). Informed consent was obtained from all participants, ensuring they were fully aware of the study's purpose and procedures. Participants were assured of both confidentiality and anonymity throughout the research process.

Participation was entirely voluntary, and respondents had the right to withdraw from the study at any stage without facing any consequences. The researchers ensured that all collected data was used exclusively for academic purposes and stored securely to prevent unauthorized access, maintaining the integrity and privacy of the respondents.

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS, AND INTERPRETATION

4.1 Demographic Characteristics of Hypertensive Patients and their Caregivers

Table 4.1: Distribution of caregivers by their demographic characteristics (n= 195)

Variables	Caregivers		Hypertensive patients	
	F (%)	Mean±SD	F (%)	Mean±SD
Gender				
Male	96(49.2)		112(57.4)	
Female	99(50.8)		83(42.6)	
Age				
≤ 40	84(43.1)		43(22.1)	
41 – 50	39(20.0)	44±7years	21(10.8)	
51 – 60	38(19.5)		27(13.8)	
> 60	34(17.4)		104(53.3)	61±5 years
Marital Status				
Single	53(27.2)		40(20.5)	
Married	91(46.7)		88(45.1)	
Separated	51(26.2)		67(34.4)	
Educational status				
No formal education	50(25.6)		41(21.0)	
Primary education	41(21.0)		46(23.6)	
Secondary school education	52(26.7)		56(28.7)	
Tertiary school education	52(26.7)		52(26.7)	
Work status				
Employed	59(30.3)		49(25.1)	
Self-employed	44(22.6)		49(25.1)	
Retired	42(21.5)		46(23.6)	
Unemployed	50(25.6)		51(26.2)	
Occupation				
Business	23(11.8)		16(8.2)	
Civil/public servant	20(10.3)		29(14.9)	
Trader	24(12.3)		40(20.5)	
Farmer	18(9.2)		26(13.3)	
Clergy	33(16.9)		28(14.4)	
Artisan	44(22.6)		29(14.9)	
Administrative	33(16.9)		27(13.8)	
Relationship to patient				**F (%)**
Siblings	23(11.8)		**Hypertension Type**	
Child	22(11.3)		Systolic BP	100(51.3)
Mother	28(14.4)		Diastolic BP	95(48.7)
Father	23(11.8)			
Aunt	17(8.7)		**Duration of hypertension diagnosis**	
Friend	14(7.2)		< 5 years	27(13.8)
Inlaw	19(9.7)		5 - 10 years	32(16.4)

Husband	24(12.3)	11 - 15 years	34(17.4)
Wife	25(12.8)	Above 15 years	102(52.3)
Perceived Health Status of the patient		**Family history of Hypertension**	
Good	67(34.4)	No	98(50.3)
Moderate	62(31.8)	Yes	97(49.7)
Bad	66(33.8)		
Patient adherence to treatment			
Good	68(34.9)		
Moderate	75(38.5)		
Poor	52(26.7)		
Residence status			
Same house	81(41.5)		
Neighborhood	60(30.8)		
Away from patients' residence	54(27.7)		
Duration as a caregiver			
Less than 1 year	21(10.8)		
1 to 3 years	35(17.9)		
3 to 5 years	39(20.0)		
Above 5 years	100(51.3)		

Source: Field survey, 2025

As shown in Table 4.1, the caregivers comprised a nearly equal gender distribution with about 49.2% males and 50.8% females. The caregivers' ages ranged predominantly above 40 years, with 43.1% aged ≤40 and a significant 56.9% above 40, suggesting that caregiving is mainly undertaken by middle-aged and older adults. The mean age of caregivers was approximately 52 years, while the patients' mean age was about 61 years, reflecting an older patient demographic typical of hypertension. Marital status revealed that 46.7% of caregivers were married, while 26.2% were separated, and the remainder were single or widowed, illustrating that caregiving responsibilities are shared across various marital statuses. Educationally, roughly equal proportions of caregivers had no formal education (25.6%), primary education (21.0%), secondary schooling (26.7%), and tertiary education (26.7%), indicating a diverse educational background among caregivers. Most caregivers were employed (30.3%) or self-employed (22.6%), with a notable 25.6% unemployed, highlighting economic variability within the

caregiving population. In terms of occupation, caregivers were engaged in diverse fields, including artisan work (22.6%), farming (13.3%), trading (12.3%), and civil service (10.3%). The relationship to the hypertensive patient was mainly as children (11.3%), spouses (husband or wife—approximately 24-25%), or siblings (11.8%), demonstrating that caregiving is often familial. Most patients had longstanding hypertension, with over half (52.3%) diagnosed more than 15 years ago, and the majority (51.3%) had been living with hypertension for over a decade, emphasizing the chronic nature of the disease. Regarding clinical parameters, 51.3% of patients had systolic BP readings around 100 mmHg and 48.7% diastolic BP around 95 mmHg, indicating that many patients may have suboptimal blood pressure control. About half (50.3%) of the patients had no family history of hypertension, and adherence to treatment was mixed, with 38.5% exhibiting moderate adherence and 26.7% poor adherence. Most caregivers (41.5%) cared for patients within the same house, while 30.8% cared for neighbors, and 27.7% cared for patients away from their residence, reflecting varied caregiving arrangements.

4.2 Level of Burden of Care among Caregivers of Hypertensive Patients

Table 4.2. Distribution of respondents on their burden of care (ZBI Interview)

ZBI 22 ITEMS INTERVIEW	Always F(%)	Often F(%)	Sometimes F(%)	Rarely F(%)	Never F(%)	Mean	Remarks
Stress from Balancing Responsibilities	38(19.5)	47(24.1)	39(20.0)	38(19.5)	33(16.9)	2.10	B
Embarrassment Due to Patient's Condition	44(22.6)	38(19.5)	43(22.1)	41(21.0)	29(14.9)	2.14	B
Anger or Frustration Around Patient	30(15.4)	34(17.4)	47(24.1)	51(26.2)	33(16.9)	1.88	NB
Impact on Relationships with Family/Friends	45(23.1)	35(17.9)	42(21.5)	40(20.5)	33(16.9)	2.10	B
Fear for the Future of Patient	41(21.0)	43(22.1)	35(17.9)	44(22.6)	32(16.4)	2.09	B
Emotional Strain Around Patient	47(24.1)	36(18.5)	39(20.0)	28(14.4)	45(23.1)	2.06	B
Lack of Privacy Due to Caregiving	20(10.3)	58(29.7)	36(18.5)	40(20.5)	41(21.0)	1.88	NB
Social Life Suffering from Caregiving	25(12.8)	31(15.9)	58(29.7)	41(21.0)	40(20.5)	1.79	NB
Uncomfortable with Friends or Visitors Due to Caregiving	45(23.1)	34(17.4)	40(20.5)	39(20.0)	37(19.0)	2.06	B
Loss of Control of Own Life Due to Caregiving	51(26.2)	39(20.0)	47(24.1)	37(19.0)	21(10.8)	2.32	B
Wishing to Hand Over Caregiving	40(20.5)	38(19.5)	46(23.6)	43(22.1)	28(14.4)	2.10	B
Uncertainty or Confusion in Caregiving	44(22.6)	32(16.4)	33(16.9)	43(22.1)	43(22.1)	1.95	NB
Feeling Insufficient in Caregiving	36(18.5)	29(14.9)	41(21.0)	38(19.5)	51(26.2)	1.80	NB
Believing You Could Do Better in Caregiving	34(17.4)	49(25.1)	29(14.9)	34(17.4)	49(25.1)	1.92	NB
Overall Burden in Caregiving	29(14.9)	41(21.0)	58(28.7)	31(15.9)	38(19.5)	1.96	NB
Patient Asking for More Help than Needed	39(20.0)	40(20.5)	47(24.1)	37(19.0)	32(16.4)	2.09	B
Lack of Time for Self Due to Caregiving	33(16.9)	38(19.5)	45(23.1)	36(18.5)	43(22.1)	1.91	NB
Patient's Dependence on You	33(16.9)	37(19.0)	40(20.5)	32(16.4)	53(27.2)	1.82	NB
Health Impact from Caregiving	55(28.2)	34(17.4)	32(16.4)	37(19.0)	37(19.0)	2.17	B
Financial Strain Due to Caregiving	38919.5)	36(18.5)	53(27.2)	28(14.4)	40(20.5)	2.02	B
Expectation to Be the Only Caregiver	37(19.0)	42(21.5)	41(21.0)	34(17.4)	41(21.0)	2.00	B
Fear of Being Unable to Continue Caregiving	38(19.5)	40(20.5)	34(17.4)	34(17.4)	49(25.1)	1.92	NB

Source: Field survey, 2025; ***N.B: B = Burden; NB = Not a Burden***

As shown in Table 4.2, Stress from Balancing Responsibilities was perceived as a burden, with a mean score of 2.10, and a combined 43.6% of caregivers reporting experiencing this Always or Often. Similarly, Embarrassment Due to Patient's Condition was considered a burden ($\bar{x}$ = 2.14), with a substantial 42.1% reporting it Always or Often. The Impact on Relationships with Family/Friends was also a burden ($\bar{x}$ = 2.10), with 41% experiencing this Always or Often. Caregivers reported Fear for the Future of Patient as a burden ($\bar{x}$ = 2.09), with 43.1% indicating Always or Often. Emotional Strain Around Patient was a burden ($\bar{x}$ = 2.06), with 42.6% experiencing it Always or Often.

Other items classified as burdens included feeling Uncomfortable with Friends or Visitors Due to Caregiving ($\bar{x}$ = 2.06), where 40.5% reported Always or Often. A significant burden was the Loss of Control of Own Life Due to Caregiving ($\bar{x}$ = 2.32), with a high proportion (46.2%) reporting this Always or Often. Wishing to Hand Over Caregiving was also a burden ($\bar{x}$ = 2.10), with 40% reporting Always or Often. Caregivers perceived the Patient Asking for More Help than Needed as a burden ($\bar{x}$ = 2.09), with 40.5% experiencing this Always or Often. The Health Impact from Caregiving was a notable burden ($\bar{x}$ = 2.17), with a combined 45.6% reporting Always or Often. Financial Strain Due to Caregiving was also a burden ($\bar{x}$ = 2.02), with 38% reporting Always or Often. Finally, the Expectation to Be the Only Caregiver was classified as a burden ($\bar{x}$ = 2.00), with 40.5% reporting Always or Often.

Conversely, several items were generally not perceived as a significant burden by the majority of caregivers in this sample. Anger or Frustration Around Patient was not a burden ($\bar{x}$ = 1.88), with a larger proportion reporting Rarely or Never experiencing this (43.1%). Lack of Privacy Due to Caregiving was also not a burden ($\bar{x}$ = 1.88), with 41.5% reporting Rarely or Never. Social Life Suffering from Caregiving was not considered a burden ($\bar{x}$ = 1.79), with 41.5% reporting Rarely

or Never. Uncertainty or Confusion in Caregiving was not a burden ($\bar{x}$ = 1.95), with 44.2% reporting Rarely or Never. Feeling Insufficient in Caregiving was not a burden ($\bar{x}$ = 1.80), with 45.7% reporting Rarely or Never. Believing You Could Do Better in Caregiving was not a burden ($\bar{x}$ = 1.92), with 42.5% reporting Rarely or Never. The Overall Burden in Caregiving was not classified as a burden ($\bar{x}$ = 1.96), with 35.4% reporting Rarely or Never. Lack of Time for Self Due to Caregiving was not a burden ($\bar{x}$ = 1.91), with 40.6% reporting Rarely or Never. Patient's Dependence on caregivers was not a burden ($\bar{x}$ = 1.82), with a significant 43.6% reporting Rarely or Never. Lastly, Fear of Being Unable to Continue Caregiving was not a burden ($\bar{x}$ = 1.92), with 42.5% reporting Rarely or Never experiencing this fear.

Table 4.3: Distribution of caregivers by their burden of care level (n= 195)

ZBI	Frequency	Percentage	Mean
Little or no burden (0 - 20)	28	14.4	16.55
Mild burden (21 - 40)	30	15.4	30.22
High burden (41 - 60)	110	56.4	51.63
Severe burden (> 60)	27	13.8	66.38

Source: Field Survey, 2025

As shown in Table 4.3, majority (56.4%), experienced a high level of burden, with scores ranging from 41 to 60 on the Zarit Burden Interview (ZBI). Additionally, 13.8% of caregivers reported severe burden, with scores exceeding 60, while 15.4% experienced mild burden, and only 14.4% reported little or no burden.

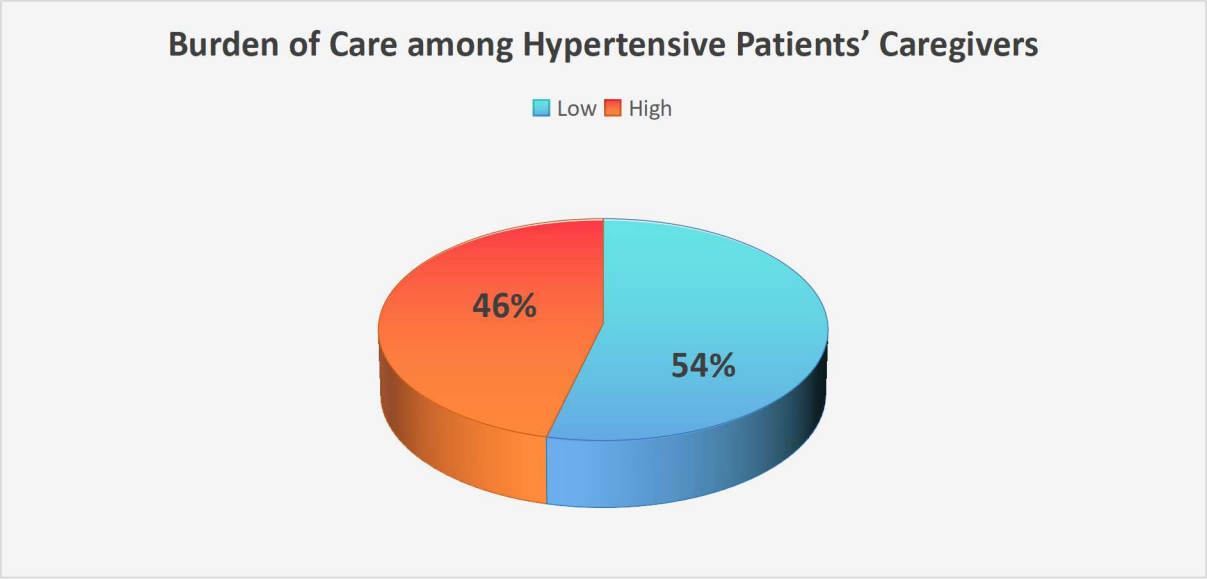

Fig 4.1 Pie chart distribution of respondents on their level of burden of care

Furthermore, fig 4.1 showed that over half (54%) of caregivers perceived their burden as low or manageable, which suggests variability in individual experiences of caregiving stress.

4.3 Health-Related Quality of life among Caregivers of Hypertensive Patients

Table 4.4 Distribution of caregivers on their quality of life (WHOQOL-BREF)

WHOQOL-BREF (26 ITEMS)	**Very poor F(%)**	**Poor F(%)**	**Neither poor nor good F(%)**	**Good F(%)**	**Very good F(%)**	**Mean**	**Remarks**
Overall Quality of Life as a Caregiver	42(21.5)	34(17.4)	32(16.4)	37(19.0)	50(25.6)	3.10	Good
	Very dissatisfied F(%)	**Dissatisfied F(%)**	**Neither satisfied nor dissatisfied F(%)**	**Satisfied F(%)**	**Very satisfied F(%)**		
Satisfaction with Health as a Caregiver	44(22.6)	41(21.0)	34(17.4)	29(14.9)	47(24.1)	2.97	Poor
	Not at all F(%)	**A little F(%)**	**A moderate amount F(%)**	**Very much F(%)**	**Extremely F(%)**		
Extent of Physical Pain Limiting	39(20.0)	46(23.6)	31(15.9)	44(22.6)	35(17.9)	3.05	Good

Caregiving							
Need for Medical Treatment in Caregiving	42(21.5)	29(14.9)	35(17.9)	51(26.2)	38(19.5)	2.93	Poor
Enjoyment of Life Despite Caregiving	37(19.0)	35(17.9)	39(20.0)	44(22.6)	40(20.5)	3.08	Good
Meaningfulness of the Caregiving Role	45(23.1)	38(19.5)	29(14.9)	49(25.1)	34(17.4)	2.94	Poor
Ability to Concentrate During Caregiving	33(16.9)	45(23.1)	31(15.9)	40(20.5)	46(23.6)	3.11	Good
Feeling of Safety in Daily Life (Caregiving)	43(22.1)	44(22.6)	51(26.2)	31(15.9)	26(13.3)	2.76	Poor
Healthiness of Physical Environment for Caregiving	57(29.2)	37(19.0)	40(20.5)	34(17.4)	27(13.8)	2.68	Poor
	Not at all F(%)	**A little F(%)**	**Moderately F(%)**	**Mostly F(%)**	**Completely F(%)**		
Energy for Daily Life and Caregiving	39(20.0)	48(24.6)	41(21.0)	37(19.0)	30(15.4)	2.85	Poor
Acceptance of Physical Appearance Changes Due to Caregiving	34(17.4)	41(21.0)	46(23.6)	39(20.0)	35(17.9)	3.00	Good
Adequacy of Financial Resources for Caregiving	44(22.6)	40(20.5)	24(12.3)	41(21.0)	46(23.6)	3.03	Good
Accessibility of Information for Caregiving	29(14.9)	44(22.6)	34(17.4)	39(20.0)	49(25.1)	3.18	Good
Time for Leisure or Personal Activities	33(16.9)	35(17.9)	43(22.1)	30(15.4)	54(27.7)	3.19	Good
	Very poor F(%)	**Poor F(%)**	**Neither poor nor good F(%)**	**Good F(%)**	**Very good F(%)**		
Ability to Move Around and Handle Physical Tasks as a Caregiver	46(23.6)	34(17.4)	31(15.9)	43(22.1)	41(21.0)	2.99	Poor
	Very dissatisfied F(%)	**Dissatisfied F(%)**	**Neither satisfied nor dissatisfied F(%)**	**Satisfied F(%)**	**Very satisfied F(%)**		
Satisfaction with Sleep While Caregiving	41(21.0)	36(18.5)	40(20.5)	33(16.9)	45(23.1)	3.03	Good
Satisfaction with Ability to Perform Daily Tasks (Caregiving)	40(20.5)	53(27.2)	29(14.9)	38(19.5)	35(17.9)	2.87	Poor

Satisfaction with Ability to Maintain Work or Obligations	36(18.5)	41(21.0)	36(18.5)	40(20.5)	42(21.5)	3.06	Good
Satisfaction with Self Considering Caregiving	32(16.4)	40(20.5)	56(28.7)	38(19.5)	29(14.9)	2.96	Poor
Satisfaction with Personal Relationships during Caregiving	26(13.3)	60(30.8)	42(21.5)	38(19.5)	29(14.9)	2.92	Poor
Satisfaction with Sexual Life During Caregiving	29(14.9)	39(20.0)	37(19.0)	53(27.2)	37(19.0)	3.15	Good
Satisfaction with Emotional/Social Support from Friends	43(22.1)	36(18.5)	27(13.8)	40(20.5)	49(25.1)	3.08	Good
Satisfaction with Living Conditions While Providing Care	34(17.4)	34(17.4)	44(22.6)	41(21.0)	42(21.5)	3.12	Good
Satisfaction with Access to Healthcare Services for Caregiver and/or Patient	36(18.5)	34(17.4)	37(19.0)	49(25.1)	39(20.0)	3.11	Good
Satisfaction with Transport for Caregiving Needs	42(21.5)	37(19.0)	42(21.5)	28(14.4)	46(23.6)	2.99	Poor
	Never F(%)	**Seldom F(%)**	**Quite often F(%)**	**Very often F(%)**	**Always F(%)**		
Frequency of Negative Feelings (Sadness, Anxiety, Depression, Emotional Exhaustion)	41(21.0)	28(14.4)	29(14.9)	50(25.6)	47(24.1)	2.83	Poor

Source: Field Survey, 2025

Table 4.4 showed that caregivers reported a Good overall quality of life, with a mean score of 3.10, suggesting that, on average, they perceived their quality of life positively despite their caregiving responsibilities. This positive perception extended to several specific aspects, including the Extent of Physical Pain Limiting Caregiving ($\bar{x}$ = 3.05), Enjoyment of Life Despite Caregiving ($\bar{x}$ = 3.08), Ability to Concentrate During Caregiving ($\bar{x}$ = 3.11), Acceptance of Physical Appearance Changes Due to Caregiving ($\bar{x}$ = 3.00), Adequacy of Financial Resources for Caregiving ($\bar{x}$ = 3.03), Accessibility of Information for Caregiving ($\bar{x}$ = 3.18), Time for Leisure or Personal Activities ($\bar{x}$ = 3.19), Satisfaction with Sleep While Caregiving ($\bar{x}$ = 3.03),

Satisfaction with Ability to Maintain Work or Obligations ($\bar{x}$ = 3.06), Satisfaction with Sexual Life During Caregiving ($\bar{x}$ = 3.15), Satisfaction with Emotional/Social Support from Friends ($\bar{x}$ = 3.08), Satisfaction with Living Conditions While Providing Care ($\bar{x}$ = 3.12), and Satisfaction with Access to Healthcare Services for Caregiver and/or Patient ($\bar{x}$ = 3.11).

However, several aspects of quality of life were perceived as Poor by the caregivers. These included Satisfaction with Health as a Caregiver, with a mean score of 2.97, suggesting caregivers were generally dissatisfied with their own health. The Need for Medical Treatment in Caregiving was also rated as Poor ($\bar{x}$ = 2.93). Caregivers reported a Poor quality of life regarding the Meaningfulness of the Caregiving Role ($\bar{x}$ = 2.94), the Feeling of Safety in Daily Life (Caregiving) ($\bar{x}$ = 2.76), the Healthiness of Physical Environment for Caregiving ($\bar{x}$ = 2.68), and their Energy for Daily Life and Caregiving ($\bar{x}$ = 2.85). Furthermore, caregivers reported a Poor quality of life concerning their Ability to Move Around and Handle Physical Tasks as a Caregiver ($\bar{x}$ = 2.99), Satisfaction with Ability to Perform Daily Tasks (Caregiving) ($\bar{x}$ = 2.87), Satisfaction with Self Considering Caregiving ($\bar{x}$ = 2.96), Satisfaction with Personal Relationships during Caregiving ($\bar{x}$ = 2.92), Satisfaction with Transport for Caregiving Needs ($\bar{x}$ = 2.99), and the Frequency of Negative Feelings (Sadness, Anxiety, Depression, Emotional Exhaustion) ($\bar{x}$ = 2.83).

Table 4.5: Distribution of caregivers on their quality of life (n = 195)

QoL Level	Physical F(%)	Psychological F(%)	Social F(%)	Environment F(%)
Low (0-30)	30(15.4)	14(7.2)	29(14.9)	11(5.6)
Moderate(31-60)	133(68.2)	133(68.2)	109(55.9)	147(75.4)
High(61-100)	32(16.4)	48(24.6)	57(29.2)	37(19.0)
Mean±SD	49.36±13.48	51.09±14.06	51.28±21.18	50.16±12.20

WHOQoL-BREF Domains	Mean±SD	Type III Sum of Squares	df	F	Sig	Partial Eta^2
Physical	49.36±13.48					
Psychological	51.09±14.06					
Social	51.28±21.18					
Environment	50.16±12.20					
Within-Subjects Effect		462.891	3	0.636	0.592	0.003

Source: Field survey, 2025

Table 4.5 showed that the Social domain had the highest mean score (51.28±21.18), suggesting that caregivers, on average, perceived a relatively better quality of life in terms of their personal relationships, social support, and sexual activity. The Psychological domain followed with a mean score of 51.09±14.06, indicating a moderate level of quality of life related to their psychological well-being, including feelings, thoughts, learning, memory, and concentration. The Environment domain had a mean score of 50.16±12.20, reflecting perceptions of quality of life related to physical safety and security, home environment, financial resources, health and social care, opportunities for acquiring new information and skills, recreation and leisure, physical environment, and transport. In contrast, the Physical domain had the lowest mean score

of 49.36± 13.48, suggesting that caregivers, on average, perceived a slightly lower quality of life in terms of their physical health, including energy and fatigue, pain and discomfort, sleep and rest, and ability to perform daily living activities.

Furthermore, the within-subjects analysis, indicated that the effect of mean differences was not statistically significant (F (3, df) = 0.636, p = 0.592). This finding suggests that there are no statistically significant differences in the perceived quality of life among caregivers across the Physical, Psychological, Social, and Environment domains. Although the mean scores varied slightly, these differences were not large enough to be considered statistically significant at the conventional levels. The partial Eta squared value of 0.003 indicates that a very small proportion (approximately 0.3%) of the variance in quality of life scores is accounted for by the differences between these domains.

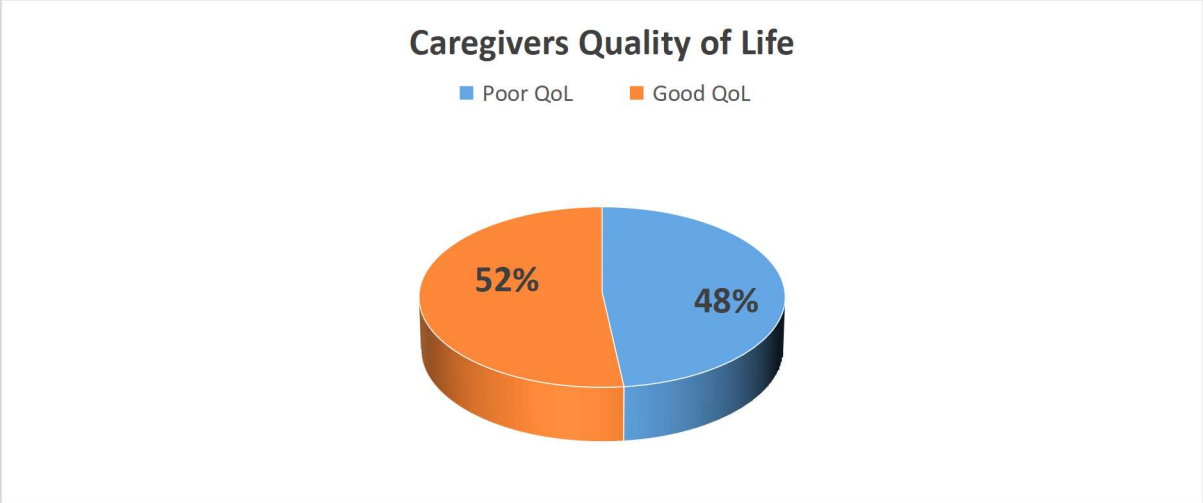

Fig 4.2 Pie chart distribution of caregivers on their quality of life

Furthermore, fig 4.2 showed that majority of the caregivers (52%) perceive their overall quality of life as good.

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4.4 Health-Related Quality of life among Hypertensive Patients

Table 4.6 Distribution of hypertensive patients on their quality of life (WHOQOL-BREF)

WHOQOL-BREF (26 ITEMS)	Very poor F(%)	Poor F(%)	Neither poor nor good F(%)	Good F(%)	Very good F(%)	Mean	Remarks
Overall Quality of Life with Hypertension	40(20.5)	41(21.0)	37(19.0)	43(22.1)	34(17.4)	2.95	Poor
	Very dissatisfied F(%)	**Dissatisfied F(%)**	**Neither satisfied nor dissatisfied F(%)**	**Satisfied F(%)**	**Very satisfied F(%)**		
Satisfaction with Health Condition	37(19.0)	29(14.9)	30(15.4)	46(23.6)	53(27.2)	3.25	Good
	Not at all F(%)	**A little F(%)**	**A moderate amount F(%)**	**Very much F(%)**	**Extremely F(%)**		
Extent of Physical Pain Interferes with Daily Activities	37(19.0)	40(20.5)	35(17.9)	42(21.5)	41(21.0)	2.95	Poor
Reliance on Medical Treatment for Daily Activities	32(16.4)	45(23.1)	30(15.4)	48(24.6)	40(20.5)	2.90	Poor
Enjoyment of Life Despite Hypertension	34(17.4)	27(13.8)	46(23.6)	47(24.1)	41(21.0)	3.17	Good
Meaningfulness or Purpose in Life	39(20.0)	32(16.4)	38(19.5)	39(20.0)	47(24.1)	3.12	Good
Ability to Focus and Concentrate in Daily Activities	34(17.4)	36(18.5)	41(21.0)	50(25.6)	34(17.4)	3.07	Good
Feeling of Safety in Daily Life	36(18.5)	49(25.1)	40(20.5)	43(22.1)	27(13.8)	2.88	Poor
Healthiness and Supportiveness of Home/Living Environment	29(14.9)	46(23.6)	36(18.5)	41(21.0)	43(22.1)	3.12	Good
	Not at all F(%)	**A little F(%)**	**Moderately F(%)**	**Mostly F(%)**	**Completely F(%)**		
Energy for Daily Routines	37(19.0)	21(10.8)	34(17.4)	51(26.2)	52(26.7)	3.31	Good
Comfort with Physical Appearance (including changes from hypertension)	36(18.5)	31(15.9)	42(21.5)	43(22.1)	43(22.1)	3.13	Good

Adequacy of Financial Resources for Personal and Medical Needs	34(17.4)	44(22.6)	39(20.0)	39(20.0)	39(20.0)	3.03	Good
Accessibility to Health-Related Information for Hypertension Management	50(25.6)	33(16.9)	30(15.4)	51(26.2)	31(15.9)	3.90	Good
Time for Hobbies, Rest, or Leisure	33(16.9)	40(20.5)	40(20.5)	53(27.2)	29(14.9)	3.03	Good
	Very poor F(%)	**Poor F(%)**	**Neither poor nor good F(%)**	**Good F(%)**	**Very good F(%)**		
Ability to Move Around and Engage in Physical Activity	43(22.1)	39(20.0)	37(19.0)	48(24.6)	28(14.4)	2.89	Poor
	Very dissatisfied F(%)	**Dissatisfied F(%)**	**Neither satisfied nor dissatisfied F(%)**	**Satisfied F(%)**	**Very satisfied F(%)**		
Satisfaction with Sleep Quality	48(24.6)	38(19.5)	25(12.8)	40(20.5)	44(22.6)	2.97	Poor
Satisfaction with Ability to Manage Daily Personal Tasks	39(20.0)	44(22.6)	33(16.9)	40(20.5)	39(20.0)	2.98	Poor
Satisfaction with Ability to Work or Carry Out Usual Activities	51(26.2)	27(13.8)	36(18.5)	42(21.5)	39(20.0)	2.95	Poor
Satisfaction with Self and Health Management	38(19.5)	39(20.0)	30(15.4)	50(25.6)	38(19.5)	3.06	Good
Satisfaction with Relationships with Family and Loved Ones	36(18.5)	40(20.5)	53(27.2)	31(15.9)	35(17.9)	2.94	Poor
Satisfaction with Sexual Life and Intimacy	41(21.0)	35(17.9)	37(19.0)	42(21.5)	40(20.5)	3.03	Good
Satisfaction with Support from Friends and others	45(23.1)	40(20.5)	33(16.9)	46(23.6)	21(15.9)	2.89	Poor
Satisfaction with Living Space Conditions	35(17.9)	42(21.5)	47(24.1)	41(21.0)	30(15.4)	2.94	Poor
Satisfaction with Access to Healthcare Services	33(16.9)	44(22.6)	39(20.0)	36(18.5)	43(22.1)	3.06	Good
Satisfaction with Transportation Options (for Medical Visits)	37(19.0)	38(19.5)	32(16.4)	45(23.1)	43(22.1)	3.10	Good

	Never F(%)	Seldom F(%)	Quite often F(%)	Very often F(%)	Always F(%)		
Frequency of Negative Emotions (Sadness, Worry, Anxiety, or Depression)	40(20.5)	36(18.5)	44(22.6)	31(15.9)	44(22.6)	2.98	Poor

Source: Field Survey, 2025

Table 4.6 showed that the overall Quality of Life of patients with Hypertension was reported as Poor, with a mean score of 2.95, suggesting that, on average, hypertensive patients perceived their quality of life negatively. This negative perception extended to several specific aspects of their lives. Patients reported a Poor quality of life concerning the Extent of Physical Pain Interferes with Daily Activities ($\bar{x}$ = 2.95), Reliance on Medical Treatment for Daily Activities ($\bar{x}$ = 2.90), Feeling of Safety in Daily Life ($\bar{x}$ = 2.88), Ability to Move Around and Engage in Physical Activity ($\bar{x}$ = 2.89), Satisfaction with Sleep Quality ($\bar{x}$ = 2.97), Satisfaction with Ability to Manage Daily Personal Tasks ($\bar{x}$ = 2.98), Satisfaction with Ability to Work or Carry Out Usual Activities ($\bar{x}$ = 2.95), Satisfaction with Relationships with Family and Loved Ones ($\bar{x}$ = 2.94), Satisfaction with Support from Friends and others ($\bar{x}$ = 2.89), Satisfaction with Living Space Conditions ($\bar{x}$ = 2.94), and the Frequency of Negative Emotions (Sadness, Worry, Anxiety, or Depression) ($\bar{x}$ = 2.98).

However, several aspects of quality of life were perceived as Good by the hypertensive patients. These included Satisfaction with Health Condition, with a mean score of 3.25, suggesting patients were generally satisfied with their health despite having hypertension. Patients also reported a Good quality of life concerning their Enjoyment of Life Despite Hypertension ($\bar{x}$ = 3.17), Meaningfulness or Purpose in Life ($\bar{x}$ = 3.12), Ability to Focus and Concentrate in Daily Activities ($\bar{x}$ = 3.07), Healthiness and Supportiveness of Home/Living Environment ($\bar{x}$ = 3.12), Energy for Daily Routines ($\bar{x}$ = 3.31), Comfort with Physical Appearance ($\bar{x}$ = 3.13), Adequacy

of Financial Resources for Personal and Medical Needs ($\bar{x}$ = 3.03), Accessibility to Health-Related Information for Hypertension Management ($\bar{x}$ = 3.90), Time for Hobbies, Rest, or Leisure ($\bar{x}$ = 3.03), Satisfaction with Sexual Life and Intimacy ($\bar{x}$ = 3.03), Satisfaction with Access to Healthcare Services ($\bar{x}$ = 3.06), and Satisfaction with Transportation Options (for Medical Visits) ($\bar{x}$ = 3.10).

Table 4.7: Distribution of hypertensive patients on their quality of life (n = 195)

QoL Level	Physical F(%)	Psychological F(%)	Social F(%)	Environment F(%)
Low (0-30)	31 (15.9)	8(4.1)	32(16.4)	32(16.4)
Moderate(31-60)	132(67.7)	127(65.1)	110(56.4)	145(74.4)
High(61-100)	32(16.4)	60(30.8)	53(27.2)	36(18.5)
Mean±SD	50.89±12.62	52.37±13.86	48.80±19.26	50.14±12.85

WHOQoL-BREF Domains	Mean±SD	Type III Sum of Squares	df	F	Sig	Partial Eta^2
Physical	50.89±12.62					
Psychological	52.37±13.86					
Social	48.80±19.26					
Environment	50.14±12.85					
Within-Subjects Effect		1297.680	3	1.903	0.128	0.010

Source: Field survey, 2025

As shown in Table 4.7, the Psychological domain had the highest mean score (52.37±13.86), suggesting that patients, on average, perceived a relatively better quality of life in terms of their psychological well-being, including feelings, thoughts, learning, memory, and concentration.

The Physical domain followed with a mean score of 50.89±12.62, indicating a moderate level of quality of life related to their physical health, including energy and fatigue, pain and discomfort, sleep and rest, and ability to perform daily living activities. The Environment domain had a mean score of 50.14±12.85, reflecting perceptions of quality of life related to physical safety and security, home environment, financial resources, health and social care, opportunities for acquiring new information and skills, recreation and leisure, physical environment, and transport. The Social domain had the lowest mean score of 48.80±19.26, suggesting that patients, on average, perceived a slightly lower quality of life in terms of their personal relationships, social support, and sexual activity.

The results of the within-subjects analysis, which examined whether there were significant differences in the mean scores across the four WHOQoL-BREF domains, indicated that the effect was not statistically significant ($F (3, df) = 1.903$, $p = 0.128$). This finding suggests that there are no statistically significant differences in the perceived quality of life among hypertensive patients across the Physical, Psychological, Social, and Environment domains. Although the mean scores varied slightly, these differences were not large enough to be considered statistically significant at the conventional levels. The partial Eta squared value of 0.010 indicates that a small proportion (approximately 1.0%) of the variance in quality of life scores is accounted for by the differences between these domains.

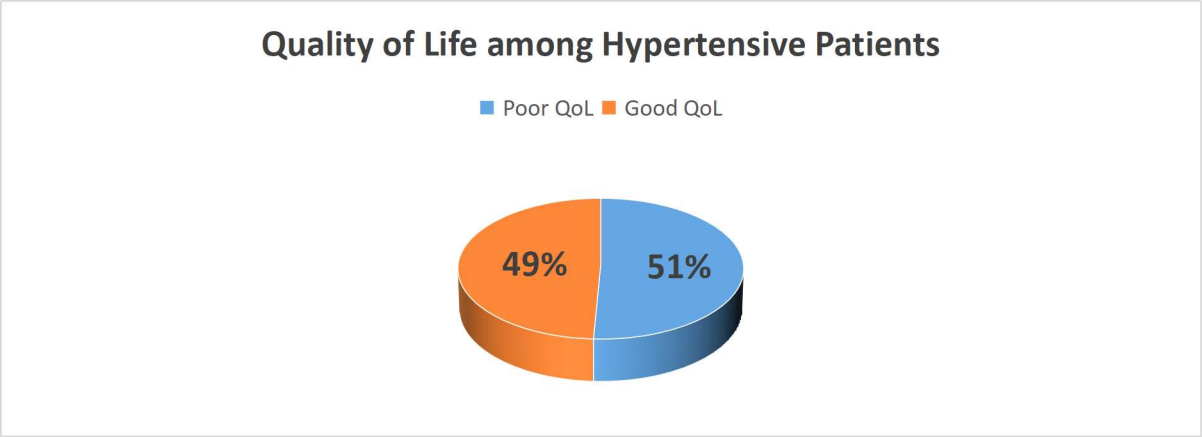

Fig 4.3 Pie chart distribution of hypertensive patients on their quality of life

Furthermore, fig 4.3 showed that about 51% of hypertensive patients perceived their quality of life as poor, highlighting the considerable impact of hypertension on their daily functioning and overall health.

4.5 Factors Associated with the Burden of Care among Caregivers of Hypertensive Patients

Table 4.8: Distribution of caregivers of hypertensive patients by the factors affecting their burden of care (n=195)

Factors	Strongly agree F (%)	Agree F (%)	Disagree F (%)	Strongly disagree F (%)	Mean	Remark
Financial burden	61(31.3)	50(25.6)	37(19.0)	47(24.1)	2.64	Factor
Work interference	51(26.2)	40(20.5)	60(30.8)	44(22.6)	2.50	Factor
Lack of caregiving training	64(32.8)	42(21.5)	37(19.0)	62(26.7)	2.61	Factor
Physical exhaustion	48(24.6)	51(26.2)	51(26.2)	45(23.1)	2.52	Factor
Emotional stress	54(27.7)	51(26.2)	48(24.6)	42(21.5)	2.60	Factor
Poor access to healthcare services	44(22.6)	47(24.1)	55(28.2)	49(25.1)	2.44	Not a factor
Lack of time for self	51(26.2)	45(23.1)	61(31.3)	36(19.5)	2.56	Factor
Social isolation	48(24.6)	56(28.7)	50(25.6)	41(21.0)	2.57	Factor

Source: Field Survey, 2025

The analysis of factors associated with the burden of care among caregivers of hypertensive patients presented in Table 4.8 showed that majority of caregivers strongly agreed or agreed that financial burden (56.9%), lack of caregiving training (54.3%), physical exhaustion (50.8%), and emotional stress (54.0%) significantly contribute to their caregiving burden, with mean scores around 2.50 to 2.64 indicating these factors are perceived as substantial challenges. Conversely, poor access to healthcare services was deemed less influential, with a mean score of 2.44 and nearly equal proportions of respondents disagreeing or strongly disagreeing, suggesting that access issues may be less immediate compared to other factors.

4.6 Hypothesis Testing

4.6.1 Relationship between Socio-demographic Characteristics of Caregivers of Hypertensive Patients and their Burden of Care

Table 4.9: Bivariate Analysis of the relationship between caregivers' demographic characteristics and their burden of care

Variables	Low Burden of Care (F)	High Burden of Care (F)	Total	χ^2 value	df	p-value	Remarks
Gender							
Male	51	45	96	0.040[a]	1	0.084	Not significant
Female	54	45	96				
Age							
≤ 40	44	40	84				
41 – 50	25	14	39	5.740[a]	3	0.125	Not significant
51 – 60	23	15	38				
> 60	13	21	34				
Educational status							
No formal education	32	18	50				
Primary education	22	19	41				
Secondary school education	30	22	52	6.176[a]	3	0.031	Significant
Tertiary school education	21	31	52				
Perceived Health Status of the patient							
Good	38	29	67				
Moderate	39	23	62	5.733[a]	2	0.050	Significant
Bad	28	38	66				
Patient adherence to treatment							
Good	29	39	68				
Moderate	42	33	75	6.357[a]	2	0.042	Significant
Poor	34	18	52				
Desire to continue							
Yes	62	31	93	11.759[a]	1	0.001	Significant
No	43	59	102				

Source: Field survey, 2025

As shown in Table 4.9, educational status was significantly related to caregiver burden ($\chi^2 = 6.176$, $p = 0.031$), with caregivers having no formal education more likely to experience a higher burden compared to those with tertiary education. Additionally, the perceived health status of the patient showed a significant association ($\chi^2 = 5.733$, $p = 0.050$), indicating that caregivers of patients perceived to be in worse health, particularly those with a "bad" health status reported higher burden levels. Furthermore, patient adherence to treatment was significantly linked to caregiver burden ($\chi^2 = 6.357$, $p = 0.042$); caregivers of patients with poor adherence experienced higher burden, possibly due to the increased challenges in managing uncontrolled hypertension. Lastly, the caregivers' desire to continue caregiving was strongly associated with burden levels ($\chi^2 = 11.759$, $p = 0.001$), suggesting that those willing to persist in caregiving roles might experience more stress, possibly due to emotional attachment or perceived obligation.

Table 4.10: Multivariate Logistic Analysis of the relationship between demographic characteristics among caregivers of hypertensive patients and their burden of care

Variables	B	S.E.	Wald	df	Sig.	OR	95% C.I.	
							Lower	Upper
Constant	0.435	0.648	0.451	1	0.502	1.545		
Gender (RC: Female)								
Male	-0.134	0.325	0.169	1	0.681	0.875	0.462	1.655
Age (RC: > 60)			2.542	3	0.468			
≤ 40	-0.504	0.452	1.244	1	0.265	0.604	0.249	1.465
41 – 50	-0.838	0.530	2.500	1	0.114	0.433	0.153	1.222
51 – 60	-0.454	0.531	0.731	1	0.393	0.635	0.224	1.798
Educational status (RC: Tertiary)			5.755	3	0.124			
No formal education	-1.017**	0.456	4.964	1	0.026	0.362	0.148	0.885
Primary education	-0.464	0.482	0.927	1	0.336	0.629	0.244	1.617
Secondary school education	-0.784	0.434	3.264	1	0.071	0.457	0.195	1.069
Perceived Health Status of the patient (RC:Bad)			4.091	2	0.129			

Good	-0.730	0.395	3.418	1	0.064	0.482	0.222	1.045
Moderate	-0.646	0.398	2.635	1	0.105	0.524	0.240	1.143
Patient adherence to treatment (RC: Poor)			4.830	2	0.089			
Good	0.926**	0.424	4.775	1	0.029	2.524	1.100	5.793
Moderate	0.433	0.403	1.155	1	0.283	1.542	0.700	3.398
Desire to continue (RC: No)								
Yes	0.888**	0.320	7.688	1	0.006	2.431	1.297	4.556

***** denote 5% level of significance***

Source: Field survey, 2025

Furthermore, Table 4.10 showed that the constant (OR = 1.545, p = 0.502) was not statistically significant, indicating that when all predictor variables are at their reference levels, the odds of experiencing a higher burden of care are not significantly different from 1. With respect to Gender, compared to female caregivers, male caregivers had 0.875 times lower odds of experiencing a higher burden of care (OR = 0.875, 95% CI [0.462, 1.655]), but this difference was not statistically significant (p = 0.681). This suggests that gender, in the context of other variables in the model, did not significantly predict the likelihood of experiencing a higher burden of care. For Age, overall, age was not a statistically significant predictor of experiencing a higher burden of care (overall p = 0.468). Compared to caregivers aged > 60 (the reference category), those aged ≤ 40 had 0.604 times lower odds (OR = 0.604, 95% CI [0.249, 1.465], p = 0.265), the 41-50 age group had 0.433 times lower odds (OR = 0.433, 95% CI [0.153, 1.222], p = 0.114), and the 51-60 age group had 0.635 times lower odds (OR = 0.635, 95% CI [0.224, 1.798], p = 0.393). None of these age categories showed a statistically significant difference in the odds of experiencing a higher burden of care compared to the oldest age group (> 60) at the 5% significance level.

In terms of Educational status, overall, it was not a statistically significant predictor of experiencing a higher burden of care (overall p = 0.124). Compared to caregivers with Tertiary education (the reference category), those with No formal education had significantly lower odds of experiencing a higher burden of care (OR = 0.362, 95% CI [0.148, 0.885], p = 0.026). Caregivers with Primary education had 0.629 times lower odds (OR = 0.629, 95% CI [0.244, 1.617], p = 0.336), which was not statistically significant. Caregivers with Secondary school education had 0.457 times lower odds (OR = 0.457, 95% CI [0.195, 1.069], p = 0.071), which is significant at the 10% level, indicating a marginal association. This suggests that, compared to those with tertiary education, caregivers with no formal education were significantly less likely to experience a higher burden of care, and those with secondary education showed a marginal tendency towards lower odds of higher burden. For the Perceived Health Status of the patient, overall, this variable was not a statistically significant predictor of experiencing a higher burden of care (overall p = 0.129). Compared to caregivers who perceived the patient's health status as Bad (the reference category), those who perceived the patient's health status as Good had 0.482 times lower odds of experiencing a higher burden of care (OR = 0.482, 95% CI [0.222, 1.045], p = 0.064), which is significant at the 10% level, indicating a marginal association. Caregivers who perceived the patient's health status as Moderate had 0.524 times lower odds (OR = 0.524, 95% CI [0.240, 1.143], p = 0.105), also significant at the 10% level, indicating a marginal association. This suggests a tendency for caregivers to experience a lower burden when the patient's health is perceived as good or moderate compared to when it is perceived as bad.

Regarding Patient adherence to treatment, overall, it was marginally statistically significant as a predictor of experiencing a higher burden of care (overall p = 0.089). Compared to caregivers of patients with Poor adherence (the reference category), those with Good adherence had

significantly higher odds of experiencing a higher burden of care (OR = 2.524, 95% CI [1.100, 5.793], p = 0.029). Caregivers of patients with Moderate adherence had 1.542 times higher odds (OR = 1.542, 95% CI [0.700, 3.398], p = 0.283), which was not statistically significant. In addition, concerning the caregivers' Desire to continue caregiving, compared to those who did not desire to continue (the reference category), caregivers who desired to continue had significantly higher odds of experiencing a higher burden of care (OR = 2.431, 95% CI [1.297, 4.556], p = 0.006). This indicates that caregivers who expressed a desire to continue providing care were over twice as likely to report a high burden of care compared to those who did not wish to continue.

4.6.2 Relationship between Socio-demographic Characteristics of Caregivers of Hypertensive Patients and their Health-Related Quality of Life

Table 4.11: Bivariate Analysis of the relationship between caregivers' demographic characteristics and their health-related quality of life

Variables	Poor QoL (F)	Good QoL (F)	Total	χ^2 value	df	p-value	Remarks
Gender							
Male	46	48	94	0.006[a]	1	0.940	Not significant
Female	48	49	97				
Age							
≤ 40	42	40	82				
41 – 50	15	22	37	1.432[a]	3	0.698	Not significant
51 – 60	20	18	38				
> 60	17	17	34				
Educational status							
No formal education	17	31	48				
Primary education	21	20	41				
Secondary school education	25	27	52	7.019[a]	3	0.016	Significant
Tertiary school education	31	19	50				

Perceived Health Status of the patient							
Good	30	35	65				
Moderate	33	27	60	1.180[aq]	2	0.554	Not significant
Bad	31	35	66				
Patient adherence to treatment							
Good	29	37	66				
Moderate	42	33	75	2.323[a]	2	0.313	Not significant
Poor	23	27	50				
Desire to continue							
Yes	40	49	89	1	1.216[a]	0.270	Not significant
No	54	48	102				

Source: Field survey, 2025

As shown in Table 4.11, the bivariate analysis assessing the relationship between caregivers' demographic characteristics and their health-related quality of life (QoL) revealed that most factors were not significantly associated with QoL. Specifically, gender ($\chi^2 = 0.006$, $p = 0.940$), age ($\chi^2 = 1.432$, $p = 0.698$), perceived health status of the patient ($\chi^2 = 1.180$, $p = 0.554$), patient adherence to treatment ($\chi^2 = 2.323$, $p = 0.313$), and the desire to continue caregiving ($\chi^2 = 1.216$, $p = 0.270$) showed no significant relationship with caregivers' QoL. However, educational status was significantly associated with caregivers' QoL ($\chi^2 = 7.019$, $p = 0.016$), indicating that caregivers with lower or no formal education are more likely to report poor QoL compared to those with higher education levels. This suggests that educational attainment may influence a caregiver's capacity to manage caregiving stress or access support resources.

Table 4.12: Multivariate Logistic Analysis of the relationship between demographic characteristics among caregivers of hypertensive patients and their health-related quality of life

Variables	B	S.E.	Wald	df	Sig.	OR	95% C.I.	
							Lower	Upper
Constant	-0.207	0.625	0.109	1	0.741	0.813		
Gender (RC: Female)								
Male	0.219	0.315	0.484	1	0.487	1.245	0.672	2.306
Age (RC: > 60)			2.827	3	0.419			
≤ 40	-0.088	0.429	0.042	1	0.838	0.916	0.395	2.126
41 – 50	0.579	0.516	1.258	1	0.262	1.785	0.649	4.910
51 – 60	-0.160	0.514	0.097	1	0.756	0.852	0.312	2.332
Educational status (RC: Tertiary)			7.462	3	0.059			
No formal education	1.225	0.456	7.213	1	0.007	3.403	1.392	8.318
Primary education	0.455	0.471	0.931	1	0.335	1.576	0.626	3.967
Secondary school education	0.571	0.425	1.806	1	0.179	1.769	0.770	4.067
Perceived Health Status of the patient (RC:Bad)			3.393	2	0.183			
Good	0.226	0.384	0.345	1	0.557	1.253	0.590	2.661
Moderate	-0.484	0.383	1.596	1	0.207	0.616	0.291	1.306
Patient adherence to treatment (RC: Poor)			3.098	2	0.212			
Good	-0.034	0.419	0.007	1	0.935	0.966	0.425	2.197
Moderate	-0.586	0.391	2.245	1	0.134	0.557	0.259	1.198
Desire to continue (RC: No)								
Yes	-0.282	0.315	0.801	1	0.371	0.754	0.406	1.399

******, **, * denote 1%, 5% and 10% level of significance respectively***

Source: Field survey, 2025

Furthermore, Table 4.12 showed that the constant (OR = 0.813, p = 0.741) was not statistically significant, indicating that when all predictor variables are at their reference levels, the odds of having a good health-related quality of life are not significantly different from 1. Regarding Gender, compared to female caregivers (the reference category), male caregivers had 1.245 times higher odds of experiencing a good health-related quality of life (OR = 1.245, 95% CI [0.672, 2.306]), but this difference was not statistically significant (p = 0.487). This suggests that gender, in the context of other variables in the model, did not significantly predict the likelihood of experiencing a good health-related quality of life. For Age, overall, age was not a statistically significant predictor of experiencing a good health-related quality of life (overall p = 0.419). Compared to caregivers aged > 60 (the reference category), those aged ≤ 40 had 0.916 times lower odds (OR = 0.916, 95% CI [0.395, 2.126], p = 0.838), the 41-50 age group had 1.785 times higher odds (OR = 1.785, 95% CI [0.649, 4.910], p = 0.262), and the 51-60 age group had 0.852 times lower odds (OR = 0.852, 95% CI [0.312, 2.332], p = 0.756). None of these age categories showed a statistically significant difference in the odds of experiencing a good health-related quality of life compared to the oldest age group (> 60) at the 5% significance level.

In terms of Educational status, overall, it was marginally statistically significant as a predictor of experiencing a good health-related quality of life (overall p = 0.059). Compared to caregivers with Tertiary education (the reference category), those with No formal education had significantly higher odds of experiencing a good health-related quality of life (OR = 3.403, 95% CI [1.392, 8.318], p = 0.007). Caregivers with Primary education had 1.576 times higher odds (OR = 1.576, 95% CI [0.626, 3.967], p = 0.335), which was not statistically significant. Caregivers with Secondary school education had 1.769 times higher odds (OR = 1.769, 95% CI [0.770, 4.067], p = 0.179), also not statistically significant. This suggests that, compared to those

with tertiary education, caregivers with no formal education were significantly more likely to report a good health-related quality of life.

For the Perceived Health Status of the patient, overall, this variable was not a statistically significant predictor of experiencing a good health-related quality of life (overall p = 0.183). Compared to caregivers who perceived the patient's health status as Bad (the reference category), those who perceived the patient's health status as Good had 1.253 times higher odds of experiencing a good health-related quality of life (OR = 1.253, 95% CI [0.590, 2.661], p = 0.557), which was not statistically significant. Caregivers who perceived the patient's health status as Moderate had 0.616 times lower odds (OR = 0.616, 95% CI [0.291, 1.306], p = 0.207), also not statistically significant. This suggests that the perceived health status of the patient did not significantly predict the caregiver's health-related quality of life in this model. Regarding Patient adherence to treatment, overall, it was not a statistically significant predictor of experiencing a good health-related quality of life (overall p = 0.212). Compared to caregivers of patients with Poor adherence (the reference category), those with Good adherence had 0.966 times lower odds (OR = 0.966, 95% CI [0.425, 2.197], p = 0.935), and those with Moderate adherence had 0.557 times lower odds (OR = 0.557, 95% CI [0.259, 1.198], p = 0.134), which was not statistically significant but showed a marginal tendency towards lower odds of good HRQoL with better adherence. Similarly, concerning the caregivers' desire to continue caregiving, compared to those who did not desire to continue (the reference category), caregivers who desired to continue had 0.754 times lower odds of experiencing a good health-related quality of life (OR = 0.754, 95% CI [0.406, 1.399], p = 0.371), which was not statistically significant. This suggests that the desire to continue caregiving did not significantly predict the caregiver's health-related quality of life in this model.

4.6.3 Relationship between Caregivers' Burden and the Health-Related Quality of Life among Hypertensive Patients

Table 4.13: Bivariate Analysis of the relationship between respondents' burden of care and their quality of life

Variables	Low Burden of Care (F)	High Burden of Care (F)	Total	χ^2 value	df	p-value	Remarks
Physical							
Low	12	4	16	3.119[a]	2	0.210	Not significant
Moderate	69	64	133				
High	18	14	32				
Psychological							
Low	3	11	14				
Moderate	75	58	133	6.378[a]	2	0.041	Significant
High	27	21	48				
Social							
Low	20	9	29				
Moderate	55	54	109	3.205[a]	2	0.201	Not significant
High	30	27	57				
Environment							
Low	3	8	11				
Moderate	76	71	147	7.414[a]	2	0.025	Significant
High	26	11	37				

Source: Field Survey, 2025

As shown in Table 4.13, the Psychological domain of quality of life showed a statistically significant relationship with the level of burden of care ($\chi^2 = 6.378$, df = 2, p = 0.041). This indicates that the distribution of caregivers reporting low, moderate, or high psychological quality of life differed significantly between those with low and high burden of care. Specifically, caregivers with Low burden of care were more likely to report a moderate or high psychological quality of life compared to those with High burden of care, who were more likely to report a low psychological quality of life. Furthermore, the Environment domain of quality of life was significantly associated with the level of burden of care ($\chi^2 = 7.414$, df = 2, p = 0.025). This finding suggests that the distribution of caregivers reporting low, moderate, or high environmental quality of life differed significantly between those experiencing low and high burden of care. Caregivers with Low burden of care were more likely to report a moderate or

high environmental quality of life, while those with High burden of care were more likely to report a low environmental quality of life.

Conversely, the other domains of quality of life did not show a statistically significant association with the level of burden of care in this bivariate analysis. There was no statistically significant relationship between the level of burden of care and the Physical domain of quality of life ($\chi^2 = 3.119$, df = 2, p = 0.210), indicating that the distribution of low, moderate, and high physical quality of life was not significantly different between caregivers with low and high burden. Similarly, the Social domain of quality of life did not show a statistically significant association with the level of burden of care ($\chi^2 = 3.205$, df = 2, p = 0.201). The distribution of social quality of life was not significantly different based on the level of burden.

Table 4.14: Multivariate Logistic Analysis of the relationship between respondents' burden of care and their quality of life

Variables	B	S.E.	Wald	df	Sig.	OR	95% C.I.	
							Lower	Upper
Constant	-1.237	0.645	3.675	1	0.055	0.290		
Physical			3.194	2	0.203			
Low	-1.117	0.784	2.029	1	0.154	0.327	0.070	1.522
Moderate	0.108	0.421	0.066	1	0.798	1.114	0.488	2.541
Psychological			5.625	2	0.060			
Low	1.868**	0.793	5.551	1	0.018	6.474	1.369	30.616
Moderate	0.220	0.376	0.342	1	0.558	1.246	0.596	2.605
Social			4.866	2	0.088			
Low	-0.613	0.543	1.274	1	0.259	0.542	0.187	1.571
Moderate	0.463	0.380	1.487	1	0.223	1.589	0.755	3.343
Environment			4.876	2	0.087			
Low	1.819**	0.894	4.138	1	0.042	6.168	1.069	35.596
Moderate	0.682	0.425	2.574	1	0.109	1.977	0.860	4.546

***** denote 5% level of significance***
Reference category; High
Source: Field survey, 2025

As shown in Table 4.14, the constant (OR = 0.290, p = 0.055) was marginally statistically significant, suggesting that when all quality of life domains are at their reference levels (High quality of life), the odds of experiencing a high burden of care are approximately 0.290 times lower than the baseline odds, indicating a tendency towards lower burden with high quality of life, though this was not significant at the 5% level. Regarding the Physical domain of quality of life, overall, this domain was not a statistically significant predictor of experiencing a high burden of care (overall p = 0.203). Compared to caregivers with High physical quality of life (the reference category), those with Low physical quality of life had 0.327 times lower odds of experiencing a high burden of care (OR = 0.327, 95% CI [0.070, 1.522], p = 0.154), which was not statistically significant. Caregivers with Moderate physical quality of life had 1.114 times higher odds of experiencing a high burden of care (OR = 1.114, 95% CI [0.488, 2.541], p = 0.798), also not statistically significant. This indicates that the level of physical quality of life did not significantly predict the likelihood of experiencing a high burden of care in this model.

For the Psychological domain of quality of life, overall, this domain was marginally statistically significant as a predictor of experiencing a high burden of care (overall p = 0.060). Compared to caregivers with High psychological quality of life (the reference category), those with Low psychological quality of life had significantly higher odds of experiencing a high burden of care (OR = 6.474, 95% CI [1.369, 30.616], p = 0.018). This suggests that caregivers reporting low psychological quality of life were over six times more likely to experience a high burden of care compared to those with high psychological quality of life, after controlling for the other quality of life domains. Caregivers with Moderate psychological quality of life had 1.246 times higher odds of experiencing a high burden of care (OR = 1.246, 95% CI [0.596, 2.605], p = 0.558), which was not statistically significant. In terms of the Social domain of quality of life, overall,

this domain was marginally statistically significant as a predictor of experiencing a high burden of care (overall p = 0.088). Compared to caregivers with High social quality of life (the reference category), those with Low social quality of life had 0.542 times lower odds of experiencing a high burden of care (OR = 0.542, 95% CI [0.187, 1.571], p = 0.259), which was not statistically significant. Caregivers with Moderate social quality of life had 1.589 times higher odds of experiencing a high burden of care (OR = 1.589, 95% CI [0.755, 3.343], p = 0.223), also not statistically significant. This suggests a tendency for lower social quality of life to be associated with higher burden, but the individual categories were not statistically significant at the 5% level.

Moreover, for the Environment domain of quality of life, overall, this domain was marginally statistically significant as a predictor of experiencing a high burden of care (overall p = 0.087). Compared to caregivers with High environmental quality of life (the reference category), those with Low environmental quality of life had significantly higher odds of experiencing a high burden of care (OR = 6.168, 95% CI [1.069, 35.596], p = 0.042). This indicates that caregivers reporting low environmental quality of life were over six times more likely to experience a high burden of care compared to those with high environmental quality of life, after controlling for the other quality of life domains. Caregivers with Moderate environmental quality of life had 1.977 times higher odds of experiencing a high burden of care (OR = 1.977, 95% CI [0.860, 4.546], p = 0.109), which was not statistically significant but showed a marginal tendency.

CHAPTER FIVE

DISCUSSION OF FINDINGS

5.1 Discussion of Findings

5.1.1 Burden of Care among Caregivers of Hypertensive Patients Attending Tertiary Health Facilities in Benin City, Edo State

The study revealed that a significant proportion of caregivers, over 56% experienced a high level of burden, with approximately 14% experiencing severe burden. This finding aligns with previous Nigerian studies, such as Adeoye *et al.* (2020), which reported substantial caregiver stress associated with chronic disease management. The high burden observed can be attributed to the chronicity of hypertension, which often requires long-term management, lifestyle adjustments, and constant monitoring, all of which impose physical, emotional, and financial strains on caregivers (Gobourne *et al..,* 2025). Many caregivers also manage long durations of caregiving, often exceeding five years, compounding fatigue and stress. However, despite the high burden, about 54% of caregivers perceived their burden as manageable or low, indicating variability in resilience, social support systems, and coping mechanisms. This suggests that some caregivers possess adaptive strategies that buffer stress, such as emotional support from family or community networks (Nath *et al.,* 2023).

5.1.2 Health-Related Quality of Life (HRQoL) Domains among Caregivers of Hypertensive Patients

The study demonstrated that caregivers' HRQoL across physical, psychological, social, and environmental domains was moderately compromised, with all mean scores below 55. The significant declines across all domains ($p < 0.01$) indicate that caregiving imposes a

multidimensional burden, affecting physical health (fatigue, somatic symptoms), mental health (stress, anxiety), social interactions (isolation, reduced leisure), and environmental satisfaction (financial strain, access to resources). These findings are consistent with prior research in Nigeria (Oladipo *et al.,* 2020) and other developing countries, where caregiving for chronic illnesses often leads to psychological distress and social withdrawal. Despite these challenges, more than half of the caregivers still perceived their overall QoL as good, suggesting resilience and adaptive coping mechanisms (Olowookere *et al.,* 2019).

5.1.3 HRQoL Domains among Hypertensive Patients Attending Tertiary Health Facilities in Benin City

Hypertensive patients also reported moderate HRQoL, with about half perceiving their overall quality of life as poor. The significant impairment across all domains ($p < 0.01$) corroborates existing literature indicating that chronic hypertension substantially diminishes patients' physical functioning, psychological well-being, social participation, and environmental satisfaction (Kondeti *et al.,* 2021; Al-Awad *et al.,* 2024). The social domain was particularly affected, reflecting social isolation, stigma, or limitations in social activities owing to health constraints.

5.1.4 Factors Associated with the Burden of Care among Caregivers of Hypertensive Patients

The analysis identified several key factors significantly associated with increased caregiver burden. Caregivers with no formal education were more likely to experience higher burden, which aligns with findings by Liu *et al.* (2025). Education enhances understanding of hypertension management, coping skills, and access to support resources, thus reducing perceived burden. Similarly, caregivers of patients perceived to be in worse health reported

higher burden, reflecting the increased demands of managing uncontrolled hypertension and its complications. Moreso, patient adherence emerged as a crucial factor; caregivers of patients with poor adherence faced greater challenges, likely due to recurrent hospital visits, medication adjustments, and managing complications. The strong association between caregivers' desire to continue caregiving and burden suggests that emotional attachment or perceived obligation influences stress levels, those committed to caregiving may experience higher burden but also derive a sense of purpose (Zimbudzi *et al.,* 2024).

5.1.5 Hypothesis Testing

The study found that educational status significantly influenced caregivers' HRQoL; caregivers with no formal education were more likely to report poor QoL, consistent with Niu *et al.* (2022). Education likely equips caregivers with knowledge, problem-solving skills, and access to resources, buffering against stress and improving well-being. Other socio-demographic factors like age, gender, and perceived patient health did not show significant associations. Regression analysis reinforced that higher educational attainment reduces the likelihood of poor QoL (OR=0.708), highlighting the importance of literacy and health education in caregiver well-being (Cui *et al.,* 2024). However, despite the intuitive expectation that higher caregiver burden would be associated with poorer HRQoL, the regression analysis revealed no significant direct relationship. This aligns with some studies (Galvan *et al.,* 2019) suggesting that subjective burden and HRQoL are mediated by other factors such as social support, resilience, or mental health. It implies that caregivers may experience high burden yet maintain acceptable levels of quality of life due to cultural, social, or personal coping mechanisms (Bello *et al.,* 2021).

5.2 Implications of findings to Nursing

The high prevalence of burden among caregivers of hypertensive patients, with over halsf of the respondents experiencing high or severe burden, shows the critical need for nursing interventions. Nurses should prioritize assessing caregiver burden, particularly among those with lower educational attainment. In addition, identifying caregivers whose patients have good treatment adherence and those willing to continue caregiving is important, as these groups surprisingly reported higher burden in this study. Moreso, addressing the significant burden factors like financial strain, lack of training, physical exhaustion, emotional stress, lack of time for self, and social isolation requires nurses to provide targeted support, education, and resources. By recognizing the impact of psychological and environmental quality of life on burden, nurses can implement interventions aimed at improving these specific domains to enhance caregiver well-being.

5.3 Limitations of the Study

The reliance on self-reported data introduces potential for social desirability bias, which may influence how caregivers report their burden and quality of life. The study was conducted at a single tertiary health facility, limiting the universality of findings to caregivers in other settings with potentially different support systems and patient populations. While several factors were explored, other unmeasured variables, such as the specific type and severity of hypertension complications or the availability of informal support networks, may also influence caregiver outcomes.

5.4 Summary of the Study

In summary, the study assessed the burden of care and health-related quality of life among caregivers and hypertensive patients attending a tertiary health facility in Benin City, Edo State. The study revealed a significant burden of care among caregivers, with a majority (56.4%) experiencing a high burden stress. Multivariate logistic regression analysis indicated that having no formal education (compared to tertiary education) was associated with significantly lower odds of experiencing a higher burden of care (OR = 0.362, 95% CI [0.148, 0.885], p = 0.026). Furthermore, caregivers who desired to continue caregiving (compared to not desiring to continue) were significantly more likely to report a high burden of care (OR = 2.431, 95% CI [1.297, 4.556], p = 0.006). Regarding health-related quality of life, while caregivers reported a good overall quality of life, specific domains were perceived as poor. Additionally, multivariate analysis examining the relationship between quality of life domains and the likelihood of experiencing a high burden of care revealed that reporting a low psychological quality of life (compared to high psychological QoL) significantly increased the odds of high burden (OR = 6.474, 95% CI [1.369, 30.616], p = 0.018), and reporting a low environmental quality of life (compared to high environmental QoL) also significantly increased the odds of high burden (OR = 6.168, 95% CI [1.069, 35.596], p = 0.042).

5.5 Conclusion of the Study

In conclusion, caregivers of hypertensive patients experienced a high burden, with over half reporting a significant level of stress, which adversely affects their mental, physical, social, and environmental quality of life. However, common factors associated with increased caregiver

burden include lower educational attainment, poor patient health status, and inadequate treatment adherence, while higher education and better patient health serve as protective factors.

5.6 Recommendations

Based on the findings of this study, the following were recommended;

1. Implement Caregiver Education Programs: Develop and provide structured educational interventions to improve caregivers' knowledge about hypertension management, treatment adherence, and coping strategies, especially targeting those with low educational levels.

2. Enhance Support Systems for Caregivers: Establish psychosocial support groups and counseling services within healthcare facilities to reduce emotional and physical stress experienced by caregivers, fostering resilience and social connectedness.

3. Strengthen Patient Adherence Interventions: Promote adherence-enhancing strategies such as regular counseling, medication reminders, and community outreach to improve blood pressure control, thereby reducing caregiver burden.

4. Integrate Routine Caregiver Assessments: Incorporate regular assessment of caregiver burden and quality of life into hypertension management protocols to identify high-risk individuals and tailor support services accordingly.

5. Develop Policy Frameworks for Caregiver Support: Advocate for policies that recognize and support caregivers through financial assistance, respite care, and caregiver training programs to improve their well-being and sustain quality caregiving.

5.7 Suggestions for Further Studies

Future research should investigate the trajectory of caregiver burden and quality of life over time and to better understand the causal pathways between influencing factors. Conducting multi-site studies, including primary and secondary healthcare settings, would improve the generalizability of findings and provide insights into variations in caregiver experiences across different care contexts. Qualitative research could explore caregivers' perspectives in depth, particularly regarding the expected associations between educational status, patient adherence, desire to continue caregiving, and burden. Developing and evaluating the effectiveness of tailored interventions, such as psychoeducational programs for caregivers on managing stress and utilizing resources, is crucial. Likewise, further studies should explore the specific aspects of psychological and environmental quality of life that contribute most significantly to caregiver burden to inform the development of targeted support strategies.

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APPENDIX I

QUESTIONNAIRE
DEPARTMENT OF NURSING SCIENCES,
SCHOOL OF BASIC MEDICAL SCIENCES,
UNIVERSITY OF BENIN,
BENIN CITY, EDO STATE

Dear respondent,

I am a 500l student of the department of nursing in the above-named institution. I am carrying out a research study on Assessment of Burden of Care as a Predictor of Quality of Life among Caregivers of Hypertensive Patients Attending a Tertiary Health Facility in Benin City, Edo State. Please be assured that all responses will be treated with the highest level of confidentiality and will be used for academic purposes only.

Please kindly assist me by indicating your opinion where necessary.

SECTION A: DEMOGRAPHIC INFORMATION

HYPERTENSIVE PATIENT

1. Gender: Male ( ) Female ( )
2. Age: ..... (years)
3. Marital Status: Single ( ) Married ( ) Separated ( )
4. Educational Status: No formal education ( ) Primary school education ( ) Secondary school education ( ) Tertiary education ( ).
5. Work Status: Employed ( ) Self-employed ( ) Retired ( ) Unemployed ( )
6. Occupation: Business ( ) Civil/public servant ( ) Trader ( ) Farmer ( ) Clergy ( ) Artisan ( ) Administrative ( )
7. Type of Hypertension? Systolic BP ( ) Diastolic BP ( )
8. Duration of Hypertension?…….(years)
9. Family household size_____
10. Family history of Hypertension: Yes ( ) No ( )

CARE GIVERS OF HYPERTENSIVE PATIENT

1. Gender: Male ( ) Female ( )
2. Age: ..... (years)
3. Marital Status: Single ( ) Married ( ) Separated ( )
4. Educational Status: No formal education ( ) Primary school education ( ) Secondary school education ( ) Tertiary education ( ).
5. Work Status: Employed ( ) Self emloyed ( ) Retired ( ) Un employed ( )
6. Occupation: Business ( ) Civil/public servant ( ) Trader ( ) Farmer ( ) Clergy ( ) Artisan ( ) Administrative ( )
7. Relationship to patient: Siblings ( ) Child ( ) Cousin ( ) Mother ( ) Aunt ( ) Friend ( ) Inlaw ( ) Husband ( ) Wife ( ) Others (specify)……..

8. Perceived Health Status of Patient: Good ( ) Moderate ( ) Bad ( )
9. Adherence to Treatment/medications: Good ( ) Moderate ( ) Poor ( )
10. Residence Status: Same house ( ) Neighborhood ( ) Away from patients' residence ( )
11. How long have you been the care giver of this patient?: _____(months)
12. Do you have desire to continue care? Yes ( ) No ( )

SECTION B: CARE GIVER BURDEN ASSESSMENT (ZARIT BURDEN INTERVIEW)

Please indicate how often you experience the feelings listed by rating the level that best corresponds to the frequency of these feelings.

ZBI 22 ITEMS INTERVIEW	**Always**	**Often**	**Sometimes**	**Rarely**	**Never**
1. Do you feel stressed trying to balance caring for your hypertensive relative and meeting other responsibilities (e.g., work or family)?					
2. Do you feel embarrassed because of your hypertensive relative's behavior or condition?					
3. Do you feel angry or frustrated when you are around your hypertensive relative?					
4. Do you feel that caring for your hypertensive relative negatively affects your relationships with other family members or friends?					
5. Are you afraid of what the future holds for your hypertensive relative?					
6. Do you feel emotionally strained when you are around your hypertensive relative?					
7. Do you feel that you do not have as much privacy as you would like because of caregiving responsibilities?					
8. Has your social life suffered because you are caring for a hypertensive relative?					
9. Do you feel uncomfortable having friends or visitors around because of your hypertensive relative?					
10. Do you feel that you have lost control of your own life since becoming a caregiver for your hypertensive relative?					
11. Do you sometimes wish you could hand over the care of your hypertensive					

relative to someone else?					
12. Do you feel uncertain or confused about what to do in caring for your hypertensive relative?					
13. Do you feel that you should be doing more to care for your hypertensive relative?					
14. Do you feel that you could do a better job in caring for your hypertensive relative?					
15. Overall, how burdened do you feel in caring for your hypertensive relative?					
16. Do you feel your hypertensive relative asks for more help than they actually need?					
17. Do you feel that because of the time you spend caring for your hypertensive relative, you do not have enough time for yourself?					
18. Do you feel your hypertensive relative is too dependent on you?					
19. Has your health suffered as a result of caring for your hypertensive relative?					
20. Do you feel you lack enough money to care for your hypertensive relative along with handling other financial responsibilities?					
21. Do you feel that your hypertensive relative expects you to be the only one available to care for them?					
22. Do you feel that you might be unable to continue caregiving for your hypertensive relative much longer?					

SECTION C: HEALTH RELATED QUALITY OF LIFE`(WHOQOL-100) AMONG CAREGIVERS OF HYPERTENSIVE PATIENTS

The following questions ask how you feel about your quality of life, health, or other areas of your life in the last two weeks. Please choose the answer that appears most appropriate.
Please keep in mind your standards, hopes, pleasures and concerns. If you are unsure about which response to give to a question, the first response you think of is often the best one.

WHOQOL-BREF (26 ITEMS)	**Very poor**	**Poor**	**Neither poor nor good**	**Good**	**Very good**
1. How would you rate your overall quality of life as a caregiver?					
	Very dissatisfied	**Dissatisfied**	**Neither satisfied nor dissatisfied**	**Satisfied**	**Very satisfied**
2. How satisfied are you with your health while caring for the patient?					
	Not at all	**A little**	**A moderate amount**	**Very much**	**Extremely**
3. To what extent does physical pain limit your caregiving duties?					
4. How much do you require medical treatment to carry out your caregiving and daily activities?					
5. How much do you enjoy life despite caregiving responsibilities?					
6. To what extent do you find your caregiving role to be meaningful?					
7. How well are you able to concentrate during your daily caregiving tasks?					
8. How safe do you feel in your daily life, including in your caregiving role?					

9. How healthy is the physical environment where you carry out your caregiving?					
	Not at all	**A little**	**Moderately**	**Mostly**	**Completely**
10. Do you have enough energy for everyday life, including caregiving responsibilities?					
11. Are you able to accept changes in your physical appearance that may have resulted from caregiving stress or burden?					
12. Do you have enough financial resources to support yourself and the person you care for?					
13. How accessible is information you need to support your caregiving role?					
14. To what extent do you have time or opportunity for leisure or personal activities?					
	Very poor	**Poor**	**Neither poor nor good**	**Good**	**Very good**
15. How well are you able to move around and handle physical tasks as a caregiver?					
	Very dissatisfied	**Dissatisfied**	**Neither satisfied nor dissatisfied**	**Satisfied**	**Very satisfied**
16. How satisfied are you with your sleep pattern while caring for someone?					
17. How satisfied are you with your ability to perform daily tasks, including caregiving activities?					
18. How satisfied are you with your ability to maintain work or other obligations?					
19. How satisfied are you with yourself, considering your					

caregiving experience?					
20. How satisfied are you with your personal relationships during this caregiving period?					
21. How satisfied are you with your sexual life while managing caregiving responsibilities?					
22. How satisfied are you with the emotional or social support you receive from friends?					
23. How satisfied are you with your living conditions while providing care?					
24. How satisfied are you with your ability to access healthcare services for yourself and/or the person you care for?					
25. How satisfied are you with the means of transport available to meet your caregiving needs?					
	Never	**Seldom**	**Quite often**	**Very often**	**Always**
26. How often do you experience negative feelings such as sadness, anxiety, depression, or emotional exhaustion?					

SECTION D: HEALTH RELATED QUALITY OF LIFE`(WHOQOL-100) AMONG HYPERTENSIVE PATIENTS

The following questions ask how you feel about your quality of life, health, or other areas of your life in the last two weeks. Please choose the answer that appears most appropriate.

Please keep in mind your standards, hopes, pleasures and concerns. If you are unsure about which response to give to a question, the first response you think of is often the best one.

WHOQOL-BREF (26 ITEMS)	**Very poor**	**Poor**	**Neither poor nor good**	**Good**	**Very good**
1. How would you rate your overall quality of life as someone living with hypertension?					
	Very dissatisfied	**Dissatisfied**	**Neither satisfied nor dissatisfied**	**Satisfied**	**Very satisfied**
2. How satisfied are you with your health condition?					
	Not at all	**A little**	**A moderate amount**	**Very much**	**Extremely**
3. To what extent does physical pain interfere with your daily activities?					
4. How much do you rely on medical treatment to carry out your daily activities?					
5. How much do you enjoy life despite having hypertension?					
6. To what extent do you feel your life has meaning or purpose?					
7. How well are you able to focus and concentrate during your daily activities?					
8. How safe do you feel in your everyday life?					
9. How healthy and supportive is your home or living environment?					

	Not at all	A little	Moderately	Mostly	Completely
10. Do you have enough energy for your daily routines?					
11. Are you comfortable with your physical appearance, including any changes due to hypertension or its treatment?					
12. Do you have enough money to meet your personal and medical needs?					
13. How accessible is the health-related information you need to manage your hypertension?					
14. To what extent do you have time for hobbies, rest, or leisure?					
	Very poor	**Poor**	**Neither poor nor good**	**Good**	**Very good**
15. How well are you able to move around and engage in physical activity?					
	Very dissatisfied	**Dissatisfied**	**Neither satisfied nor dissatisfied**	**Satisfied**	**Very satisfied**
16. How satisfied are you with your quality of sleep?					
17. How satisfied are you with your ability to manage daily personal tasks?					
18. How satisfied are you with your ability to work or carry out your usual activities?					
19. How satisfied are you with yourself and how you manage your health?					
20. How satisfied are you with your relationships with family and loved ones?					
21. How satisfied are you with your sexual life and					

intimacy?					
22. How satisfied are you with the support you receive from friends and others?					
23. How satisfied are you with the condition of your living space?					
24. How satisfied are you with your access to healthcare services?					
25. How satisfied are you with your transportation options (for medical visits, etc.)?					
	Never	**Seldom**	**Quite often**	**Very often**	**Always**
26. How often do you feel negative emotions like sadness, worry, anxiety, or depression?					

SECTION E: FACTORS ASSOCIATED WITH CAREGIVERS BURDEN

Please rate your level of agreement with the following factors regarding your care-giving experience.

Influencing Factors	**Strongly agree**	**Agree**	**Strongly disagree**	**Disagree**
Financial burden				
Work interference				
Lack of caregiving training				
Physical exhaustion				
Emotional stress				
Poor access to healthcare services				
Lack of time for self				
Social isolation				

RELIABILITY TEST

Reliability Statistics

Cronbach's Alpha[a]	N of Items
0.739	82

Item Statistics

	Mean	Std. Deviation	N
ZBI_Q1	2.45	1.572	20
ZBI_Q2	2.25	1.585	20
ZBI_Q3	1.80	1.473	20
ZBI_Q4	2.80	1.105	20
ZBI_Q5	2.65	1.461	20
ZBI_Q6	1.40	1.353	20
ZBI_Q7	1.80	1.152	20
ZBI_Q8	2.10	1.165	20
ZBI_Q9	1.35	1.496	20
ZBI_Q10	2.60	1.273	20
ZBI_Q11	2.30	1.380	20
ZBI_Q12	1.95	1.432	20
ZBI_Q13	1.80	1.642	20
ZBI_Q14	2.00	1.257	20
ZBI_Q15	2.00	1.298	20
ZBI_Q16	2.25	1.164	20
ZBI_Q17	1.60	1.231	20
ZBI_Q18	1.90	1.373	20
ZBI_Q19	1.80	1.542	20
ZBI_Q20	2.50	1.051	20
ZBI_Q21	2.00	1.376	20
ZBI_Q22	2.20	1.508	20
CG_Q1	2.95	1.504	20

CG_Q2	2.70	1.342	20
CG_Q3	3.25	1.410	20
CG_Q4	2.80	1.704	20
CG_Q5	2.85	1.531	20
CG_Q6	3.60	1.314	20
CG_Q7	2.80	1.399	20
CG_Q8	2.75	1.372	20
CG_Q9	2.90	1.373	20
CG_Q10	3.35	1.226	20
CG_Q11	3.05	1.234	20
CG_Q12	2.25	1.333	20
CG_Q13	3.15	1.182	20
CG_Q14	3.05	1.504	20
CG_Q15	3.05	1.432	20
CG_Q16	3.20	1.473	20
CG_Q17	2.45	1.317	20
CG_Q18	2.70	1.525	20
CG_Q19	2.95	1.504	20
CG_Q20	3.20	1.240	20
CG_Q21	3.05	1.395	20
CG_Q22	3.35	1.599	20
CG_Q23	3.25	1.372	20
CG_Q24	3.20	1.436	20
CG_Q25	3.25	1.552	20
CG_Q26	2.60	1.536	20
PT1	3.40	1.429	20
PT2	3.70	1.261	20
PT3	3.05	1.538	20
PT4	2.55	1.356	20
PT5	3.20	1.281	20
PT6	3.15	1.348	20
PT7	3.05	1.468	20
PT8	3.00	1.257	20

PT9	3.35	1.424	20
PT10	3.40	1.501	20
PT11	3.75	1.070	20
PT12	2.55	1.504	20
PT13	3.30	1.342	20
PT14	3.20	1.361	20
PT15	2.85	1.268	20
PT16	3.00	1.451	20
PT17	2.80	1.240	20
PT18	2.80	1.473	20
PT19	2.95	1.468	20
PT20	2.65	1.309	20
PT21	3.35	1.424	20
PT22	2.90	1.410	20
PT23	2.80	1.322	20
PT24	2.70	1.525	20
PT25	3.35	1.461	20
PT26	3.35	1.424	20
Factor_Financial burden	2.70	1.081	20
Factor_Work interference	2.25	1.118	20
Factor_Lack of caregiving training	2.75	1.410	20
Factor_Physical exhaustion	2.80	.951	20
Factor_Emotional stress	2.60	1.188	20
Factor_Poor access to healthcare services	2.25	1.020	20
Factor_Lack of time for self	2.15	.875	20
Factor_Social isolation	2.40	1.046	20

HEALTH RESEARCH ETHICS COMMITTEE (HREC)

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Registration Number:
NHREC-UBTH-HREC/24/12/2022B

PROTOCOL NUMBER: ADM/E 22/A/VOL.VII/2025/20

PROPOSAL TITLE: "ASSESSMENT OF BURDEN OF CARE AS A PREDICTOR OF QUALITY OF LIFE AMONG CARE GIVERS OF HYPERTENSIVE PATIENTS ATTENDING A TERTIARY HEALTH FACILITY IN BENIN CITY, EDO STATE"

PRINCIPAL INVESTIGATOR(S): IWEKUBA VICTOR CHUKWUEMEKA

DEPARTMENT/INSTITUTION: DEPARTMENT OF NURSING SCIENCE, SCHOOL OF BASIC MEDICAL SCIENCES UNIVERSITY OF BENIN, BENIN CITY, EDO STATE

DATE CONSIDERED: APRIL 25TH, 2025

DECISION OF THE COMMITTEE: APPROVED

THIS APPROVAL DATES 25/4/2025 TO 24/4/2026. IF THERE IS DELAY IN STARTING THE RESEARCH, PLEASE INFORM THE HREC SO THAT THE DATES OF APPROVAL CAN BE ADJUSTED ACCORDINGLY

REMARK:

CHAIRMAN: PROF. (MRS) A.N. OFILI **SIGNATURE & DATE** Ofili 25/4/2025
SUPERVISOR (S): DR. T. A. EHWARIEME

DECLARATION BY INVESTIGATOR(S):
PROTOCOL NUMBER (please quote in all enquiries)
Note that no participant accrual or activity related to this research may be conducted outside of these dates. All informed consent forms used in this study must carry the HREC assigned number and duration of HREC approval of the study. In multiyear research, endeavor to submit your annual re-port to the HREC early in order to obtain renewal of your approval and avoid disruption of your research. No changes are permitted in the research without prior approval by the HREC except in circumstances outlined in the Code. The HREC reserves the right to conduct compliance visit your research site without previous notification

Signature & Date.....