

UNIVERSITY OF CAPE COAST

INFLUENCE OF MEMORY FUNCTIONING ON QUALITY OF LIFE IN
STROKE PATIENTS: THE MODERATING ROLE OF SOCIAL SUPPORT

BY

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DECLARATION

Candidate's Declaration

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

Candidate's Signature: Date:

Name:

Supervisor's Declaration

I hereby declare that the preparation and presentation of the thesis were supervised by the guidelines on supervision of the thesis laid down by the University of Cape Coast.

Supervisor's Signature: Date:

Name:

ABSTRACT

This study investigated the influence of memory functioning on quality of life in stroke patients and the moderating role of social support. The positivist philosophical paradigm was used in the research. The study employed a quantitative approach, specifically a correlational design. Simple random sampling was used to select 132 patients from the target population of 189 stroke patients at the Cape Coast Teaching Hospital (CCTH) in the Central Region of Ghana. Means and standard deviations were used to analyse research questions 1, 2, and 3. Hypotheses 1 and 2 were tested using multivariate linear regression, while hypothesis 3 was tested using Hayes PROCESS moderation analysis. The study found a statistically significant influence of memory functioning on the quality of life in stroke patients. There was no statistically significant influence of social support on the quality of life in stroke patients. Again, social support did not moderate the influence of memory functioning on quality of life in stroke patients. The study recommended that implementing support groups, caregiver education programmes, and peer mentorship networks could enhance quality of life. Also, a longitudinal study could provide a comprehensive understanding of the dynamic nature of social support and its possible long-term influence on the relationship between memory functioning and quality of life in stroke patients.

KEYWORDS

Memory Functioning

Quality of Life

Social Support

Stroke



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DEDICATION

To Margaret Yaa Krah, my mother, and Beatrice Nana Abrafi, my aunt.



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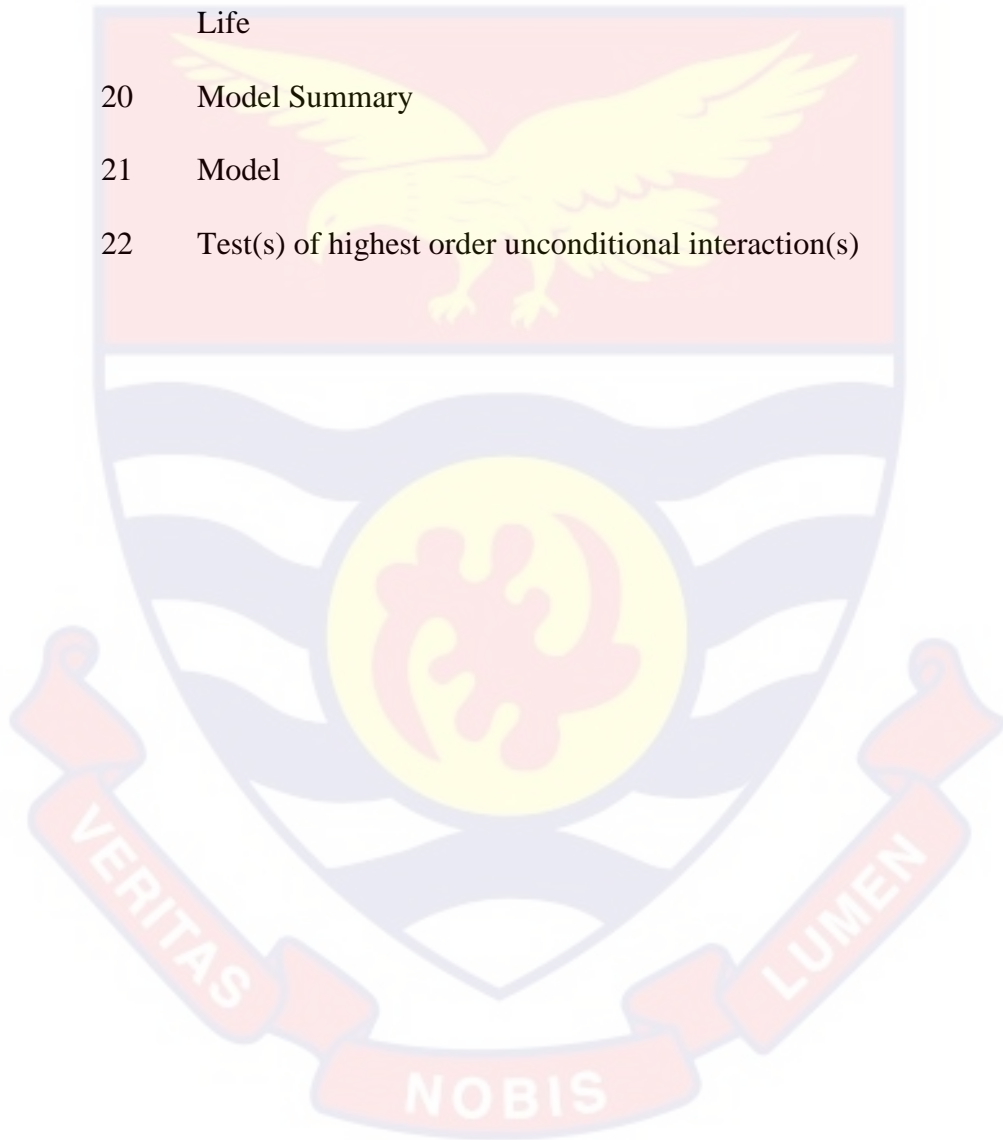
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LIST OF ACRONYMS

APA	-	American Psychological Association
CCTH	-	Cape Coast Teaching Hospital
CRT	-	Cognitive Reserve Theory
CVA	-	Cerebrovascular Accident
GSS	-	Ghana Statistical Service
HRQoL	-	Health-Related Quality of Life Model HRQoL
HRQOLISP	-	Health-Related Quality of Life Impact Scale for Stroke Patients
KATH	-	Komfo Anokye Teaching Hospital
MFQ	-	Memory Functioning Questionnaire
MSPSS	-	Multidimensional Scale of Perceived Social Support
QoL	-	Quality of life
SCT	-	Social Convoy Theory
SPSS	-	Statistical Product and Service Solutions
SRQoL	-	Stroke-related quality of life
SS- QOL	-	Stroke Specific Quality of Life Scale
TIA	-	Transient Ischaemic Attack
UCC	-	University of Cape Coast
VCI	-	Vascular Cognitive Impairment
WHO	-	World Health Organization

CHAPTER ONE

INTRODUCTION

Stroke is a multifaceted health issue affecting patients and their families in physical, psychological, social, and economic ways (Harwood, Ebrahim & Salinas, 2014). However, little attention has been given to the social aspects of care for stroke patients. According to Sawant, Lee and Chan (2020), despite its significant impact on memory functioning, stroke care lacks comprehensive research on the psychological and social aspects of its delivery. Stroke patients may struggle with their roles and activities, necessitating social support from family, friends, and significant others. However, in Ghana, stroke care focuses primarily on physiopathology, with little attention paid to the social components of care (Sarfo et al., 2018). To address this knowledge gap, this study adopts the biopsychosocial (spiritual) model to highlight the importance of integrating social support in stroke rehabilitation and the multidisciplinary team approach to provide holistic stroke care.

Background to the Study

According to the American Heart Association (2022), stroke, also known as Cerebrovascular Accident (CVA), is a neurological condition that affects the arteries leading to the brain and inside the brain. According to the World Health Organization [WHO] (1978), stroke is a sudden onset of focal neurological deficit lasting more than 24 hours or that results in death with no other root cause than a vascular event. An acute stroke, Transient Ischaemic Attack (TIA) refers to less than a 24-hour- period of a stroke. Stroke is classified based on its aetiology as either ischaemic or hemorrhagic (Donnan,

Fisher, Madeod & Davis, 2008). It emerges when a blood vessel that transports oxygen and nutrients to the brain is either blocked by a clot (ischaemic stroke) or bursts (hemorrhagic stroke). According to Mozaffarian *et al.* (2015), brain cells die when the blood supply to the brain is cut off.

Stroke affects 15 million people globally each year, with an estimated five million dying and another five million permanently disabled (WHO, 2002). It is the second leading cause of death and the third leading cause of disability worldwide (WHO, 2021). Stroke is a leading cause of mortality and morbidity worldwide, responsible for 11.13% of all deaths in 2019. In Africa, stroke is also a major health problem, with an estimated incidence rate of 316 per 100,000 population and a prevalence rate of 1.54% (Feigin *et al.*, 2018). In West Africa, the prevalence rate of stroke is 1.5%, with Ghana recording a prevalence rate of 1.7% (Obiako *et al.*, 2018). Sarfo, Acheampong, Oparebea, Akpalu, and Bedu-Addo (2014), indicated that stroke is the major cause of death and disability in Ghana.

In the Central Region of Ghana, stroke is a significant public health concern, with a reported incidence rate of 57 per 100,000 population (Agyemang *et al.*, 2016). Individuals who have suffered stroke may experience a variety of cognitive impairments including loss of memory performance in general, seriousness of forgetting, retrospective functioning, and mnemonics usage. Memory loss is frequent after a stroke. Nearly 30% of stroke patients develop dementia within a year after their stroke (Cullen, O'Neill, Evans, Coen & Lawlor, 2007). Memory issues are frequently present at the time of stroke diagnosis (Buckner, 2004).

Squire (2009), defines memory as the ability to encode, store, and retrieve information. Memory is divided into three categories: sensory, short-term, and long-term. Sensory memory, for example, is not consciously controlled, short-term memory can only hold a limited amount of information, and long-term memory can store an infinite amount of information. In this study, memory functioning is conceptualized as the ability to store and retrieve information. According to Staniloiu and Markowitsch (2012), forgetting and fading of memories are also understood as being an important aspect of the functioning and utility of memory. Memory functioning is a crucial cognitive function that is essential for daily living activities.

In stroke patients, memory functioning may be impaired due to the damage to the brain caused by the stroke. This impairment may affect the patient's ability to perform daily living activities and impact their quality of life. According to the American Psychological Association [APA] (2021), memory impairment is a common consequence of stroke. APA guidelines recommend that healthcare professionals assess memory functioning in stroke patients and develop individualised rehabilitation plans to address cognitive deficits. Research studies have also shown that memory loss is a prevalent issue in stroke survivors. For example, a study published in the *Journal of Stroke and Cerebrovascular Diseases* found that up to 66% of stroke survivors experienced some form of memory impairment (Dhamoon *et al.*, 2014).

Another study published in the *Journal of Stroke and Cerebrovascular Diseases* found that memory problems persist for stroke survivors one year after the event (Smith, 2022). These findings highlight the importance of addressing memory loss in stroke rehabilitation programs. According to

Ferrans *et al.* (2005), quality of life (QoL) is a multidimensional term that includes physical, psychological, and social factors. It examines all aspects of life satisfaction, including physical health, family, education, employment, wealth, safety, and security, as well as freedom, religious beliefs, and the environment. Quality of life is defined as normal functioning, social usefulness, general well-being, ability to achieve life's goals, happiness, and life satisfaction (Ferrans *et al.*). Quality of life, therefore, refers to overall well-being and satisfaction with life.

Paterson, Jones, and Lauder (2013) define health-related quality of life as a multifaceted construct that includes the physical, psychological (emotional), and social components associated with an illness or treatment. Stroke patients may experience a reduced quality of life due to physical disability, emotional distress, and cognitive impairment. Stroke-specific quality of life refers to the impact of stroke on a person's overall well-being, including physical, psychological, and social functioning. It encompasses various domains, such as mobility, self-care, social relationships, and emotional well-being. Stroke-specific quality-of-life measures are used to assess the effects of stroke on these domains and to evaluate the effectiveness of stroke rehabilitation interventions. Kruithof *et al.*, (2013) employed the Stroke-Specific Quality of Life Scale to assess the quality of life of stroke patients.

The authors found that stroke-specific quality of life was associated with cognitive impairment, mood disorders, and physical disability. Quality of Life in this study is therefore an individual's overall level of satisfaction with several areas of his or her life, such as family roles, language, mobility, mood,

personality, self-care, social roles, thinking, upper extremity function, vision, energy, and productivity. Social support is a variable of relevance in this study because of its function as a moderator in the relationship between memory functioning and quality of life in stroke patients. Social support is understood as the belief and reality that a person has support from others and, most significantly, as being a part of a social network or group that is supportive (Uchino, Bowen, de Grey, Mikel & Fisher, 2018).

Social support can come from a range of sources, including family, close friends, intimate partners, pets, neighbours, and coworkers, but it is not limited to these (Taylor, 2011). Social support is an essential resource that has the potential to impact stroke patients' quality of life. Social support may include emotional, informational, and material assistance that is provided by family members, friends, and significant others. Social support could help stroke patients cope with the physical, emotional, and cognitive challenges of stroke recovery. This research used the conceptualization of social support as family, friends, and significant others in one's social network that provides certain needs such as emotional, informational, and material assistance in difficult situations.

The aforementioned demonstrates that stroke is a serious medical condition in Ghana, and it is worth highlighting that patients may have their social and psychological well-being threatened by required adjustments in the course of stroke and its treatments, which may further lead to diminished quality of life. Social support is required to improve the quality of life in stroke patients. As a result, it is essential to carry out the study to investigate

the influence of memory functioning on quality of life in stroke patients, as well as the moderating role of social support in this relationship.

Statement of the Problem

Stroke patients may have complicated health needs due to the chronic and long-term adverse effects of treatment, which require continuing care.

When someone has stroke, the ramifications may extend beyond the medical symptoms of the disease to include social consequences. O'Sullivan and Chard (2010) agreed with this assertion that, after a stroke, some persons are unable to return to their previous activities and roles and must rely on friends and family for support. Furthermore, the limitations that stroke patients face in role performance often involve reliance on family, friends, and significant others (Lynch *et al.*, 2008). However, a lack of social support in stroke care negatively impacts daily functioning, particularly memory, and leads to a lower quality of life (Donnan *et al.*, 2008). According to a study conducted by Appiah *et al.*, (2021), stroke patients in Ghana had limited access to social support, which may worsen the negative impact of memory impairment on quality of life.

Furthermore, stroke care in Ghana has mostly concentrated on physiopathology, with little attention paid to the psychological and social factors of care (Sarfo *et al.*, 2018). Stroke patients have a better chance of survival with medical therapy, although the majority of them live with memory issues (Jauch *et al.*, 2013). Memory functioning issues are prevalent following a stroke, with approximately 30% of stroke patients experiencing memory deterioration within a year of the stroke (Cullen *et al.*, 2007). Memory functioning is one of the major brain areas influenced by stroke, and

it has a major effect on a patient's capacity to manage daily living tasks. According to Staniloiu and Markowitsch (2012), forgetting and fading of memories are also seen as a crucial part of memory functioning. Furthermore, cognitive assessment following a stroke to identify memory impairments and give help is often unavailable (Care Quality Commission, 2019).

Memory impairment negatively affects patients' physical functioning, thereby reducing their quality of life (Cumming, Brodtmann, Darby, & Bernhardt, 2014). Research has shown that memory problems are common in stroke patients in Africa and can negatively affect their quality of life (Clay *et al.*, 2013). A study by Owolabi *et al.* (2016) in Nigeria found that over 50% of stroke patients had memory impairment, which was associated with poorer quality of life. Similarly, research conducted in Ghana has shown that stroke patients with memory impairment have a lower quality of life compared to healthy individuals (Anarfi, 2015; Nyame, 2018). A study by Akpalu *et al.*, (2018) in Ghana found that stroke patients had lower quality of life and that lack of life satisfaction was associated with memory impairment.

Furthermore, Studies have also revealed that reduced quality of life in stroke patients is a significant predictor of cognitive impairment, including a reduction in memory functioning (Owolabi *et al.*, 2014). Furthermore, studies have shown that poor quality of life in stroke patients is a major predictor of cognitive impairment, including more serious memory functioning (Owolabi *et al.*, 2014). Stroke patients who experience frequent complications have a lower quality of life in terms of memory and reasoning (Melkas *et al.*, 2009). The Stroke-Specific Quality of Life Scale was used in a study to evaluate 143 individuals within the first three weeks after a stroke. Memory impairment,

specifically problems with visual perception and construction, was associated with lower quality of life (Mitchell & Chong, 2010). Stroke patients frequently have a reduced quality of life as a result of their reliance on others for support (Donnan *et al.*, 2008).

Many studies (Jauch *et al.*, 2013; Mitchell & Chong, 2010; Pollock *et al.*, 2012, 2014), on the relationship between memory functioning and quality of life, as well as social support and quality of life, have been conducted in isolation, but the role of social support as a moderator in the influence of memory functioning on quality of life has been overlooked in Africa, especially in the Cape Coast Metropolis of Ghana. Memory impairment was found to be the most significant topic in stroke research in a national priority-setting study, emphasising its significance to patients (Pollock *et al.*, 2012, 2014). Despite this degree of priority, there was a gap in care for stroke patients with memory problems.

Memory impairment has received less research in comparison to more prevalent neurological symptoms such as weakness and sensory loss, as well as well-established mental health issues such as anxiety and depression (Mitchell *et al.*, 2010). In other settings outside Africa, social support has been demonstrated to play a moderating effect in the association between memory performance and quality of life in stroke patients (Johnson, Smith, & Davis, 2018); however, there appear to be few studies in Ghana and the Cape Coast Metropolis in particular. While research has demonstrated that memory functioning can have a direct impact on stroke patients' quality of life, less is known about the moderating role of social support in African settings, particularly in the Cape Coast Metropolis of Ghana (Smith, 2023).

It is therefore against these aforementioned reasons that this empirical research was conducted to investigate the influence of memory functioning on stroke patients' quality of life, using social support as a moderator in the Cape Coast Metropolis as well as because the Cape Coast Teaching Hospital (CCTH) is a referral centre for stroke cases in the Central Region of Ghana.

Purpose of the study

The purpose of this study was to examine the influence of memory functioning on stroke patients' quality of life, using social support as a moderator.

Research Objectives

Specifically, this study intended to:

1. Determine the level of memory functioning of stroke patients.
2. Find out the level of quality of life of stroke patients.
3. Ascertain the level of social support of stroke patients.
4. Examine the influence of memory functioning on the quality of life of stroke patients.
5. Evaluate the influence of social support on the quality of life of stroke patients.
6. Investigate the moderating effect of social support on the influence of memory functioning on quality of life in stroke patients.

Research Questions

The following research questions were stated to guide the study and fulfil the primary goal of this research:

1. What is the level of memory functioning of stroke patients?
2. What is the level of quality of life of stroke patients?

3. What is the level of social support for stroke patients?

Research Hypotheses

The hypotheses listed below were tested:

1. H_0 : There is no statistically significant influence of memory functioning on the quality of life in stroke patients.

H_1 : There is a statistically significant influence of memory functioning on the quality of life in stroke patients.

2. H_0 : There is no statistically significant influence of social support on the quality of life in stroke patients.

H_1 : There is a statistically significant influence of social support on the quality of life in stroke patients.

3. H_0 : Social support will not moderate the influence of memory functioning on quality of life in stroke patients.

H_1 : Social support will moderate the influence of memory functioning on quality of life in stroke patients.

Significance of the Study

The study on the influence of memory functioning on the quality of life in stroke patients using social support as a moderator is significant for clinical practice in several ways. It highlights the importance of integrating social support into the care plans of stroke patients. By demonstrating how positive social support from friends, family, and significant others can enhance the quality of life and reduce psychological issues like stress, depression, and anxiety, healthcare providers can adopt more holistic and patient-centred approaches. This will not only help in improving physical function and mental well-being but also in increasing overall life satisfaction among stroke

patients. Rehabilitation specialists, physiotherapists, speech and language therapists, clinical health psychologists, and neurologists can use these findings to develop and implement more effective and comprehensive rehabilitation programs.

For the research community, this study adds valuable knowledge to the growing body of literature on the interplay between memory functioning, social support, and quality of life in stroke patients. Focusing on the Ghanaian population, it addresses a gap in the current research, providing context-specific insights that are crucial for understanding the unique challenges faced by stroke patients. The findings of the study can serve as a foundation for future stroke researchers by exploring similar variables in different cultures and geographical areas, thereby contributing to the global understanding of stroke rehabilitation. Additionally, it sets a new direction for stroke research in Ghana, advocating for a shift from focusing solely on physiopathology to exploring the social and psychological experiences of stroke patients.

In the field of education, particularly within healthcare and medical training programs, this study underscores the need for incorporating modules on the importance of social support in stroke care. Medical students, nursing students, and trainees in allied health professions can benefit from understanding how social factors influence stroke patient outcomes. This knowledge is critical for preparing future healthcare providers to deliver comprehensive care that addresses the physical, social and psychosocial needs of stroke patients. The findings of the study can be integrated into curricula to emphasise the promotion of a more holistic approach to stroke care.

From a policy perspective, the study provides empirical evidence that can inform healthcare policymakers, particularly the Ministry of Health in Ghana, about the necessity of adopting the World Health Organization's Biopsychosocial model of diagnosis and treatment. By recognizing the importance of providing psychological and social support to stroke patients, policymakers can advocate for the inclusion of these aspects in the national healthcare delivery system. This can lead to the formulation of policies that support the creation of multidisciplinary teams of healthcare specialists, ensuring a more integrated and holistic approach to stroke care. Furthermore, the findings of the study can support advocacy efforts aimed at mental health policymakers, such as the Mental Health Authority, to promote mental health policies that focus on enhancing psychological and social well-being rather than just treating physiopathology.

Delimitations

The study is delimited to stroke patients who are admitted to CCTH for treatment and who are at least 18 years old, able to communicate and agree to participate in the study. The study focuses on three variables: memory functioning, social support, and quality of life. The study focuses on the frequency of forgetting, memory performance in general, seriousness of forgetting, retrospective functioning, and mnemonics usage as the dimensions of memory functioning of stroke patients. Moreover, the researcher considers support from friends, family, and significant others when determining what types of social support contribute to the study and quality of life was assessed through various domains, including family roles, language, mobility, mood, personality, self-care, social roles, thinking, upper extremity function, vision,

energy, and productivity. A questionnaire was used in collecting data, with respondents limited to only the items provided by the researcher.

Limitations

The study encountered the following challenges, which could influence its outcome:

1. The emotional trauma that the stroke patients were experiencing at the time of the study hindered them from completely participating in the study.
2. The study was conducted at a single point in time; therefore it could not help to assess the extent to which social support influences the memory functioning and quality of life of stroke patients over a long period.
3. The study only included stroke patients at the CCTH. As a result, the findings were limited in their generalizability.

Operational Definition of Terms

The following words are operationally defined within the study since they are used in the context and scope of the research:

Memory Functioning: It encompasses the frequency of forgetting, overall memory performance, the seriousness of forgetting, retrospective functioning, and the usage of mnemonics in stroke patients.

Quality of Life: It is an individual's overall level of satisfaction with several areas of his or her life, such as family roles, language, mobility, mood, personality, self-care, social roles, thinking, upper extremity function, vision, energy, and productivity.

Social Support: It is family, friends, and significant others in one's social network that provides certain needs such as emotional, informational, and material assistance in difficult situations.

Organisation of the Rest of the Study

The study on the influence of memory functioning on the quality of life in stroke patients using social support as a moderator is expected to be of major benefit to the healthcare system, especially considering the identified need for and importance of providing support for stroke patients. Chapter Two reviews the relevant literature, including the theoretical framework, conceptual review, empirical review, and conceptual framework of the study. Chapter Three addresses the methods of research that were appropriate for the study, such as research philosophy, approach, design, population, sampling procedure, inclusion and exclusion criteria, research instruments, data collection procedures, data processing and analysis based on the hypotheses as well as ethical considerations. Chapter Four presents the findings of the field data and a discussion of the results of the study. Finally, Chapter Five presents the summary of the key findings of the study, draws conclusions, gives recommendations based on the findings, and makes suggestions for further studies.

CHAPTER TWO

LITERATURE REVIEW

Introduction

This chapter reviews the relevant literature, including the theoretical framework, conceptual review, empirical review, and conceptual framework of memory functioning, quality of life, and social support in stroke patients. Also, an empirical review of the relationship between the various variables of the study was critiqued.

Theoretical Framework

This review concentrated on the various theoretical viewpoints that direct research by relying on formal models built by applying established, cogent explanations of events and relationships. This study had as its foundation the Biopsychosocial (Spiritual) model. To explain the phenomena in the study, other models such as the Cognitive Reserve Theory (CRT), the model for Health-Related Quality of Life (HRQoL), and the Social Convoy Theory (SCT) were integrated.

Biopsychosocial (Spiritual) Model

The Biopsychosocial Model, developed by George Engel in 1977, proposes that health and illness are determined by a complex interaction of biological (physical health), psychological (thoughts, emotions, and mental processes), and social (environment and relationships) factors (Engel, 1977). This model suggests that biological, psychological, and social factors are all intertwined and interact with each other in shaping an individual's health status. Engel argued that the biomedical model considers only biological

factors as the cause of illness and neglects the psychosocial aspects of health and illness.

The Biopsychosocial Model has gained widespread acceptance and has been used to inform treatment in various healthcare settings. According to Kassir, Fein and Markus (2021), its biological component aims to comprehend how a person's body and biological processes interact to produce the sickness they are experiencing. The psychological component looks for possible psychological explanations of a health issue, including elements like a lack of self-control, emotional reactivity, and negative thinking, among others. Its social component looks at how many social elements, including financial status, culture, ties to the community, and religion, can affect health.

The interaction of biological, psychological, and social elements and how they might affect a person's health and well-being is another focus of the Biopsychosocial Model. The spiritual dimension has recently been included in the Biopsychosocial Model, and this has received support from several academic publications. In recent years, some researchers have expanded on the original model to include spiritual factors explicitly. For instance, Puchalski *et al.* (2014) proposed a Biopsychosocial (Spiritual) Model of health and illness, which emphasizes the importance of spirituality in healthcare. This model suggests that spirituality can influence a person's physical, emotional, and social health and that healthcare providers should consider the spiritual dimension of a patient's life when providing care.

The Biopsychosocial (spiritual) Model recognises that health and illness are complex phenomena that cannot be understood solely in terms of biological factors. Instead, it emphasises the importance of taking a holistic

approach to healthcare that considers the biological, psychological, social, and spiritual dimensions of a person's life. Slocum (2013), demonstrated how the model may be expanded to include spiritual factors by pointing out that truly holistic medical care must consider all the patient's interpersonal relationships. Furthermore, the WHO (2010) has emphasised the importance of spirituality for clinical objectives. As stated by Puchalski *et al.* (2009), the model goes beyond causation to show how any clinical disease may be viewed as having biological, psychological, social, and spiritual components. This has an impact on how well a patient understands their condition.

Application of the Biopsychosocial(S) Model

The model suggests that treating neurobehavioral conditions like stroke calls for a multidisciplinary approach to healthcare that considers the biological, psychological, social, and spiritual implications on a patient's functioning and welfare. Certain cardiovascular disorders, such as diabetes and high blood pressure, may develop because of biological factors including heredity, which could result in a stroke. Additionally, psychological factors like stress and sadness may contribute to diabetes and high blood pressure because depressed individuals often have unhealthy habits including bad eating habits and a lack of exercise. Again, bad eating habits and inactivity are social variables that may affect stroke risk since they raise the possibility of developing biological problems like high blood pressure, diabetes, excess body fat, high cholesterol, and diseases like high blood protein and high blood sugar.

In addition to the stroke itself, which can affect memory function, all these biopsychosocial risk factors for stroke can also affect people's memory

and negatively impact their quality of life and everyday functioning. In addition to medical treatment for brain problems that improve the memory functioning of stroke patients, social support from family, friends, and significant others is necessary to improve the patient's quality of life. According to WHO (2021), there are social determinants of health, or non-medical variables, that affect health outcomes. The circumstances under which people are born, develop, work, and live may be among them. To explain phenomena in the study, the following theories and models were integrated:

The Cognitive Reserve Theory (CRT)

The Cognitive Reserve Theory (CRT) was originally proposed by Yaakov Stern, a neuropsychologist and professor at Columbia University in the 1990s. The theory suggests that the brain's ability to cope with neurological damage or decline is related to its cognitive reserve, which is built up over a lifetime through experiences such as education, intellectual stimulation, and social engagement. Stern's research has shown that individuals with higher levels of cognitive reserve are better able to withstand the effects of brain injury or ageing and may also have a lower risk of developing dementia.

CRT posits that individual differences in brain structure and function, as well as experiences that promote cognitive engagement and neural plasticity, can influence the cognitive outcomes of brain injury and disease (Stern, 2012). In the context of stroke patients, cognitive reserve theory posits that individuals with a higher level of cognitive reserve may be better able to cope with the cognitive effects of stroke (Abdullah, Sharip, Rahman & Bakar

2021). In stroke patients, cognitive reserve may buffer against the negative effects of brain damage and promote better cognitive outcomes.

Cognitive reserve in people with stroke is affected by numerous factors which influence how quickly they can regain cognitive function and maintain quality of life. Such factors include educational background, occupational complexity, lifestyle choices, and social engagement. Below is a discussion of these factors and how they affect quality of life:

- **Educational Factors:** Increased cognitive reserve is consistently associated with higher educational achievement. The development of cognitive abilities and neural networks through education increases brain injury resistance. Highly educated people frequently have more flexible minds and are better at solving problems, which can help them be more capable of handling everyday tasks on their own after a stroke (Kim, Stewart & Yoon, 2013).
- **Occupational Factors:** Cognitive reserve is increased by working in professions that demand complex thinking, problem-solving, and continuous learning. Such jobs encourage neuronal plasticity and activate the brain. Increased occupational complexity improves cognitive flexibility and resilience, which helps stroke patients carry out daily activities and engage with others, thereby enhancing their quality of life (Staff, Hogan & Whalley, 2018).

- **Lifestyle Factors:** Engaging in mentally demanding activities like reading, learning to play an instrument, and solving puzzles helps maintain cognitive reserve by keeping the mind engaged. These activities improve social and recreational participation and delay cognitive decline, all of which improve stroke patients' overall quality of life (Stern, Arenaza-Urquijo & Bartres-Faz, 2020). Physical activity enhances cognitive function by promoting neurogenesis and improving cardiovascular health. Physical activities lead to improved physical health, mood, and cognitive function, and these benefits are essential for stroke patients to retain their independence and general well-being (Ahlskog, Geda, Graff-Radford & Petersen, 2011).
- **Social Factors:** Sustaining relationships and an active social life is essential for cognitive recovery. Emotional support and cognitive processes are provided by social contacts. People who are socially engaged have a higher quality of life after stroke because it provides them with brain stimulation and emotional support, both of which are essential for mental health and cognitive resilience (Kelly et al., 2017).

Health-Related Quality of Life Model (HRQoL)

The Health-Related Quality of Life (HRQoL) Model is a theoretical framework used to assess the impact of a disease or disability on an individual's physical, psychological, and social well-being. It was developed by WHO in the 1990s. According to this model, an individual's quality of life is determined by the interaction of their health status, functional status, and social and environmental factors (Gandek, 2020). HRQoL is a multidimensional construct that encompasses physical, emotional, social, and

cognitive domains, and it is affected by a range of factors, including personal characteristics, social support, and healthcare services (Krahn, 2014). This component of a healthy life (physical, psychological, or social), which is acknowledged by the person as highly important to their well-being, in an illness situation, is threatened by the occurrence of diseases or health-related dysfunctions.

Stroke is a common condition that can have a significant impact on individuals' HRQoL, particularly in the areas of physical and cognitive functioning, as well as emotional well-being. The HRQoL model suggests that stroke patients' quality of life is influenced by their memory functioning, physical abilities, and social support. Moreover, social support plays a crucial moderating role in this relationship, as it can enhance the impact of memory impairment on HRQoL (Pinter *et al.*, 2020). Social support has also been identified as a key factor that can buffer the negative impact of cognitive impairment on HRQoL (Burton *et al.*, 2019). Therefore, interventions aimed at improving memory functioning and increasing social support may help enhance stroke patients' quality of life.

Social Convoy Theory (SCT)

The social support theory that contributed to the study is the Social Convoy Theory (SCT) proposed by Kahn and Antonucci in 1980. This theory emphasises that individuals have a social network or "convoy" that provides support across the lifespan and is important for promoting positive outcomes such as a better quality of life. This theory highlights the importance of social support in promoting well-being, particularly in times of stress and adversity, such as following a stroke (Antonucci, 2014). According to SCT, the social

convoy can be classified into three layers: the innermost layer consists of close family and friends who provide emotional support, the middle layer consists of acquaintances who provide instrumental support, and the outermost layer consists of individuals who offer occasional support such as doctors or neighbours.

According to this theory, the size, composition, and quality of an individual's social convoy can impact their cognitive functioning and quality of life, particularly following a stroke (Antonucci, 2014). In the case of stroke patients, social support can provide emotional support, practical assistance, and social companionship, which may help alleviate depression, anxiety, and social isolation, all of which can negatively impact memory functioning and overall quality of life. Research has shown that social support can have a moderating effect on the relationship between memory functioning and quality of life in stroke patients. For example, a study by Kim, Park, and Jang (2016) found that higher levels of perceived social support were associated with a better quality of life in stroke patients with memory impairment.

Moreover, social support may also moderate the relationship between memory functioning and quality of life in stroke patients, suggesting that social support may act as a protective factor against the negative effects of impaired memory functioning on quality of life (Chang *et al.*, 2019). Additionally, a study by Maaijwee *et al.* (2015) found that social support moderated the relationship between memory functioning and post-stroke depression, such that social support buffered the negative impact of memory impairment on depressive symptoms. The Social Convoy Theory provides a useful framework for understanding the role of social support in promoting

cognitive functioning and quality of life in stroke patients, particularly those with memory impairment.

Conceptual Framework

The conceptual review offers an overview of the several ideas being examined and examines the progression of variables in terms of their definition and explanation.

Memory Functioning

Memory functioning is a critical cognitive activity that is essential in our daily lives. It includes the acquisition, storage, and retrieval of information within the brain (Baddeley, 2012). Understanding memory functioning becomes important in the context of a study involving stroke patients since strokes can often have severe and long-lasting consequences on cognitive abilities, including memory. Memory functioning in stroke patients is defined by the study as encompassing the frequency of forgetting, overall memory performance, the seriousness of forgetting, retrospective functioning, and the usage of mnemonics. Stroke is a medical condition that frequently results in serious cognitive impairments, including memory difficulties. Understanding memory functioning in stroke patients is critical for both clinical and therapeutic purposes.

Types of Memory Affected by Stroke

The phenomena of memory have been broadly divided by cognitive psychology researchers into three basic categories: sensory memory, short-term memory, and long-term memory. Although "short-term memory" was a commonly used term decades ago, "working memory" is now the preferred term. The term "working memory" has been used because of the realisation

that it more accurately describes the active role that this memory system plays in the processing of information. There are distinctive traits for each type of memory. Each type of memory possesses distinct characteristics.

Sensory memory captures ephemeral sensations from our senses, including a short sound or visual experience. Working memory oversees temporarily storing and processing information actively inside conscious awareness and is frequently referred to as the cognitive workspace. Long-term memory has essentially infinite storage capacity, as its name suggests, and can hold information for a long time (Zlotnik & Vansintjan, 2019). These memory systems may be impacted differently in stroke patients. For instance, sensory memory may be generally unaffected, but working memory and long-term memory may show variable degrees of deterioration (Baddeley, 2012). It is critical to investigate how these memory problems affect the daily functioning of stroke patients.

- **Sensory Memory:** The first stage of memory is called sensory memory, and it involves the temporary retention of sensory information. The encoding of sensory information can be impacted in stroke patients by sensory deficiencies, such as visual or auditory impairments brought on by injury to particular brain regions.
- **Working Memory:** Working memory, which entails actively manipulating information within conscious awareness, can be impaired in stroke victims because of the prefrontal cortex or associated anatomical damage. A patient's capacity to follow directions, organise, and make judgments may be impacted by impaired working memory.

- **Long-term Memory:** Strokes can also influence long-term memory, which serves as an archive of our lifetime knowledge and experiences. Anterograde amnesia, a disorder where it is difficult to generate new long-term memories, can be brought on by damage to the hippocampus and other brain areas. Furthermore, due to harm or interference, previous memories may become damaged or inaccessible.

Function of Hippocampus

Many theoretical structures try to explain how memory is organised within cognitive systems. Patients who have had strokes may be especially susceptible to damage to the hippocampus, a portion of the brain important for memory consolidation. Single-system theories proposed that the hippocampus is essential for aiding the encoding and storage of long-term memories in the neocortex. To accomplish this, connections are strengthened, which eventually leads to the memory becoming independent and no longer relying on the hippocampus (Frankland & Bontempi, 2005). According to the multiple-trace theory, the hippocampus continues to play a role in memories to some extent and each memory is defined by unique codes or memory traces (Briglia *et al.*, 2018; Hintzman, 1986; Versace *et al.*, 2014; Whittlesea, 1987).

Memory Decline and Entropy

Wiener (1988) suggested that memory might be understood as a product of excess energy or negative entropy. The brain then uses this energy in a way that tries to use as little energy as possible (Friston, 2010; Van der Helm, 2016). Damage to the brain from a stroke impairs memory-supporting energy-efficient processes. The brain could have to devote more resources to make up for damaged areas, which could lead to higher energy use and

memory problems. An energy imbalance in the brain caused by a stroke may damage memory function. It is believed that a key element in how memories function and how effective they are is the process of forgetting and the slow decay of memories (Staniloiu & Markowitsch, 2012). The impact of energy-related elements on memory restoration and recovery can be clarified through research in this field (Wiener, 1988).

Rehabilitation and Care Implications

Understanding the causes of memory loss in stroke patients is essential to developing individualised rehabilitation and care plans:

- **Memory Rehabilitation:** Depending on the nature and location of the damage to the brain, rehabilitation programmes could be designed to focus on memory problems. Memory performance could be increased by using cognitive training, compensatory techniques, and assistive technology.
- **Psychosocial Support:** Due to memory problems, stroke patients may experience frustration, worry, and depression. With psychosocial support, patients could overcome these difficulties and improve their overall quality of life.

Strokes can have a major negative impact on the complex process of memory functioning. More effective stroke rehabilitation and patient care can result from a thorough understanding of the memory types affected, the underlying brain mechanisms, and the relevant therapies. More research is needed in this area to develop specialised treatments and improve the quality of life for stroke survivors who have memory issues.

Quality of Life

Quality of life (QoL) is a multifaceted construct that encompasses an individual's perception of their physical, psychological, social, and environmental well-being (WHO, 2010). QoL is a subjective perception of a person's well-being and satisfaction with their life situation (Tugade & Fredrickson, 2010). It refers to individuals' beliefs regarding their positions in life within the context of their values and culture in which they live, as well as their goals, demands, norms, and complaints, and it is the result of the interaction between social, health, economic, and environmental factors that affect human and social development (Karimi & Brazier, 2016). In the context of stroke, QoL refers to the degree of recovery and adjustment to life after stroke. Stroke patients may experience physical, psychological, and social limitations that affect their QoL (Carod-Artal *et al.*, 2013).

QoL is affected by various factors such as physical functioning, emotional status, social support, and the ability to participate in daily activities (Mackenzie *et al.*, 2015). Stroke patients often experience a decrease in QoL due to physical disabilities, cognitive impairment, and emotional distress (Lynch *et al.*, 2008). Using QoL as a measuring factor has been a contentious topic in the field of healthcare (Bergner, 2010). Existing definitions of quality of life are unclear because it is a multifaceted concept (Heo, 2010). The lack of common ground on a satisfactory definition of quality of life has hindered the operationalisation of the concept as an outcome measure. However, quality of life is usually defined by a wide range of life domains such as psychosocial, physical, and social well-being (Li, Lopez, & Lee, 2010).

Physical function and psychosocial well-being are the most widely used dimensions, and they include life satisfaction (Liu, Wu & Tao, 2015). Many scholars argue that the concept of quality of life is closely linked to the individual perspective (Gao, Greenberg & Wong, 2015; Jivraj, Nazroo, & Vanhoutte, 2014; Kao, Travis, & Compas, 2019). Also, culture is an important dimension that cannot be disregarded when evaluating QoL (Kagawa-Singer et al., 2010). This is because it shapes individuals' perceptions, values, and expectations regarding their well-being and life satisfaction. Culture influences various aspects of life, including social relationships, health practices, economic status, and environmental conditions, all of which contribute to QoL.

According to Diener, Oishi, and Lucas (2018), cultural differences in QoL arise from the fact that individuals in different cultures prioritise different aspects of life, and their subjective well-being is affected by factors such as economic prosperity, social relationships, and personal freedom. The findings of research that investigated the relationship between cultural values and well-being provide one example of the influence of culture on QoL. For instance, a study by Diener *et al.* found that individuals from collectivist cultures, such as Japan and China, report higher levels of life satisfaction when they feel connected to their social networks and have harmonious relationships with others. On the other hand, individuals from individualistic cultures, such as the United States and Canada, report higher levels of life satisfaction when they achieve personal goals and have a sense of autonomy and control over their lives.

Another example of the importance of culture in evaluating QoL is seen in studies that have investigated the impact of cultural beliefs and practices on health outcomes. For example, a study by Kim, Li, and Ng, (2013) found that Asian Americans who adhere to traditional cultural values, such as maintaining a healthy balance between yin and yang energies, report better health outcomes and higher levels of well-being than those who do not adhere to these values. QoL and HRQoL are two terms that are frequently used interchangeably (Karimi & Brazier, 2016). Despite the differences between them, these two concepts share certain similarities: they are multidimensional, self-reported, and incorporate physical, mental, and social components of the lives of individuals (Karimi & Brazier). Stroke is a major cause of disability and decreased QoL worldwide.

Stroke-related quality of life (SRQoL) refers to the impact that stroke has on various aspects of an individual's life, such as physical functioning, psychological well-being, social participation, and daily activities. The measurement of SRQoL is crucial for evaluating the effectiveness of stroke rehabilitation interventions and for understanding the needs of stroke survivors (Koton *et al.*, 2014). Studies have shown that factors such as age, gender, severity of the stroke, and comorbidities can influence SRQoL outcomes. Assessing SRQoL can be done through various methods, including standardised questionnaires, structured interviews, and clinical observation.

Social Support

The concept of social support has been defined as the availability or provision of a relationship, information, or assistance that enables a person to manage their day-to-day life effectively in the presence or absence of crisis

(Lepore & Revenson, 2018). This study also uses the conceptualisation advanced by Sarason *et al.* (2014), who defined social support as the sum of the social, emotional and instrumental exchanges with which an individual is involved having the subjective consequence that an individual sees him or herself as an object of continuing value in the eyes of significant others. It refers to the availability and provision of assistance, care, and empathy from family, friends, and significant others within one's social network (Uchino, 2011).

The concept of a social network defines a network of social relationships that surround individuals. One of the most important functions of relationships is to provide social support. Thus, the term social network refers to connections between people that may or may not give social support and might serve functions other than providing support. Recently, the term social capital has been used to describe specific resources and norms that emerge from social networks (Putnam, 2015). Social networks provide a variety of social functions, including social influence, social control, social undermining, social comparison, companionship, and social support. The focus of the study is on social networks and the provision of social support. Social support has been defined and measured in a variety of ways (Putnam, 2015).

Social support appraisals are subjective evaluations of social support network resources and supportive behaviours in these interactions (Cutrona & Russell, 2011). As a result, social support appraisals are perceptual assessments of the availability and quality of one's social support system. Cobb (1976) provides the foundation for social support assessments and describes social support as "information leading the subject to believe that he

is cared for and loved, esteemed, and a member of a network of mutual obligations." Perceptions of available social support have been linked to physical health, emotional well-being, and relationship quality (Dunkel-Schetter & Bennett, 2010). Furthermore, social support can come in various types, including emotional support, informational support, and material support (Boden-Albala *et al.*, 2015).

Emotional support involves providing comfort, empathy, and encouragement to stroke patients, while informational support includes providing them with information and advice regarding their condition and treatment options. Material support, on the other hand, involves providing practical assistance, such as help with daily activities and transportation to medical appointments (Boden-Albala *et al.*, (2015). Although different types of support can be conceptually distinguished, relationships that provide one type often provide another, making it difficult to analyse them empirically as distinct constructs. All of these elements are referred to collectively as the quality of social support. (Cohen & Wills, 2011). The quantity of social support is described as the number of people in a support network, the amount of time invested by this network, and the frequency with which social support is available (Tsouna-Hadjis *et al.*, 2000).

Forms of social support

Social support has been conceptualised in terms of function and structure for this study. The supply of supportive functions by others is referred to as functional support (Cohen & Wills, 2011). Emotional support, material support, informational support, such as guidance or advice, and social companionship, for example, in leisure or recreational activities, are examples

of these supports (Berkman, Glass, Brissette & Seeman, 2000). A distinction can also be drawn between received and perceived functional support. While received support (seen acts of support) can change depending on one's life circumstances, perceived support, or the subjective experience of feeling supported, is thought to be relatively stable (Sarason, Sarason & Shearin, 1986). A meta-analysis of 23 studies indicated only a moderate relationship between perceived and received support (Haber *et al.*, 2007).

A concept associated with functional support is the structure or social network' through which support can be provided. Aspects of social network structure can include network size and composition (for example, whether network members are relatives, friends, or significant others). Individual network ties may have characteristics such as frequency of contact, reciprocity, and duration. Many social network indices incorporate the frequency with which people participate in community or religious organisations or some other indicator of community integration (Berkman *et al.*, 2000). While a well-functioning and diversified social network is likely to facilitate receiving functional support, receiving appropriate functional support from only one or two network members may be adequate (Cohen & Wills, 2011).

Furthermore, Cohen and Wills (2011) assert that feeling integrated and embedded in one's social network gives positive experiences about positive affect, a sense of predictability and stability in one's life circumstance, and an awareness of self-worth. Emotional support (feeling valued and loved; encouragement; constancy; acceptance); receiving material support in ways that promoted independence; social companionship (humour, distraction); as

well as being able to contribute or maintain roles were all valued by patients with stroke.

As a result, perceived and received support seem to be separate concepts, implying that perceived support is measuring something other than visible support transactions. It has been proposed that the experience of being supported is based on numerous 'invisible' and reciprocal everyday support exchanges acquired over time (Thoits, 2011). In contrast, received support may be measuring more 'visible' than reciprocal support. Particularly, satisfaction with perceived support was consistently linked to HRQL. The concept of satisfaction may have a more direct impact on how functional support is delivered.

Difference between social support and other social relationships

Social support can be separated from other social interaction functions (Burg & Seeman, 1994). Social support is always intended to be beneficial (by the person providing it), distinguishing it from purposeful negative interactions (for example, social undermining acts like harsh criticism and hassling). Furthermore, social support is offered consciously, distinguishing it from social influence produced through mere observation of the behaviour of others or receiver-initiated social comparison processes (Bandura, 1986; Wood, 1996). Again, while providing social support, especially informational support, is an attempt to influence the receiver's thoughts and behaviours, it is done in an interpersonal setting of caring, trust, and respect for each person's right to decide his or her own choices.

This quality differentiates social support from other forms of social influence that derive from the potential to provide or deny desired resources or

approval. Through the interpersonal exchanges within a social network, people are influenced and supported in such health habits as adherence to medical prescriptions help-seeking behaviour and weight loss (DiMatteo, 2004). Social networks and social support may influence disease incidence and recovery through influences on preventative health behaviour, illness behaviour, and sick-role behaviour.

Social support providers

Many different types of people can offer social support, both in one's informal network (such as family, friends, coworkers, and bosses) and in formal helping networks (such as health care professionals and human service workers). Different network members are likely to offer varying levels and types of support. Long-term support, for example, is most typically offered by family members, but short-term support is more likely to be provided by neighbours and friends (McLeroy *et al.*, 2001). In addition, the efficiency of the support that is offered may be affected by the source of the support (Agneessens *et al.*, 2006). Patients in medical care settings frequently require emotional support from family and friends, as well as information from healthcare providers (Blanchard *et al.*, 1995).

There has been much discussion over whether professional caregivers are useful forms of social support. Professional and informal helpers are incorporated into a problem-defined support system intended to address specific health challenges, such as stroke recovery (Glass *et al.*, 2000). Health education therapies by health professionals may aim to improve the social support available to stroke patients by giving empathetic understanding and information about their situations. Furthermore, family members and

neighbours can provide the necessary informational support while keeping empathy developed from life experiences like those of patients (Heaney & Israel, 2008).

In the case of individuals with strokes, social support can be extremely beneficial to their recovery and overall well-being. Social support can assist stroke patients in coping with rehabilitation challenges, reduce stress, and improve their quality of life (Uchino, 2011). Individuals with stroke need to consider the social support structures accessible to them to return to their previous functioning. People with stroke who received enough social support had better outcomes in terms of physical and cognitive functioning, as well as psychological adjustment, according to research (Boden-Albala *et al.*, 2015).

Empirical Review

This section reviewed important findings from other research that were relevant to this study. There was a review of empirical studies on the relationship involving memory functioning, quality of life, and social support. An empirical review of the research objectives that guide the study aided in understanding the diverse views of researchers and in the discussion of study findings.

Level of Memory Functioning of Stroke Patients

Everts *et al.* (2008) examined the levels of cognitive functioning in various domains of childhood stroke. A total of twenty-one patients underwent assessment, revealing the presence of mild cognitive deficits, and a decline in quality of life. The findings of the study indicate that verbal functions exhibited a greater degree of preservation in comparison to visuospatial functions, hence implying a functional advantage of verbal abilities during the

recovery process. The sole determinant of cognitive outcome was the individual's age at the time of experiencing a stroke. This study emphasises the significance of comprehending the association between many factors that influence the process of rehabilitation and the resulting outcomes in cases of infantile stroke.

Wang, Capistrant, Ehntholt, and Glymour (2012) investigated the long-term rate of change in memory functioning before and after stroke. They conducted a comparative analysis of memory changes in individuals before and after experiencing a stroke, comparing them to older individuals who have not experienced a stroke. The study included 17,340 participants aged 50 and older from the Health and Retirement Study. Segmented linear regression models were used to examine the annual rates of change in a composite memory score before and after stroke. The results showed that those who survived the stroke experienced a faster average yearly deterioration in memory (-.143 points per year) before the stroke compared to those who did not experience a stroke during the follow-up period (-.101 points per year).

The researchers concluded that while the start of a stroke resulted in significant declines in memory, disparities were observable several years before the stroke. The rate of memory decline observed in stroke patients was higher than that observed in adults without a history of stroke. The prevalence of cognitive impairment following an initial stroke was evaluated in a cohort from the South London Stroke Register spanning the years 1995 to 2010, as conducted by Douiri, Rudd and Wolfe (2013). The data collection period spanned from 1995 to 2010, with a sample size of 4212 individuals. The data was obtained from the South London Stroke Register, a community-based

registry that encompasses a multi-ethnic population of 271,817 residents residing in an inner-city area.

The research revealed that cognitive impairment exhibits a sustained high prevalence over an extended period, with differences mostly attributed to sociodemographic factors. Given the current trends of population growth and ageing demographics, it is imperative to implement efficient preventive strategies and establish poststroke surveillance systems to effectively manage individuals who have had cognitive impairment because of stroke. In a study conducted by Synhaeve *et al.* (2015), the focus was on examining the impact of cognitive performance on the long-term functional outcome following ischemic stroke (IS) in a specific population of young adults aged 18 to 50 years, referred to as young IS. This study is a component of a prospective cohort study conducted on a sample of 277 stroke survivors who experienced an ischemic stroke at a young age and were hospitalised in our department between the years 1980 and 2010.

The findings indicate that, on average, 11 years following the onset of juvenile IS, there is no evident correlation between persistent cognitive impairments and long-term functional outcomes or instrumental activities of daily living (IADL). These results underscore the necessity for additional prospective studies that employ more refined measures of functional prediction. Tang *et al.* (2017) examine the Gaps in care for stroke patients with memory deficits. A single interviewer conducted seventeen semi-structured individual interviews with primary and secondary care clinicians who regularly interact with stroke survivors. The finding indicates that physical impairments dominate the care provided by stroke services.

Clinicians are uncertain as to who should oversee the follow-up of cognitively impaired patients.

In their study, Karimian *et al.* (2018) investigated the prevalence of memory impairments across different memory domains in individuals who had experienced ischemic stroke. The study aimed to identify distinct memory profiles among stroke patients in Iran. The objective of this study was to assess the extent and characteristics of memory deficits in individuals who have experienced ischemic stroke. Additionally, the study aimed to identify distinct profiles of memory impairments in stroke patients, to inform the development of tailored memory rehabilitation interventions by therapists. The study population comprised 35 individuals diagnosed with ischemic stroke. A control group consisting of thirty-five persons who were matched with the patients was selected. A Multivariate Analysis of Covariance (MANCOVA) was conducted to identify any disparities in memory performance between the two groups.

The results indicate that individuals who have experienced a stroke exhibit discernible patterns of cognitive impairment specifically related to memory function. Fitri, Fithrie, and Rambe (2020), conducted a study on the impact of working memory deficits after a stroke on daily activities. The study involved 38 participants, with 23 (60.5%) male and 15 (39.5%) female. Neurologic examinations, mini-mental state tests, and assessments of daily life activities (ADL) and instrumental activities of daily living (IADL) scales were used to evaluate cognitive function. The results showed a negative relationship between global cognitive function, working memory, and scores on ADL and

IADL in stroke survivors. The researchers concluded that cognitive impairment negatively impacts daily life task performance.

Lugtmeijer, Lammers, de Haan, de Leeuw, and Kessels (2021) undertook a systematic review aimed at investigating the impairments in working memory following stroke, utilising the multi-component model. Through a comprehensive examination of the PubMed database, it was shown that individuals who have experienced a stroke have notable impairments in their working memory. The observed deficits were found to be statistically significant, with modest effect sizes observed for both low-load and high-load activities. The review additionally discovered that impairments in working memory persist in the chronic phase after stroke, and these deficiencies are linked to lesions in the front-parietal network. Patients who have experienced a stroke have significant reductions in all components of working memory, indicating that the impairment in working memory following a stroke is widespread.

Level of Quality of Life of Stroke Patients

The study conducted by Naess, Waje-Andreassen, Thomassen, Nyland, and Myhr (2006) aimed to examine and compare the HRQoL of young individuals who had experienced ischemic stroke over an extended period with a control group. Additionally, the researchers intended to assess the HRQoL of specific subgroups of clinically important patients. The study was conducted in Norway. The assessment of HRQoL was conducted by employing the eight subscales of the Short-Form General Health Survey (SF-36). The results suggest that young individuals who have experienced an ischemic stroke

exhibit significantly lower levels of HRQoL compared to both control groups and the general population of Norway.

This disparity is particularly evident in terms of physical functioning. The prompt suggests that the timely detection and intervention of depression, fatigue, and physical handicap have the potential to enhance the HRQoL in those who have experienced a stroke. The study conducted in Singapore by Kong & Yang (2006) had the objective of evaluating the HRQOL among persons who have experienced chronic stroke, as well as identifying any relevant factors. A cross-sectional survey methodology was employed in this study to examine individuals who had experienced a stroke and had reached one year since the occurrence of the stroke event.

The assessment of HRQOL was conducted using two standardised instruments, namely the Medical Outcomes 36-Item Short-Form Health Survey and Beck's Depression Inventory. The findings of the study indicate that a considerable proportion of individuals who have suffered from stroke continue to face physical impairments, with approximately 30% also reporting symptoms of depression. These factors have a detrimental effect on their overall HRQOL. The study conducted by Owolabi and Ogunniyi (2009) aimed to examine the profile of HRQOL in stroke patients from Nigeria. A stroke-specific health-related quality of life measure, known as HRQOLISP, was created, and subsequently validated. The measure was administered to a sample consisting of 100 stroke patients and 100 individuals without any history of stroke.

The findings of the study indicated that the Health-Related Quality of Life Impact Scale for Stroke Patients (HRQOLISP) had a level of reliability

that exceeded Nunnally's established criterion of 0.7 (Owolabi & Ogunniyi, 2009). Furthermore, the scale effectively distinguished between strokes of different severities regarding their physical dimensions. The correlation between the Social Life Score (SLS) and Modified Rankin Scale (mRS) was observed exclusively within the physical dimension domains. Carod-Artal and Egido (2009) aim to examine the quality of life after stroke. Focusing on the importance of a good recovery, this study comprehensively evaluates HRQoL measurements and factors in individuals who have experienced a stroke. The findings indicate that stroke is the primary contributor to chronic impairment in developed nations and that both disability and poststroke depression are significant factors influencing health-related quality of life.

Poststroke depression has a significant impact on various aspects of stroke survivors' lives, including HRQoL, functional recovery, cognitive function, and healthcare utilisation. Baumann, Couffignal, Etienne Le Bihan, and Nearkasen Chau (2012) examine the effects of gender, occupational status, memory function, and quality of life-on-life satisfaction on stroke patients and their family carers in Luxembourg. The study found that at the two-year mark, 44.7% of patients experienced sensory, motor, and memory impairments, while 35.1% and 31.9% experienced these impairments. The researchers concluded that family caregiving is associated with lower levels of life satisfaction and emotional well-being for stroke patients.

Abubakar and Isezuo (2012) examined the variables associated with stroke survivors' HRQoL. Three months after their stroke, 62 patients were prospectively recruited and then interviewed at a neurology outpatient clinic. The results of the study indicate that approximately 29% of individuals who

had suffered a stroke exhibited depressive symptoms, whereas 54.8% exhibited signs of recovery. In their study, Dąbrowska-Bender *et al.* (2017) investigate the assessment of patients' quality of life following an ischemic cerebral stroke, focusing on multiple domains such as clinical and psychoemotional aspects. The research comprised a sample of 44 individuals who experienced their initial ischemic cerebral stroke, which was classified as having moderate or mild severity based on the National Institutes of Health Stroke Scale.

These patients were currently receiving treatment at the Neurology Department of the Międzyleski Specialist Hospital in Warsaw. The findings indicate a notable decline in the patient's quality of life, particularly in the domains of psychological and spiritual well-being. Additionally, it was observed that patients with mild-severity cerebral stroke experience a higher prevalence of depression. Liu, Zhou, Zhang, and Zhou (2019) investigate the prevalence and association of resilience with quality of life in hospitalised stroke patients, as well as the independence of the association from physical function, anxiety, depression, and other population characteristics. 215 individuals participated in a cross-sectional study conducted in a tertiary hospital.

To measure the quality of life, the specific Quality of Life Scale was utilised. The results indicate that resiliency, anxiety, and depression were independently associated with quality of life. Anxiety and depression were inversely correlated with resiliency. Quartey, Lartey, Boakye, and Kwakye (2020), examine the assessment of the quality of life (QoL) among individuals who provide care for stroke survivors. This cross-sectional study involved the

deliberate recruitment of fifty stroke survivors and their carers receiving physiotherapy at Korle-Bu Teaching Hospital, Accra, as well as fifty individuals who were not carers. The findings indicate that individuals providing care for stroke survivors in Accra experience a decrease in their quality of life.

Demerew, Ahmed, and Shumet (2020), conducted a systematic review of the health-related quality of life experienced by stroke patients before and during intervention strategies. They searched 864 academic databases and analysed 20 articles. Out of the 17 papers, 85% focused on evaluating health-related quality of life following interventions, while 15% examined health-related quality of life before interventions. Physical handicaps and depression were common complications of stroke. The study utilised 20 interventions, with pharmacological therapy, physical exercise, psychological intervention, assistive equipment, and surgical procedure accounting for 40%, 25%, 20%, 20%, and 10%, respectively. The results indicate that the presence of complications from stroke is a significant factor in determining a diminished quality of life.

Kariyawasam, Pathirana and Hewage (2020) investigate the numerous factors that are associated with the HRQOL of individuals who have suffered a stroke in Sri Lanka. A longitudinal study was conducted with a cohort of 257 individuals who had suffered a stroke. The study found that a high degree of dependence, significant language impairment, advanced age, hemorrhagic stroke, and left-sided brain lesions were associated with a lower HRQOL. In the context of neurorehabilitation, Gandolfi *et al.* (2021) examine the health-

related quality of life and psychological characteristics of post-stroke patients with chronic pain in a cross-sectional study.

The study included 50 participants, with 25 experiencing chronic pain and 25 without suffering. Results showed that stroke patients with chronic pain had higher disability levels and lower quality of life. They also experienced higher psychological distress, inflexibility, and lower self-efficacy and problem-oriented coping strategies. These differences were statistically significant, with a p-value less than 0.001. A systematic review by Bello *et al.* (2021) examined the QoL among African stroke survivors. The study included 28 studies, involving 2572 stroke survivors and 795 healthy volunteers from eight nations in the African continent. Results showed that African individuals with strokes reported worse QoL compared to healthy individuals. They concluded that to improve QoL, early interventions should focus on mitigating disability and depression linked to stroke.

Level of Social Support of Stroke Patients

Friedland and McColl (1987) aimed to examine the mediating effect of social support on the relationship between stressful life events encountered by individuals who had experienced a stroke and the subsequent outcomes of psychosocial dysfunction. The research encompassed a cohort of 85 individuals who had experienced a stroke and were afterwards interviewed in their residences, ranging from two to 24 months following their release from intensive rehabilitation. The study assessed eight distinct components of social support to examine their impact on individuals' adjustment. The findings indicate that 27% of the participants experienced psychosocial dysfunction,

and community social support had a significant and beneficial impact in mitigating this dysfunction.

In this study, Tsouna-Hadjis, Vemmos, Zakopoulos, and Stamatelopoulos (2000) investigate the impact of familial social support on three key aspects of stroke rehabilitation, namely functional status, depression, and social status, over six months. A sequential sample of 43 patients who experienced a first stroke and met the specified inclusion criteria was obtained. The study's results indicate that individuals who experienced moderate to severe strokes and had strong social support demonstrated much greater and continuously improving functional abilities compared to those with less support. The researchers conclude that there is a positive correlation between high levels of family support, both instrumental and emotional, and the progressive enhancement of functional status. This correlation is particularly evident in patients with severe impairments.

Additionally, the psychosocial status of patients is significantly influenced by the level of family support. Yeh and Liu, (2003) investigate the influence of social support on cognitive function among older Taiwanese residents. They surveyed 4,993 elderly individuals aged 65 or older, with 12% being over 80 years old. Most participants were married. The data was analysed using multiple regression. The findings of the study indicated a positive correlation between enhanced social support and greater cognitive performance among elderly individuals residing in the community.

Palmer and Glass (2003) conducted a comprehensive review of existing literature about three specific domains related to family functioning within the context of stroke recovery. The results of the study showed that the

functioning of the family has an impact on the outcomes of stroke. Adopting a family-systems perspective helps in comprehending the psychosocial consequences of stroke. Previous studies have primarily concentrated on individual models rather than family-systems models. The existing tools for assessing family dynamics following a stroke are insufficient.

A study examined the role of social support in the family and community integration of right-hemisphere stroke survivors. A series of open-ended interviews were carried out with a sample of 12 individuals who had experienced a stroke in the right hemisphere of their brain, as well as their respective family carers. The findings of the study indicated the presence of seven distinct obstacles, namely physical, cognitive-perceptual, emotional, relationship, employment, financial, and challenges related to activities of daily living. Additionally, the study identified three categories of resources, namely formal external, informal external, and internal resources (Egbert, Koch, Coeling, & Ayers 2006).

The study conducted by Northcott & Hilari (2011) aimed to investigate the reasons behind the loss of social connections among individuals following a stroke. Additionally, the researchers examined potential protective variables that may mitigate this loss and analysed the subjective perception of individuals regarding changes in their friendships. A total of 29 volunteers were enlisted, out of which 10 individuals were diagnosed with aphasia. The study recruited individuals who had experienced their initial stroke from a single acute stroke unit located in the United Kingdom. The study included comprehensive qualitative interviews throughout a timeframe ranging from 8 to 15 months following the occurrence

of a stroke. The findings indicate that there is a correlation between depression and the loss of friendships following a stroke. Therefore, helping individuals in preserving their social networks is likely to have positive effects.

For an intervention to yield desired outcomes, it is crucial to consider not just the consequences of newly acquired physical and verbal impairments, but also the evolving social aspirations. Adriaansen, van Leeuwen, Visser-Meily, van den Bos, and Post (2011) conducted a study to investigate the trajectory of social support among spouses of stroke patients, as well as the direct and indirect associations between social support and life satisfaction over a period. This study is a prospective cohort study that includes a total of 180 participants. The measurements were taken at three different time points: 2 months following discharge from inpatient rehabilitation, 1 year after stroke, and 3 years after stroke. The findings indicate that the partners of individuals who have suffered a stroke witnessed a gradual decrease in their levels of social support as time progressed.

The study found a favourable correlation between social support and life satisfaction, irrespective of the level of carer pressure encountered by the spouses. In this study, Anderson and Whitfield (2011) investigate the factors that hinder or assist stroke survivors aged 50 to 64 years in selecting their daily activities. The researchers utilised a combination of Situational Analysis, Grounded Theory, and Ecological Models as methodological frameworks for conducting their study. The discovery indicates that there exist intricate levels of interconnections among individuals and various environmental circumstances that impact their level of engagement.

Interventions may be effective in addressing the issue of reduced levels of physical activity following a stroke. Subsequent investigations must consider the following factors: (1) Examining participation in activities from the perspective of all levels of the socioecological model; (2) Assessing the influence of stigma connected to disability and ageing; (3) Analysing the outcomes of community navigation conducted on an ad hoc basis; and (4) Investigating the consequences of health and disability regulations that impose restrictions on meaningful activity. In a systematic review conducted by Kruithof, van Mierlo, Visser-Meily, van Heugten, and Post (2013), it was discovered that there exists a favourable correlation between the perception of social support and the HRQoL among individuals who have experienced stroke.

The researchers discovered that the perception of social support holds greater importance and exhibits a stronger influence compared to the various types or sources of social support. Blessing and Oluwagbemiga (2017) investigate the effectiveness of social support in coping with stroke by medically ill patients in Ibadan, Nigeria. The research conducted was a descriptive survey study, in which a purposive sampling method was used to pick a total of 50 stroke patients who were receiving treatment at Adeoyo Government Hospital in Ibadan. The findings of the study indicate that family support, financial support, emotional support, and companionship support have a significant impact on the coping mechanisms of medically ill patients who have experienced a stroke.

In their systematic investigation, Elloker and Rhoda (2018) sought to establish a correlation between social support and engagement in stroke-

related activities. A comprehensive search was conducted across 54 electronic databases, resulting in the identification of six papers that met the eligibility criteria for inclusion. The findings indicated a significant correlation between the level of social support and the extent of engagement in stroke-related activities. Health practitioners must adopt a comprehensive approach by integrating social support treatments to enhance stroke participation.

The study by Ahmad and Wells (2018) examines the role of social support as a moderator in the impact of stereotype threat on working memory. The study comprised a total of 147 students. The demographic questionnaire evaluated several demographic factors, including age, gender, degree of education, and ethnicity. The findings indicate a noteworthy association between social support and working memory performance, along with a statistically significant connection ($r = .19$, $p = .02$). They conclude that increased levels of social support among students, regardless of their racial background, may have cognitive advantages.

Influence of Memory Functioning on Quality of Life in Stroke Patients

Nichols-Larsen, Clark, Zeringue, Greenspan, and Blanton (2005) explored the correlation between individual and clinical variables and HRQoL in stroke survivors experiencing mild to moderate stroke throughout the subacute recovery phase. A total of 229 individuals, who were between 3 to 9 months poststroke, were recruited as subjects for a nationwide clinical experiment known as the Extremity Constraint-Induced Therapy Evaluation. The results suggest that there is a correlation between lower HRQoL in the physical aspect and factors such as age, non-white ethnicity, a higher number of comorbidities, and decreased upper-extremity functionality. Stroke

survivors who have a higher number of comorbidities have been found to have a lower HRQoL specifically in the domain of memory and thinking.

Additionally, those who have experienced an ischemic stroke and exhibit concordance have been observed to have weaker communication abilities. Saxena, Ng, Koh, Yong, and Fong (2007) conducted a study to assess the influence of depressive symptoms, cognitive status, and enhancements on functional status and recovery among individuals recovering from post-acute stroke. The study employed a range of assessment tools, such as the National Institute of Health Stroke Scale, Abbreviated Mental Test, Geriatric Depression Scale, and Barthel Index. The findings of the study indicate that enhancing depressed symptoms could potentially speed up functional recovery following a stroke.

The study notes that the extent of physical functionality attained after a stroke is mostly influenced by neurological and cognitive aspects. This implies that the presence of cognitive impairment poses a constraint on the effectiveness of therapeutic interventions aimed at ameliorating depression symptoms. The study conducted by Melkas *et al.* (2009) aims to examine the impact of poststroke dementia on the extended-term survival following an acute stroke. Additionally, the researchers seek to evaluate the potential influence of cognitive decline before the stroke and past occurrences of stroke on this association. The study encompassed a cohort of 451 consecutive patients who were hospitalised to the hospital due to acute ischemic stroke. These patients were then monitored for 12 years.

The results suggest that doing a comprehensive and extended monitoring of our extensive and clearly defined group of individuals who have

experienced a stroke reveals that the presence of dementia in patients with acute stroke is a notable factor in predicting unfavourable long-term survival outcomes and mortality specifically related to brain-related causes. The presence of cognitive impairment before a stroke appears to have a detrimental impact on survival outcomes, although the occurrence of a previous stroke does not appear to have a significant effect on survival. In their study, Mellon *et al.* (2015) analysed the cognitive impairment profile of individuals who had experienced a stroke, specifically focusing on the six-month post-stroke period.

The researchers also aimed to identify the characteristics that were linked with the occurrence of cognitive impairment following a stroke. The present study conducted an assessment on a sample of 246 individuals who had experienced an ischemic stroke, with data collected six months after the stroke. The findings of the study revealed that, after six months, more than half of the participants (56.6%) exhibited cognitive impairment. Furthermore, the analysis demonstrated significant correlations between cognitive impairment and being female (odds ratio (OR) = 1.6, 95% CI 1.01-2.57) as well as having a history of cerebrovascular disease (OR = 2.22, 95% CI 1.38-3.59).

Influence of Social Support on Quality of Life in Stroke Patients

Lynch *et al.* (2008) conducted a qualitative study in the US to examine the impact of social ties on the quality of life after a stroke. The study involved 9 individuals in the long-term recovery phase and 6 carers who provided support. The findings showed that factors such as social support, coping strategies, communication, physical functioning, and independence contribute

to the outcome. Carers deemed role shifts in patients crucial, and the discourse focused on the impact of stroke on social dynamics. The study aligns with previous research highlighting the importance of social elements about the quality of life experienced by stroke patients. The study suggests that incorporating evaluations of social function and social support is crucial for measuring the quality of life in stroke-affected individuals.

In their study, Vincent-Onabajo *et al.* (2016) examined the influence of social support on the engagement of individuals who have experienced stroke in Nigeria. A total of 96 stroke survivors residing within the community were selected as participants in this study. These individuals were recruited from the physiotherapy outpatient departments of two tertiary care hospitals located in Northern Nigeria. The results suggest that social support had a notable effect specifically in the domain of economic self-sufficiency within participation. A greater presence of social support was associated with improved economic self-sufficiency. This discovery offers supplementary insights into the significance of social support following a stroke. A different study by Vincent-Onabajo, Muhammad, Ali, Masta, and Aliyu (2016) examined the influence of social support from family, acquaintances, and significant others on the health and well-being of stroke survivors in Northern Nigeria.

The study involved 100 stroke survivors from two tertiary hospitals, analysing sociodemographic and stroke-related characteristics. The Multidimensional Scale of Perceived Social Support (MSPSS) and Stroke-Specific Quality of Life-12 (SS-QoL-12) were used to evaluate perceived social support from friends, family, and significant others. Hierarchical regression analysis was used to determine the independent influence of social

support sources on HRQoL. The results showed that overall social support, including support from friends, family, and significant others, had a significant positive effect on psychosocial and total HRQoL. They concluded that global social support, rather than a single source, significantly and positively affected the HRQoL of stroke survivors.

The moderating effect of social support on the influence of memory functioning on quality of life in stroke patients

In a prospective cohort study conducted by Glass, Matchar, Belyea, and Feussner (1993), the researchers investigated the influence of social support on the outcome following an initial stroke. A total of forty-six individuals who had survived a stroke were monitored over six months. The results indicate that there is a positive correlation between elevated levels of social support and a more rapid and comprehensive restoration of functional abilities following a stroke. The presence of social support has been identified as a significant predictive determinant in the process of stroke recovery. Individuals who experience social isolation may face a heightened vulnerability to negative outcomes.

Anderson and Whitfield (2013) examine the impact of familial, social, and community resources on stroke survivors' long-term engagement in activities of personal significance. The study uses a situational analysis approach and grounded theory analysis to analyse in-depth interviews with nine middle-aged stroke survivors. The findings show that social support facilitates reintegration into society and regains social standing. Stroke survivors' social standing can help them establish personal objectives and cultivate a constructive sense of self. However, strokes can negatively impact

their social standing, limiting their ability to resist or challenge predetermined social statuses.

Northcott, Moss, Harrison, and Hilari (2016), conducted a systematic review to examine the effects of stroke on social support and networks. The study identified a total of seventy research publications, with 22 using qualitative methods and the remaining 48 using quantitative approaches. The sample consisted of 4,816 individuals who experienced a stroke. The qualitative research revealed a reduction in social networks, especially in non-kin interactions, and tensions within family structures. In quantitative research, inadequate functional social support was found to correlate with negative outcomes like depression, decreased quality of life, and decline in physical recovery. The sense of receiving assistance remained relatively consistent, despite the decline in most indicators of social networks.

Sarfo, Akassi, Adamu, Obese, and Ovbiagele (2017), aim to examine the influence of Vascular Cognitive Impairment (VCI) on health-related quality of life within the sub-Saharan Africa region. A total of 147 stroke survivors aged over 45 years were recruited consecutively between January 2015 and February 2016. The study participants were observed at a tertiary hospital situated in Ghana. In addition, a cohort of 49 individuals who were demographically comparable and did not have a history of stroke were recruited as control subjects. The results suggest that a significant proportion of stroke survivors from Ghana who were included in this cross-sectional study exhibited cognitive impairment, with around 50% of participants affected.

The study conducted by Abeasi (2020) investigates the relationship between depression, QoL, and social support among family carers of stroke survivors in Ghana. A cross-sectional research approach was employed to conveniently choose a sample of 50 individuals who were carers and 50 individuals who were not carers. The findings indicate a statistically significant association between depression, quality of life, and social support. Pucciarelli *et al.* (2021) investigate the moderating influence of mutuality on the relationship between depressed symptoms and QoL in dyads consisting of stroke survivors and their caregivers.

The study employed a longitudinal research design, involving a total of 222 dyads consisting of stroke survivors and their respective carers. These dyads were enrolled in the study immediately following the discharge of the stroke survivors from rehabilitation hospitals. The process of data collecting was conducted over 12 months. The findings indicate that there are no statistically significant moderating effects of mutuality for survivors across the four categories of QoL over time. Nevertheless, there was a notable correlation between increased survivor mutuality and improved psychological and social quality of life among survivors at the initial assessment.

Critique from Empirical Review

It is generally acknowledged that stroke affects the memory functioning of the patient such as cognitive outcome, memory profiles, working memory impairments, and the impact of cognitive performance. Several studies have been conducted on this view. For instance, Everts *et al.*, (2008) and Wang *et al.*, (2012) look at memory changes in stroke patients, emphasising the importance of age and pre-stroke memory decline while

Karimian *et al.*, (2018) examine distinct memory profiles in stroke patients, addressing the seriousness of forgetting and memory deficits. Lugtmeijer *et al.*, (2021) and Mellon *et al.*, (2015) look at working memory impairments and cognitive impairment respectively. Sarfo *et al.*, (2017) look at the influence of vascular cognitive impairment (VCI) on health-related quality of life.

Although the studies yield comparable results, they lack a comprehensive evaluation of memory functioning. Furthermore, the studies that were reviewed either did not take place within the specific context of Ghana or were undertaken in developed nations. As a result, there is a lack of analysis of the unique circumstances and factors present in Ghana. The reviewed studies such as Friedland *et al.*, (1987); Tsouna-Hadjis *et al.*, (2000); Adriaansen *et al.*, (2011); Northcott *et al.*, (2011); Blessing *et al.*, (2017); Lynch *et al.*, (2008); Vincent-Onabajo *et al.*, (2016); Glass *et al.*, (1993); (Abeasi, 2020) shed light on the multifaceted effects of stroke on the lives of individuals and the role of social support in their recovery process.

The research emphasises the significance of social support in the recovery of stroke patients, with the majority of studies conducted abroad. Vincent-Onabajo *et al.*, (2016) and (Abeasi, 2020) are African studies. While Vincent-Onabajo's study provides important evidence of the positive influence of social support on economic self-sufficiency among stroke survivors in Nigeria, Abeasi's study in Ghana focuses on social support as it affects family carers and not stroke patients. Ahmad *et al.*, (2018) partially addressed the variables that are the focus of the current study, which aims to examine the moderating influence of social support. However, their study primarily focused on working memory rather than memory functioning.

The studies reviewed like Naess *et al.*, (2006); Kong *et al.*, (2006); Owolabi *et al.*, (2009); Anderson *et al.*, (2013); Carod-Artal *et al.*, (2009) collectively provide the role of family, mobility, and mood on the health-related quality of life of stroke patients. The studies provided information that encompasses a thorough comprehension of the many obstacles encountered by individuals who have experienced a stroke, encompassing physical limitations, depressive symptoms, and a reduced level of autonomy.

In the empirical studies reviewed, there is an attempt to establish the moderating effect of psychological factors on quality of life, which can be related to the retrospective functioning dimension by Pucciarelli *et al.*, (2021). However, this study does not directly address memory functioning about the frequency of forgetting, the seriousness of forgetting memory performance in general, retrospective functioning, and mnemonics. At the same time, the study did not address the moderating role of social support on the quality of life of stroke patients. As such, social support regarding the impact on the quality of life of stroke patients was not known in Ghana.

Summary of the Existing Literature

The empirical review examines the impact of stroke on cognitive domains and memory functioning. It highlights challenges faced by stroke survivors, including physical limitations, depression, and reduced autonomy. Studies reveal adverse effects on various dimensions of QoL, emphasising the need for early interventions to mitigate disability and depression. Social support plays a crucial role in recovery.

Conceptual Framework

The conceptual framework of this study explained the relationships between the various variables and how they are connected. The dependent or response variable is quality of life while memory functioning is the independent or predictor variable. Social support was expected to have a statistically significant moderating effect on the influence of memory functioning on quality of life in stroke patients. The assumption was that social support such as support from friends, family, and significant others either strengthened or weakened the influence of memory functioning on quality of life (family roles, language, mobility, mood, personality, self-care, social roles, thinking, upper extremity function, vision, energy, and productivity) in stroke patients. The conceptual framework is depicted in Figure 1 below:

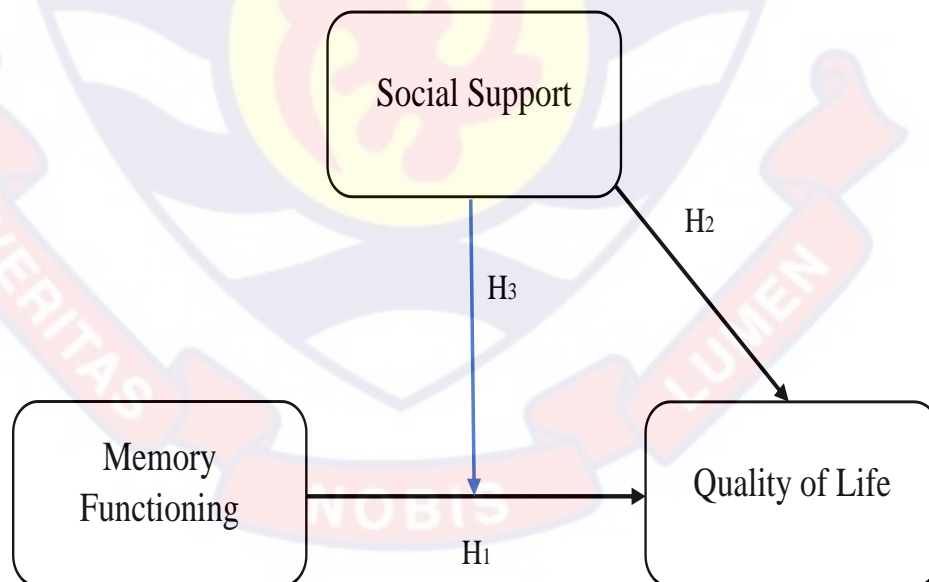


Figure 1-Influence of memory functioning on quality of life with social support as a moderator
Source: Author's construct

Chapter Summary

This chapter reviewed the relevant literature regarding this study. The theoretical contributions of memory functioning, quality of life, and social support have been discussed in this chapter. The theoretical review concentrated on the several theoretical viewpoints that guide research. The study was founded on the Biopsychosocial (Spiritual) model. Other models were used to explain phenomena in the study, including the structural memory model for memory functioning, the health-related quality of life model for quality of life, and the theory of symbolic interactionism for social support. Additionally, the chapter addressed the main concepts of memory functioning, quality of life, and social support. This chapter further empirically reviewed the study's variables and how they were related to one another. It subsequently illustrated the critique of the empirical review. The review findings were thought to be important for discussing the conclusions of the study. The conceptual framework of this study was explored to explain the relationships between the various variables.

CHAPTER THREE

RESEARCH METHODS

Introduction

This chapter discussed the methods of research that were appropriate for the study, research philosophy, approach, design, study area, population, sampling procedure, inclusion and exclusion criteria, research instruments, data collection procedures, data processing and analysis based on the hypotheses as well as ethical considerations. In this chapter, the appropriate tools used to answer the various research questions and hypotheses addressing the objectives of the study have been discussed, and the ethical considerations around which the research was conducted have been laid out.

Research Philosophy

The research philosophy of a researcher is the foundation of knowledge, reality, and truth upon which the imperative norms and tendencies of the study are based. It describes the beliefs and principles that guide the design of research as well as the collection and analysis of data (Ryan, 2018). The study used the positivist philosophical paradigm, which is based on the theory of knowledge that considers reality as a singular and unified world that can be objectively understood through the scientific method. According to positivism, external objects are quantifiable and hence reliable (Selvam, 2017). Positivism is typically associated with quantitative research, and it applies the hypothetico-deductive technique to test existing hypotheses. Nevertheless, positivist research does not always rely on quantitative approaches. One of the primary goals of positivist research is to generate functional relationships between causal or explanatory factors (independent

variables) and outcomes (dependent variables) that would eventually lead to the prediction and control of the phenomenon under investigation.

Research Approach

A research approach refers to the systematic and structured approach in which a study is designed and carried out to investigate a specific phenomenon or answer research questions. The study adopted the quantitative research approach, which uses statistical, mathematical, or computer techniques to conduct systematic empirical investigations of observable phenomena (Given, 2008). The quantitative approach involves the use of quantitative data, which refers to information that can be stated numerically. Quantitative data is classified into two categories.

The two are discrete and continuous. Discrete data is countable, whereas continuous data is measurable (Yilmaz, 2013). Discrete data is information that can be presented as specific values. Tally charts, bar charts, and pie charts are commonly used to show this type of data. Continuous data, on the other hand, can have any value. According to Yilmaz, this form of quantitative data is typically represented by a line graph, which accurately depicts the changes that occur over time. Continuous data is further classified into ratio data and interval data.

The study administered a consensual questionnaire to respondents, who were assured confidentiality and voluntary participation. Means and standard deviations were used to determine the levels of memory functioning, quality of life, and social support of stroke patients for study questions one (1), two (2), and three (3), respectively. Hypotheses one (1) and two (2) were tested using multivariate linear regression to determine the influence of

memory functioning on quality of life, social support on memory functioning, and social support on quality of life in stroke patients, respectively. Ultimately, hypothesis three (3) was tested with Hayes PROCESS moderation analysis to see how social support significantly strengthens or weakens the influence of memory functioning on quality of life.

Research Design

Research design is understood to explain the general plan for implementing the framework of research methods and techniques chosen by a researcher to undertake a study. A research design describes how many variables will be used in the study, whether group or individual participants will be involved, and whether comparisons will be made within or between groups (Gravetter & Forzano, 2009). The researcher used a correlational research design because the study intended to investigate relationships between memory functioning, social support, and quality of life in stroke patients without focusing on cause-and-effect relationships.

Correlational research design is a non-experimental research technique that uses statistical analysis to investigate the relationship between two or more variables (Koul, 2009). It studies relationships between variables without allowing the researcher to manipulate or control any of them. The strength and direction of the relationship between two or more variables can be observed in correlational research. The strength of the relationship between two or more variables is measured, and the direction can be positive or negative (McBurney & White, 2009). Regardless of its strengths, data can be either consistent or inconsistent with some existing theory. Correlational research cannot prove a theory but can disprove one.

Study Area

In Ghana, the Central Region is renowned as the centre for prestigious educational institutions. Out of the twenty-three (23) districts in the Central Region, Cape Coast is the only Metropolis (Ghana Statistical Service [GSS], 2021). The Cape Coast Metropolitan Assembly used to be called Cape Coast Municipal. It was given municipality status in 1987 by LI 1373, and metropolitan status in 2007 by LI 1927. The Gulf of Guinea borders the Metropolis to the south, the Komenda Edina Eguafo Abrem Municipality to the west (at Iture Bridge), the Abura Asebu Kwamankese District to the east, and the Twifu Heman Lower Denkyira District to the north. It is situated at a latitude of 506'N and a longitude of 115'W. It covers an area of approximately 122 square kilometres, with the furthest point at Brabedze located about 17 kilometres from Cape Coast, the Central Regional capital of Ghana. According to the 2021 population and housing census, 189,925 people are living in the Metropolis, including 92,790 men and 97,135 women (GSS, 2021).

Population

The target population of the study included all stroke patients in the Cape Coast Metropolis. The accessible population, on the other hand, comprised stroke patients in the Cape Coast Metropolis receiving treatment at CCTH. The accessible population consisted of one hundred and eighty-nine (189) stroke patients who had been medically diagnosed and were receiving treatment at CCTH (Cape Coast Teaching Hospital [CCTH], 2023). The researcher obtained from the CCTH Statistics Unit an accessible population size of one hundred and eighty-nine (189) stroke patients who were medically diagnosed and undergoing stroke treatment at the CCTH through the

neurology clinic, the male and female medical wards, and the physiotherapy unit in the year 2023. The researcher relied on the 2023 annual data of 189 stroke patients who visited the CCTH for treatment. A suitable sample for the study was selected from this number.

Sampling Procedure

Amedahe (2000) defines sampling as the process of selecting a subset of a population to represent the whole population. According to Wahyuni (2012), a sample allows the researcher to study a smaller number of units in place of the target population and gather data representative of the target population. The researcher used the Cohen, Manion, and Morrison (2018) tabulated formula for determining sample size to arrive at a suitable sample size for the study. They suggest that a population of 189 should be rounded up to 200. A total population of 200 in the Cohen, Manion and Morrison (2018) table has a corresponding sample size of 132. Therefore, out of the accessible population size of one hundred and eighty-nine (189) stroke patients, the researcher selected a sample of one hundred and thirty-two (132) using a simple random sampling procedure to ensure that each stroke patient diagnosed and receiving treatment at the CCTH had an equal probability of being selected. The researcher obtained a list of all 189 stroke patients from the CCTH Statistics Unit to randomly administer the research instrument.

Inclusion Criteria

The study comprised stroke patients who had been admitted to the CCTH for treatment. Respondents were at least 18 years old, had a brain imaging diagnosis of ischemic or hemorrhagic stroke that matches the clinical

presentation of stroke, could communicate, and agreed to participate in the research.

Exclusion Criteria

Stroke patients who did not receive treatment at CCTH, who were under the age of 18, and were unable to communicate to consent to taking part in the study were excluded. Furthermore, the respondent had no comorbidity conditions at the end-stage other than diabetes, hypertension, and heart failure for the study's results to be unaffected.

Research Instruments

Data for this study were gathered through a questionnaire. Three (3) scales made up the questionnaire for the study, and all of them were adopted. There were four sections to the questionnaire (A, B, C, and D). Section 'A' presented the demographic characteristics common to stroke patients in the areas of Sex, Age, Marital Status, Level of Education, and Employment Status. The instruments used in the other sections of the questionnaire for the study are explained below:

Memory Functioning Questionnaire (MFQ)

Section 'B' included the Memory Functioning Questionnaire (MFQ). The MFQ was adopted to examine individuals' self-assessment of everyday memory functioning (Gilewski, Zelinski, & Schaie, 1993). The MFQ is made up of 64 items that are scored on a 7-point Likert scale with 5 subscales: Frequency of Forgetting, consists of ratings of how often forgetting occurs in 28 specific situations (items 2 to 29), including when reading, as well as 5 more scores of one's Memory Performance in General (item 1, 30, 31, 32 and 33); Seriousness of Forgetting, ratings of memory failures from 18 different

situations (item 34 to 51); Retrospective Functioning, ratings of change in current memory ability relative to 5 points earlier in life (item 52 to 56); and Mnemonics Usage, the frequency with which 8 specific mnemonics are used (item 57 to 64).

The MFQ was developed and validated in 778 cognitively healthy older adults. The factor scores have a high degree of internal consistency, with alpha values ranging from .94 to .83. Cronbach's alpha for the subscales Frequency of Forgetting, Memory Performance in General, Seriousness of Forgetting, Retrospective Functioning, and Mnemonics Usage reported Cronbach α for internal consistency of each factor was .94, .94, .89, .88, and .83, respectively (Gilewski *et al.*, 1993). Higher scores indicate higher levels of perceived memory functioning, with fewer forgetting occurrences, fewer serious incidents, improved current memory ability compared to earlier in life, and less use of mnemonics. Finally, it has been demonstrated that MFQ factor scores reflect variance other than that generated by chronological age, education, or self-reported health status (Gilewski *et al.*).

Stroke Specific Quality of Life Scale (SS-QOL)

Section 'C' comprised the Stroke Specific Quality of Life Scale (SS-QOL). The SS-QOL is a patient-centred outcome measure adopted to assess health-related quality of life in stroke patients. The scale domains and items were developed from a series of interviews with post-stroke patients. Patients must respond to each SS-QOL question about the previous week. The final SS-QOL scale has 49 items under 12 domains, namely, energy (items 1 to 3), family roles (items 4 to 6), language (items 7 to 11), mobility (items 12 to 17), mood (item 18 to 22), personality (item 23 to 25), self-care (item 26 to 30),

social roles (item 31 to 35), thinking (item 36 to 38), upper extremity function (item 39 to 43), vision (item 44 to 46), and work/productivity (item 47 to 49) (Williams, Weinberger, Harris, Clark & Biller, 1999). The items are scored on a 5-point Likert scale.

Patients must respond to each item on a 5-point Likert-type scale using the corresponding response set. Higher scores imply better performance. The SS-QOL produces domain scores as well as an overall SS-QOL summary score. The domain scores are unweighted averages of the associated items, whereas the summary score is an unweighted average of all twelve domain scores. Items 4, 19, 22, 31, and 33 are negatively worded and need to be recorded in positive wording. SS-QOL demonstrates excellent internal consistency with Cronbach's alpha values exceeding .73 across all 12 domains, including energy ($\alpha = .88$), family roles ($\alpha = .79$), language ($\alpha = .85$), mobility ($\alpha = .86$), mood ($\alpha = .80$), personality ($\alpha = .77$), self-care ($\alpha = .89$), social roles ($\alpha = .85$), thinking ($\alpha = .73$), upper extremity function ($\alpha = .83$), vision ($\alpha = .81$), and work/productivity ($\alpha = .75$) (Williams et al., 1999).

Multidimensional Scale of Perceived Social Support (MSPSS)

Section 'D' consisted of the Multidimensional Scale of Perceived Social Support (MSPSS) (Zimet, Dahlem, Zimet & Farley, 1988). MSPSS is a self-administered 12-item scale with three subscales. It was adopted to assess the perceived sufficiency of support from three sources: family (items 3, 4, 8, and 11), friends (6, 7, 9, and 12), and significant others (1, 2, 5 and 10). For each of the three dimensions, the values for the item were added together. A high score denotes a high degree of perceived social support. The MSPSS has

a strong psychometric quality; the coefficient alpha for scales is as follows: overall score (.88), family (.87), friends (.85), and significant other (.91).

The overall score has a test-retest reliability of .85 (Zimet et al., 1988). Items are assessed on a 7-point Likert-type scale ranging from "strongly disagree" to "very strongly agree," participants are asked to express how they feel about each statement about their social support. The score for each subscale is calculated by finding the arithmetic mean of the sum of the subscale item scores. The researcher used the MSPSS for the study to collect data on perceived social support for stroke patients at the CCTH.

Reliability of Instrument

The adopted research instrument was put through a pre-test study to determine its internal consistency. A pre-test is a small-scale study in which a few respondents answer a research instrument and give feedback on the feasibility and efficiency of the research instrument (Thabane *et al.*, 2010). The pre-test study comprised 20 stroke patients from the Komfo Anokye Teaching Hospital (KATH). These 20 respondents were employed only in the pre-testing of the instrument; they were not a part of the study. According to Connelly (2008), a pre-test study sample should be ten percent (10%) of the sample projected for the main study. KATH was selected since the respondents shared similar features with the studied population. Likewise, the facility is a tertiary referral centre, indicating the researcher had similar demographic characteristics to the health facilities selected for the study.

The scales were pre-tested to enable the researcher to sharpen the instruments by rewording and rearranging the items. Pre-testing helped to find potential weaknesses, ambiguity, and faults with the instrument so that they

could be fixed before data collection. The overall reliability of the research instrument was measured through the internal consistency approach and by Cronbach’s Alpha value (Pallant, 2005). Table 1 shows the reliability scores of the test from the pre-test and main studies.

Table 1-Reliability Test from Pre-test and Main Studies of Research Instruments

Scale	No. of items	Cronbach alpha (pre-testing)	Cronbach alpha (main study)
Memory Functioning Questionnaire (MFQ)			
Memory Performance in General	5	.613	.916
Retrospective Functioning	5	.957	.946
Mnemonics Usage	8	.920	.883
Seriousness of Forgetting	18	.949	.983
Frequency of Forgetting	28	.965	.983
Overall MFQ	64	.969	.986
Stroke Specific Quality of Life Scale (SS-QOL)			
Energy	3	.950	.949
Family Roles	3	.604	.714
Thinking	3	.885	.856
Work/Productivity	3	.986	.962
Vision	3	.984	.972
Personality	3	.920	.955
Self-Care	5	.881	.915
Social Roles	5	.814	.930
Language	5	.960	.989
Upper Extremity Function	5	.928	.958
Mood	5	.892	.920
Mobility	6	.937	.969
Overall SS-QOL	49	.961	.972
Multidimensional Scale of Perceived Social Support (MSPSS)			
Family	4	.916	.933
Friends	4	.968	.961
Significant Others	4	.991	.950
Overall MSPSS	12	.871	.933

Source: Field work, (2023)

The results in Table 1 illustrate the reliability coefficients of the various research instruments used in pre-testing and the main study. The findings indicated that all the instruments had a high degree of internal consistency, which suggests that the instruments were reliable. Cronbach's alpha is a measurement of internal consistency reliability that determines how well scale or questionnaire items correlate with each other (Pallant, 2005). Higher Cronbach's alpha values (typically ranging from 0 to 1) indicate greater internal consistency, implying that the items on the scale are measuring the same underlying construct.

For some subscales, below is a comparison of Cronbach alpha values between the pre-test study and the main study. Under MFQ, the Cronbach alpha for Memory Performance, in General, improved dramatically from .613 in the pre-test study to .916 in the main study, indicating that the items became more reliable in evaluating memory functioning. SS-QOL subscale (Family Roles) had Cronbach alpha value improved significantly from .604 in a pre-test study to .714 in the main study. This implies that the items in these subscales improved their internal consistency reliability. These improvements imply that changes made to the scales or data collected in the main study contributed to improved reliability. As a rule, Cronbach's alpha values above .70 are regarded as acceptable for research purposes (Pallant, 2005).

Data Collection Procedures

The researcher sought ethical approval from the University of Cape Coast's Ethical Review Board to address issues such as confidentiality, anonymity, consent, and debriefing. An introductory letter and ethical approval were obtained from the University of Cape Coast's Department of

Education and Psychology, as well as the Institutional Review Board, and delivered to the CCTH. After the researcher went through the necessary processes, the Ethical Review Board of the CCTH granted ethical clearance and permission.

To study the patients during clinic hours, communication was conducted with the head of the neurology clinic and various units involved. The data collection instruments were personally delivered to the study location by the researcher. The researcher introduced the topic, the objective of the research, and the significance of the study to the respondents in a brief manner. Respondents were assured of confidentiality, and their participation was solicited voluntarily. The researcher self-administered the questionnaire to patients who agreed to take part in the study. The questionnaire was administered in English.

The researcher assisted respondents who did not comprehend some of the material on the questionnaire by explaining and interpreting it as needed. The respondents then completed the questionnaire, which was collected by the researcher. The information gathered was kept private. Because there was no identification information on the questionnaire, the respondents completed it anonymously. It took about 15 minutes to complete the questionnaire. Data collection took roughly six (6) months, from February to July 2023, with the help of an assistant.

Data Processing and Analysis

The data collected for the study was statistically analysed. First, the scales were modified, coded, and scored. The individual question items on the questionnaire were coded in the statistical software programme Statistical

Product and Service Solutions (SPSS) for Windows (Arbuckle, 2011) after data collection. Data was cleansed to remove any errors that may have gone undetected. The researcher also verified that the data was normally distributed and that the variables were equal and homogeneous. Descriptive statistics were used to analyse the background data by determining outliers, mean, minimum, and maximum data scores. The study's unit of analysis was stroke patients since the researchers wanted to explore the influence of memory functioning on quality of life in stroke patients making use of social support as a moderator.

Means and standard deviations were used to determine the levels of memory functioning, quality of life, and social support in stroke patients for research questions one (1), two (2), and three (3), respectively. Hypotheses one (1) and two (2) were examined using multivariate linear regression to determine the influence of memory functioning on quality of life, social support on memory functioning, and social support on quality of life in stroke patients, respectively. Ultimately, hypothesis three (3) was tested with Hayes PROCESS moderation analyses to investigate how social support significantly strengthens the influence of memory functioning on quality of life.

The researcher employed descriptive statistics (Means, Standard Deviations, Frequencies, and Percentages) to provide a comprehensive summary of the demographic characteristics of stroke patients and the key variables such as memory functioning, quality of life, and social support. These statistics aided in the comprehension of central tendencies and variations within these variables. Frequencies and percentages aided in the description of categorical data and made information more understandable.

These figures were important in providing a preview of the conditions of the study participants and in answering all three research questions. To test hypotheses one and two, multivariate linear regression was used, allowing the researcher to analyse the correlations between many independent factors (memory functioning, social support) and the dependent variable (quality of life) at the same time.

This technique provided a deeper understanding of how memory functioning influences the quality of life and how social support influences the quality of life in stroke patients. It also made it easier to keep potential confounding factors under control. The third hypothesis entailed investigating the moderating effect of social support on the influence of memory functioning on quality of life. The Hayes PROCESS, a well-known statistical method for moderation analyses, was used. It aided the researcher in exploring how various levels of social support influence the strength or direction of the relationship between memory functioning and quality of life. This provided depth to the research findings and revealed the importance of social support in reducing the influence of memory functioning on quality of life.

The researcher used tables to effectively describe the findings. One table displayed the multivariate linear regression results, including coefficients, p-values, and R-squared values for hypotheses one and two. This table illustrates the influence of memory functioning on quality of life, as well as the influence of social support on quality of life in stroke patients. Another table was used to illustrate the moderation analysis results for hypothesis three using Hayes PROCESS, including interaction effects, coefficients, and p-values. These tables provided a brief and organised approach for readers to

interpret the research findings and evaluate the significance of hypotheses and variable relationships.

Ethical Considerations

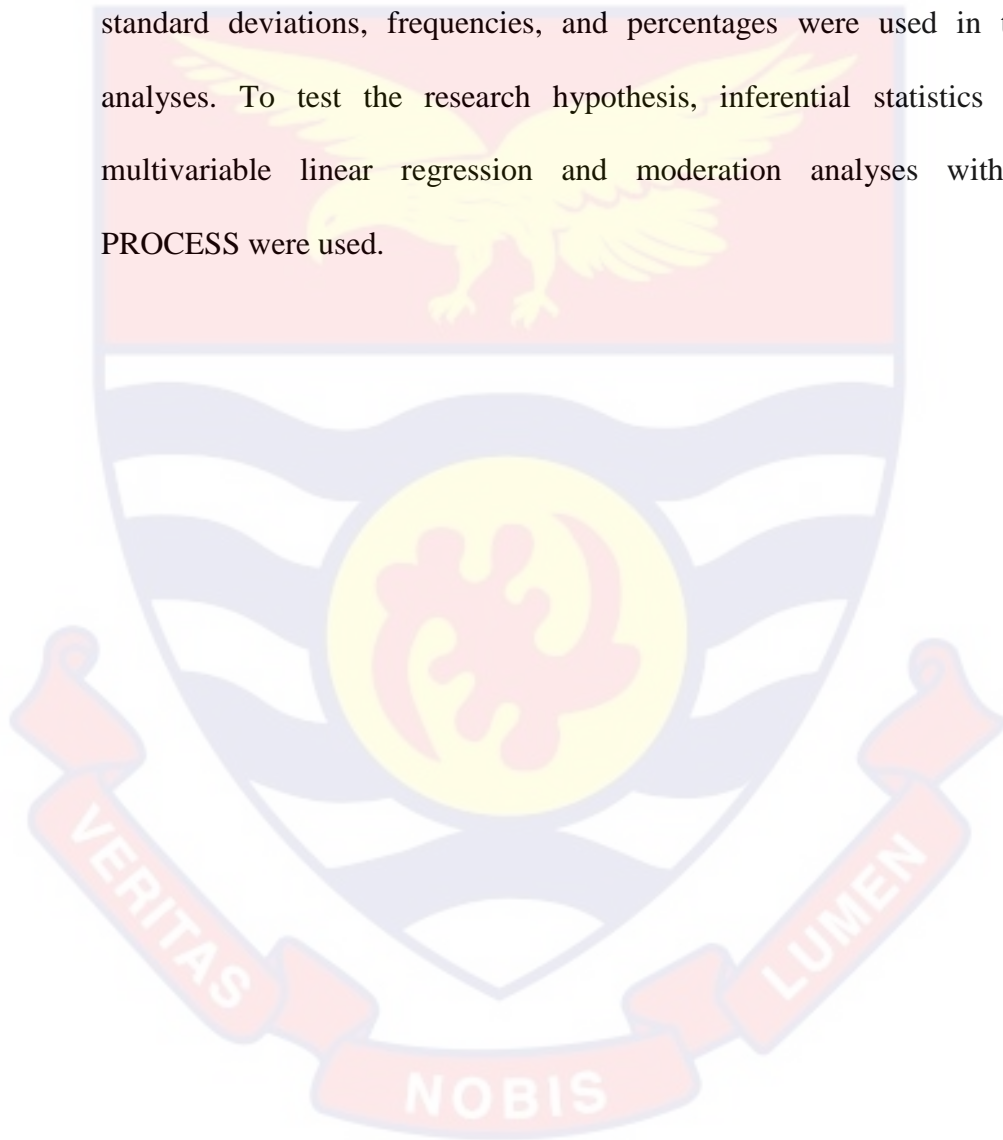
The researcher obtained ethical approval from the University of Cape Coast's Institutional Review Board to maximise benefits and minimise the risk of harm to the respondents. The researcher informed the respondents about the purpose of the study and obtained their consent to participate. To comply with research ethics, the researcher sent an introductory letter to the CCTH outlining the purpose of the study, which was to investigate the influence of memory functioning on stroke patients' quality of life, using social support as a moderator as well as why the assistance of CCTH is required for the study to be completed successfully.

Formal approval was sought from the selected respondents to conduct the data collection exercise. In addition, the study was devoid of characters, such as respondents' names, to preserve the respondents' anonymity and confidentiality. No personal information that could be used to identify them was made public. Respondents were guaranteed that the information they gave would not be shared with any third parties. Furthermore, respondents received assurances that the information obtained would be used only for scholarly purposes and that the data would not be manipulated.

Chapter Summary

The chapter described the research method used in this study. The chapter examined the research design, population, sample and sampling techniques, instruments, data collection procedure, as well as data processing and analysis. The correlational research design was used in this study. There

were 189 stroke patients receiving treatment at the CCTH who were accessible. A sample size of 132 was used. In addition, simple random sampling was used to ensure that each stroke patient at the CCTH had an equal chance of being selected. The questionnaire was the instrument that was used. The researcher collected the data. Descriptive statistics such as means, standard deviations, frequencies, and percentages were used in the data analyses. To test the research hypothesis, inferential statistics such as multivariable linear regression and moderation analyses with Hayes PROCESS were used.



CHAPTER FOUR

RESULTS AND DISCUSSION

This chapter presents the findings of the field data. A discussion of the findings concerning the literature review followed. The main objective of this study was to investigate the influence of memory functioning on stroke patients' quality of life, with social support serving as a moderator. This study specifically aimed to:

1. Determine the level of memory functioning of stroke patients.
2. Find out the level of quality of life of stroke patients.
3. Ascertain the level of social support of stroke patients.
4. Examine the influence of memory functioning on the quality of life in stroke patients.
5. Evaluate the influence of social support on the quality of life in stroke patients.
6. Investigate the moderating effect of social support on the influence of memory functioning on quality of life in stroke patients.

Out of 132 questionnaires distributed, 120 were completed and retrieved, resulting in a 91% response rate. This response rate was deemed adequate for analyses in this type of study (Saunders, Lewis, & Thornhill, 2007). Many stroke patients were unable to communicate to agree to participate in the study and they were excluded. This accounted for the reduction in the sample size and the response rate of the questionnaire administered. Sections A, B, and C present the results of the data analyses. Section A addresses demographic information provided by respondents, Section B addresses the study's three (3) research questions, and Section C

presents the findings from data analyses on the three (3) research hypotheses that guided the study. Tables have been created to help support the analysis and results.

Section A: Demographic Characteristics

This section describes the demographic characteristics of the respondents involved in the study in the areas of sex, age, marital status, level of education, and employment status. The demographic information in the study is shown in Table 2 below.

Table 2- Demographic Characteristics

Variables	Frequency	Percentage (%)
Age		
18-33	6	5.0
34-49	22	18.3
50-65	57	47.5
66-81	25	20.8
82-98	10	8.3
Sex		
Female	57	47.5
Male	63	52.5
Marital Status		
Divorced	10	8.3
Single	18	15.0
Widowed	19	15.8
Married	73	60.8
Level of Education		
No formal education	23	19.2
Secondary education	24	20.0
Basic education	32	26.7
Tertiary education	41	34.2
Employment Status		
Unemployed	23	19.2
Employed	48	40.0
Retired	49	40.8

Source: Field work, (2023)

Table 2 shows that 63 responders were male and 57 were female. The majority of stroke patients undergoing treatment at the CCTH were males, accounting for 52.5% of the sample size. However, females made up a minority of the stroke patients at the CCTH, accounting for only 47.5% of the total sample size. In terms of age, 6 (5.0%) of the respondents were between the ages of 18 and 33; 10 (8.3%) were between the ages of 34 and 49; 22 (18.3%) were between the ages of 50 and 65; and 57 (47.5%) were between the ages of 66 and 81. As a result, the majority of stroke patients receiving treatment at the CCTH were in the 50-65 age range while the 18-33 age range was the minority group.

According to the table, there were 73 respondents (60.8%) who were married, 10 respondents (8.3%) who were divorced, 18 respondents (15.0%) who were single, and 19 respondents (15.8%) who were widowed. Therefore, it was concluded that among stroke patients receiving treatment at CCTH, married patients were the majority. The patient with the minority representation was divorced patients. Also, it can be seen from the table that 41 respondents (34.2%) had tertiary education, 32 respondents (26.7%) had basic education, 24 respondents (20.0%) had secondary education, and 23 respondents (19.2%) did not complete any formal education. The majority of stroke patients at the CCTH had tertiary education, and the patients with no formal education made up the minority group. The data shows that 49 respondents were retired, accounting for 40.8%. Those employed were 48(40.0%) respondents, while 23 respondents (19.2%), were unemployed. This indicates that a slim majority of the respondents were retired while a minority were unemployed.

Section B: Analysis of Data on Research Questions

This section presents analyses of data on the three research questions that guided the study's objectives. Answering the research questions contributed to the study's overall purpose.

Research Question 1: What is the level of memory functioning of stroke patients?

Research question 1 aimed at determining the level of memory functioning of stroke patients involved in the study. Data on this research question was analysed using means and standard deviations. Respondents responded to 64 items rated on a 7-point Likert-type scale. A score ranging from 64-128 implied low memory functioning, 129-256 implied moderate memory functioning and 25-448 implied high memory functioning (Pimentel & Pimentel, 2019). Additionally, for frequency of forgetting, the score ranging from 28-56 meant low, 57-112 meant moderate, and 113-196 meant high frequency of forgetting.

Memory performance in general, the score ranging from 5-10 meant low, 11-20 meant moderate, and 21-35 meant high memory performance in general. For the Seriousness of forgetting, the score ranging from 18-36 meant low, 37-72 meant moderate, and 73-126 meant high seriousness of forgetting. In retrospective functioning, the score ranging from 5-10 meant low, 11-20 meant moderate, and 21-35 meant high retrospective functioning. For mnemonics usage, the score ranging from 8-16 meant low, 17-32 meant moderate, and 33-56 meant high mnemonics usage. The results of this research question 1 are presented in Table 3.

Table 3-Memory Functioning Questionnaire (MFQ)

Dimension	No. of Items	M	SD
Retrospective Functioning	5	19.49	8.40
Memory Performance in General	5	21.98	8.32
Mnemonics Usage	8	51.19	8.50
Seriousness of Forgetting	18	106.43	33.10
Frequency of Forgetting	28	161.99	48.95
Overall MFQ	64	361.09	93.37

Source: Field survey (2023) M = Mean, SD = Standard Deviation N =120

As shown in Table 3, generally, most ($M = 361.09$, $SD = 93.37$) of the stroke patients involved in the study had high memory functioning. Moreover, high memory functioning was found in all the dimensions, Frequency of Forgetting ($M=161.99$, $SD=48.95$), Memory Performance in General ($M=21.98$, $SD=8.32$), Seriousness of Forgetting ($M=106.43$, $SD=33.10$), Retrospective Functioning ($M=19.49$, $SD=8.40$), and Mnemonics Usage ($M=51.19$, $SD=8.50$).

Research Question 2: What is the level of quality of life of stroke patients?

The purpose of this research question was to establish the quality of life of stroke patients. This research question's data was analysed using means and standard deviations. The SS-QOL is a patient-centred outcome measure designed to assess the health-related quality of life of stroke patients. Respondents responded to 49 items under 12 domains on a 5-point Likert-type scale ranging from “Strongly agree” to “Strongly disagree”. A score ranging from 49-114 implied low quality of life, 155-180 implied moderate quality of life and 181-245 implied high quality of life (Pimentel & Pimentel, 2019).

Additionally, a score ranging from 3-6 implied low energy, 7-10 implied moderate energy and 11-15 implied high energy. For family roles, the score ranging from 3-6 meant low, 7-10 meant moderate, and 11-15 meant high family roles. Language, the score ranging from 5-11 meant low, 12-18 meant moderate, and 19-25 meant high language. Mobility, the score ranging from 6-13 meant low, 14-21 meant moderate, and 22-30 meant high mobility. Mood, the score ranging from 5-11 meant low, 12-18 meant moderate, and 19-25 meant high mood. Personality, the score ranging from 3-6 meant low, 7-10 meant moderate, and 11-15 meant high personality. For Self-care, the scores ranging from 5-11 meant low, 12-18 meant moderate, and 19-25 meant high self-care.

For social roles, the score ranging from 5-11 meant low, 12-18 meant moderate, and 19-25 meant high social roles. Thinking, the score ranging from 3-6 meant low, 7-10 meant moderate, and 11-15 meant high thinking. For upper extremity function, the score ranging from 5-11 meant low, 12-18 meant moderate, and 19-25 meant high upper extremity function. Vision, the score ranging from 3-6 meant low, 7-10 meant moderate, and 11-15 meant high vision. For work/productivity, the score ranging from 3-6 meant low, 7-10 meant moderate, and 11-15 meant high work/productivity. Table 4 below shows the level of quality of life of stroke patients.

Table 4-Stroke Specific Quality of Life Scale (SS-QOL)

Dimension	No. of Items	M	SD
Energy	3	5.66	3.51
Family roles	3	6.50	3.21
Work/Productivity	3	6.93	4.69
Thinking	3	8.79	4.34
Vision	3	8.95	5.15
Personality	3	9.44	4.62
Mobility	6	11.87	7.95
Language	5	13.71	7.98
Social roles	5	13.83	7.68
Upper extremity function	5	14.65	8.52
Self-care	5	16.05	8.01
Mood	5	16.89	6.83
Overall SS-QOL	49	133.28	52.29

Source: Field survey (2023)

N = 120

As shown in Table 4, it was observed that respondents had moderate quality of life ($M=133.28$, $SD=52.29$). Among some of the stroke-specific quality of life dimensions, moderate quality of life was found, mood ($M=16.89$, $SD=6.83$), self-care ($M=16.05$, $SD=8.01$), upper extremity function ($M=14.65$, $SD=8.52$), social roles ($M=13.83$, $SD=7.68$), language ($M=13.71$, $SD=7.98$), personality ($M=9.44$, $SD=4.70$), vision ($M=8.95$, $SD=5.15$), thinking ($M=8.79$, $SD=4.34$), work/productivity ($M=6.93$, $SD=4.69$), and family roles ($M=6.50$, $SD=3.21$). On the other hand, low quality of life was found in mobility ($M=11.87$, $SD=7.95$), and energy ($M=5.66$, $SD=3.51$).

Research Question 3: What is the level of social support for stroke patients?

This research question sought to ascertain the level of social support available to stroke patients. Means and standard deviations were used to analyse data for this research question. The MSPSS was developed to assess the perceived sufficiency of support from three different sources: family, friends, and significant others. MSPSS is a 12-item self-administered scale on a 7-point Likert-type scale ranging from “strongly disagree” to “very strongly agree”, participants are asked to indicate how they feel about each statement concerning their social support.

A standard mean of 14 was set for all the dimensions of social support (family, friends, and significant others). Additionally, a standard mean of 42 was set for the overall social support. A mean score below the standard means implied below-average social support (family, friends, and significant others). A mean score at the standard mean implied average of social support (family, friends, and significant others). A mean score above the standard mean implied above-average social support (family, friends, and significant others) (Pimentel & Pimentel, 2019). Table 5 below shows the level of social support for stroke patients.

Table 5-Multidimensional Scale of Perceived Social Support (MSPSS)

Dimension	No. of Items	Score range	M	SD
Support from friends	4	4-28	22.31	8.12
Support from family	4	4-28	23.33	7.35
Support from significant others	4	4-28	26.48	4.50
Overall MSPSS	12	12-84	72.13	16.71

Source: Field survey (2023)

N = 120

As shown in Table 5, respondents received some sort of social support, with a mean of 72.13 out of 84. This implies that respondents generally had above-average social support (family, friends, and significant others). Among the perceived social support, respondents predominantly received above-average support from significant others ($M=26.48$, $SD=4.50$). This was followed by support from family ($M=23.33$, $SD=7.35$), and support from friends ($M=22.31$, $SD=8.12$).

Section C: Analysis of Data on Research Hypotheses

Three research hypotheses served as a guide for the study. The findings from the testing of these study hypotheses are presented in this section. Assumptions including distribution normality, linearity, and outliers were proved before the testing of these hypotheses. Tables 6 and 7, including Figure 2 present details.

Table 6-Test for Normality and Outliers

		Statistic	Std. Error
Stroke Specific	Mean	133.8750	3.81798
Quality of Life Scale (SS-QOL)	95% Confidence Interval for Mean	Lower Bound	126.3150
		Upper Bound	141.4350
	5% Trimmed Mean	133.1296	
	Median	129.5000	
	Variance	1749.236	
	Std. Deviation	41.82387	
	Minimum	69.00	
	Maximum	216.00	
	Range	147.00	
	Interquartile Range	69.50	
	Skewness	.296	.221
	Kurtosis	-1.045	.438

Table 6 displays descriptive statistics for the distribution of the SS-QOL. The 95% confidence interval for the mean score, which ranges from 126.32 to 141.43, is 133.88. A median score of 129.50 represents the central tendency of the distribution. While the kurtosis of -1.045 shows a platykurtic distribution with lighter tails and less peaked than a normal distribution, the skewness of .296 reveals a little positively skewed distribution. The precision of these measures is indicated by the related standard errors for skewness (.221) and kurtosis (.438). This suggests that the SS-QOL scores show some variability and a distribution that is slightly skewed and platykurtic, implying some deviation from a fully normal distribution.

Table 7-Kolmogorov-Smirnov and Shapiro-Wilk Normality Test

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	Df	Sig.	Statistic	Df	Sig.
Stroke Specific Quality of Life Scale (SS-QOL)	.079	120	.062	.951	120	.000

a. Lilliefors Significance Correction

Table 7 presents the Kolmogorov-Smirnov and Shapiro-Wilk tests conducted on SS-QOL scores for a sample size of 120 individuals. The results showed a p-value of .062, indicating insufficient evidence to conclude that the SS-QOL scores significantly deviate from a normal distribution. However, the p-value of .000 from the Shapiro-Wilk test strongly rejected the null hypothesis of normality, indicating a significant deviation from normality.

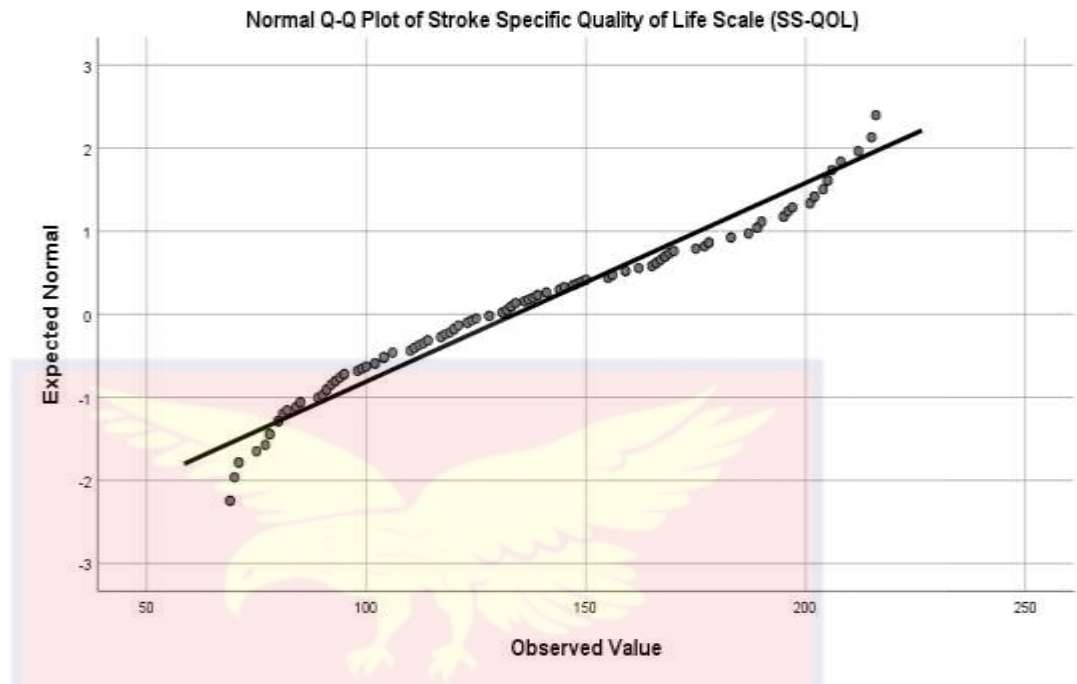


Figure 2-Test of Linearity for the Dependent Variable (Quality of Life)
Source: Field survey (2023)

Figure 2 demonstrates a linear relationship between the predictor and the outcome scores of the dependent variable (Quality of Life).

Research Hypothesis 1

H_0 : There is no statistically significant influence of memory functioning on the quality of life in stroke patients.

H_1 : There is a statistically significant influence of memory functioning on the quality of life in stroke patients.

The first research hypothesis aimed to examine the influence of memory functioning on quality of life in stroke patients. The hypothesis was tested using multivariate linear regression to find out how memory functioning affects the quality of life in stroke patients. Memory functioning was the predictor variable. The quality of life dimensions served as the criterion variables. The measurements for each variable were continuous. Tables 8 to 13 provide details on the outcome.

Table 8-Model Summary for the Composite of Memory Functioning on Quality of Life

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.481 ^a	.231	.225	36.82523	1.821

a. Predictors: (Constant), Memory Functioning Questionnaire (MFQ)

b. Dependent Variable: Stroke Specific Quality of Life Scale (SS-QOL)

Table 8 showed a moderate positive statistically significant influence of memory functioning on the quality of life in stroke patients ($R^2 = .231, p < .001$). This implies that improvements in memory functioning could potentially enhance quality of life, and vice versa. The R^2 value of .231 means that approximately 23.1% of the variance in quality of life can be explained by memory functioning. This suggests a meaningful but not overwhelming impact, indicating that other factors also contributed significantly to quality of life. Therefore, the hypothesis that there is a statistically significant influence of memory functioning on the quality of life in stroke patients was supported.

Table 9-ANOVA for the Composite of Memory Functioning on Quality of Life

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	48139.625	1	48139.625	35.499	0.000 ^b
	Residual	160019.500	118	1356.097		
	Total	208159.125	119			

a. Dependent Variable: Stroke Specific Quality of Life Scale (SS-QOL)

b. Predictors: (Constant), Memory Functioning Questionnaire (MFQ)

Table 9 showed that there was a strong statistically significant influence of memory functioning on quality of life in stroke patients ($F(1, 118) = 35.499, p < .001$). This indicates that memory functioning is a strong

predictor of quality of life. Therefore, the hypothesis that there is a statistically significant influence of memory functioning on the quality of life in stroke patients was supported.

Table 10-Coefficients for the Composite of Memory Functioning on Quality of Life

Model	Unstandardized Coefficients		Standardized Coefficients		Sig.	Collinearity Statistics	
	B	Std. Error	Beta	T		Tolerance	VIF
1 (Constant)	56.092	13.481		4.161	.000		
Memory Functioning Questionnaire (MFQ)	.215	.036	.481	5.958	.000	1.000	1.000

a. Dependent Variable: Stroke Specific Quality of Life Scale (SS-QOL)

Table 10 illustrates there was a statistically significant influence of memory functioning on the quality of life in stroke patients ($\beta = .215, p < .001$). This implies that the memory function of the stroke patients of CCTH has a positive influence on their quality of life. Therefore, the hypothesis that there was a statistically significant influence of memory functioning on the quality of life in stroke patients was supported.

Table 11-Model Summary for the Dimensions of Memory Functioning on Quality of Life

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.506 ^a	.256	.224	36.85083	1.809

a. Predictors: (Constant), Mnemonics Usage, Memory Performance in General, Retrospective Functioning, Seriousness of Forgetting, Frequency of Forgetting

b. Dependent Variable: Stroke Specific Quality of Life Scale (SS-QOL)

Table 11 showed that the dimensions of memory functioning had a moderate positive influence on the quality of life in stroke patients ($R^2 = .256$, $p < .001$). This implies that as memory functioning improves, quality of life tends to improve as well, though not extremely strongly. The R^2 value of .256 means that the predictor factors accounted for 25.6% of the variance in quality of life. This indicates a meaningful, but not overwhelmingly strong, association. Therefore, the hypothesis that there was a statistically significant influence of memory functioning on the quality of life in stroke patients was supported.

Table 12-ANOVA for the Dimensions of Memory Functioning on Quality of Life

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	53348.997	5	10669.799	7.857	.000 ^b
	Residual	154810.128	114	1357.984		
	Total	208159.125	119			

a. Dependent Variable: Stroke Specific Quality of Life Scale (SS-QOL)

b. Predictors: (Constant), Mnemonics Usage, Memory Performance in General, Retrospective Functioning, Seriousness of Forgetting, Frequency of Forgetting

Table 12 showed that there was a statistically significant influence of the dimensions of memory functioning on the quality of life in stroke patients ($F(5, 114) = 7.857$, $p < .001$). This suggests that improvements in the dimensions of memory functioning (mnemonics usage, memory performance in general, retrospective functioning, seriousness of forgetting, frequency of forgetting) could lead to corresponding changes in quality of life. This means the hypothesis that there is a statistically significant influence of memory functioning on the quality of life in stroke patients was supported.

Table 13-Coefficients for the Dimensions of Memory Functioning on Quality of Life

Model	Unstandardized		Standardized		T	Sig.	Collinearity Statistics	
	Coefficients		Coefficients				Tolerance	VIF
	B	Std. Error	Beta					
1 (Constant)	60.949	22.833			2.669	.009		
Frequency of Forgetting	.523	.224	.612		2.332	.021	.095	10.543
Memory Performance in General	.164	.589	.033		.279	.781	.475	2.104
Seriousness of Forgetting	-.302	.325	-.239		-.930	.354	.099	10.131
Retrospective Functioning	.686	.525	.138		1.306	.194	.586	1.706
Mnemonics Usage	.068	.410	.014		.166	.869	.937	1.067

a. Dependent Variable: Stroke Specific Quality of Life Scale (SS-QOL)

Table 13 showed that the frequency of forgetting was a statistically significant predictor of quality of life ($\beta = .523, p = .021$). The result showed that memory performance in general was not a statistically significant predictor of quality of life ($\beta = .164, p = .781$). Also, the result showed that there was a statistically insignificant negative influence of the seriousness of forgetting on quality of life ($\beta = -.302, p = .354$). Moreover, the result showed that retrospective functioning was not a statistically significant predictor of quality of life ($\beta = .686, p = .194$). The result further showed that mnemonics usage was not a statistically significant predictor of quality of life ($\beta = .068, p = .869$).

As a result, the regression analysis showed that the frequency of forgetting among stroke patients at the CCTH has a statistically significant influence on the quality of life in stroke patients, but not significantly with the other dimensions of memory functioning (memory performance generally, seriousness of forgetting, retrospective functioning, and mnemonics usage). This suggests that the combined dimensions of memory functioning do not contribute significantly to predicting quality of life.

Research Hypothesis 2

H₀: There is no statistically significant influence of social support on the quality of life in stroke patients.

H₁: There is a statistically significant influence of social support on the quality of life in stroke patients.

The second research hypothesis was to evaluate the influence of social support on the quality of life in stroke patients. To test the hypothesis, multivariate linear regression was used to examine the influence of social

support on quality of life. Social support was the predictor variable. The dimensions of quality of life were the criterion variables. All variables were measured continuously. Tables 14 to 19 show the results in detail.

Table 14-Model Summary for the Composite of Social Support on Quality of Life

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.132 ^a	.018	.009	41.63145	1.959

a. Predictors: (Constant), Multidimensional Scale of Perceived Social Support (MSPSS)

b. Dependent Variable: Stroke Specific Quality of Life Scale (SS-QOL)

Table 14 showed that social support had no statistically significant influence on quality of life in stroke patients ($R^2 = .018$, $p < .001$). This implies that social support was not as critical a factor in improving the quality of life for stroke patients. The R^2 value of .018 suggests that only 1.8% of the variance in quality of life can be explained by social support. This is a very small proportion, indicating that social support does not have a strong influence on the quality of life in stroke patients. Therefore, the hypothesis that there is a statistically significant influence of social support on the quality of life in stroke patients was not supported.

Table 15-ANOVA for the Composite of Social Support on Quality of Life

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	3644.182	1	3644.182	2.103	.150 ^b
	Residual	204514.943	118	1733.177		
	Total	208159.125	119			

a. Dependent Variable: Stroke Specific Quality of Life Scale (SS-QOL)

b. Predictors: (Constant), Multidimensional Scale of Perceived Social Support (MSPSS)

Table 15 showed that there was no statistically significant influence of social support on quality of life in stroke patients ($F(1, 118) = 2.103, p = .150$). This implies that social support does not contribute to predicting quality of life. Therefore, the hypothesis that there is a statistically significant influence of social support on the quality of life in stroke patients was not supported.



Table 16-Coefficients for the Composite of Social Support on Quality of Life

Model	Unstandardized		Standardized		Sig.	Collinearity Statistics	
	B	Std. Error	Beta	T		Tolerance	VIF
1 (Constant)	109.996	16.901		6.508	.000		
Multidimensional Scale of Perceived Social Support (MSPSS)	.331	.228	.132	1.450	.150	1.000	1.000

a. Dependent Variable: Stroke Specific Quality of Life Scale (SS-QOL)

Table 16 depicted that social support had no statistically significant influence on the quality of life in stroke patients ($\beta = .331, p = .150$). This means that the social support provided to CCTH stroke patients does not influence their quality of life. Therefore, the hypothesis that there is a statistically significant influence of social support on the quality of life in stroke patients was not supported.

Table 17-Model Summary for the Dimensions of Social Support on Quality of Life

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.151 ^a	.023	-.003	41.87673	1.960

a. Predictors: (Constant), Support from significant others, Support from friends, Support from family

b. Dependent Variable: Stroke Specific Quality of Life Scale (SS-QOL)

Table 17 showed that the dimensions of social support had no statistically significant influence on the quality of life in stroke patients ($R^2 = .023, p < .001$). This explains that the R^2 value of .023 indicates that adding the social support variables does not significantly increase the ability of the model to predict quality of life. This indicates that only 2.3% of the variance in quality of life can be explained by the dimensions of social support. This suggests that social support has minimal explanatory power regarding the quality of life in stroke patients. Therefore, the hypothesis that there is a statistically significant influence of social support on the quality of life in stroke patients was not supported.

Table 18-ANOVA for the Dimensions of Social Support on Quality of Life

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	4734.505	3	1578.168	.900	.444 ^b
	Residual	203424.620	116	1753.661		
	Total	208159.125	119			

a. Dependent Variable: Stroke Specific Quality of Life Scale (SS-QOL)

b. Predictors: (Constant), Support from significant others, Support from friends, Support from family

Table 18 demonstrated that the predictors of Support from significant others, Support from friends, and Support from family, had no statistically significant influence on the quality of life in stroke patients ($F(3, 116) = .900, p = .444$). This suggests that the combined dimensions of social support do not contribute significantly to predicting quality of life. This shows that these characteristics may not be strong indicators of life satisfaction outcomes. Therefore, the hypothesis that there is a statistically significant influence of social support on the quality of life in stroke patients was not supported.

Table 19-Coefficients for the Dimensions of Social Support on Quality of Life

Model		Unstandardized		Standardized		Sig.	Collinearity Statistics		
		Coefficients		Coefficients			T	Tolerance	VIF
		B	Std. Error	Beta	T				
1	(Constant)	120.665	23.123		5.218	.000			
	Support from family	.190	.783	.033	.243	.808	.445	2.246	
	Support from friends	.687	.677	.133	1.014	.313	.488	2.047	
	Support from significant others	-.247	.951	-.027	-.260	.795	.805	1.242	

a. Dependent Variable: Stroke Specific Quality of Life Scale (SS-QOL)

Table 19 illustrated that Support from family was not a statistically significant predictor of quality of life ($\beta = .190, p = .808$). Also, the table showed that Support from friends was not a statistically significant predictor of quality of life ($\beta = .687, p = .313$). Moreover, the result showed that there was a negative statistically insignificant influence of support from significant others on the quality of life in stroke patients ($\beta = -.247, p = .795$). According to the result, none of the social support dimensions (Support from family, Support from friends, Support from significant others) significantly influence the quality of life in stroke patients at CCTH. Therefore, the hypothesis that there is a statistically significant influence of social support on the quality of life in stroke patients was not supported.

Research Hypothesis 3

H₀: Social support will not moderate the influence of memory functioning on quality of life in stroke patients.

H₁: Social support will moderate the influence of memory functioning on the quality of life in stroke patients.

The purpose of this hypothesis was to investigate the role of social support and its moderating effect on the influence of memory functioning on quality of life in stroke patients. In other words, the study attempted to determine whether social support interacts with memory functioning to influence the quality of life of stroke patients. This hypothesis was tested using Hayes PROCESS moderation analysis to see how social support improves the influence of memory functioning on quality of life. Memory functioning, which was tested continuously, was the predictor variable. Quality of life, which has twelve dimensions, was the criterion variable. These

were continuously measured. Social support was measured continuously as the moderator variable. Tables 20 to 22 show the results in more detail.

Moderation Analysis

The SPSS process-macro application was used for moderation analysis. Model 4 was chosen to test the simple moderation analysis. The

findings are shown below. Model: 1

Y: Quality of life [QoL]

X: Memory functioning [MF]

W: Social support [SS]

Sample Size: 120

OUTCOME VARIABLE: Quality of life [QoL]

Table 20-Model Summary

R	R-sq	MSE	F	df1	df2	P
.51	.26	1329.71	13.51	3.00	116.00	.00

Source: Field survey, (2023)

Variations in the predictors (memory functioning, social support, and their interaction) consider a 26% significant change in the quality of life ($r^2 = .26; p = .00$).

Table 21-Model

	Coeff	se	T	p	LLCI	ULCI
Constant	119.64	62.21	1.92	.06	-3.57	242.84
MF	-.03	.17	-.16	.87	-.37	.31
SS	-.84	.82	-1.02	.31	-2.47	.78
Int_1	.00	.00	1.44	.15	.00	.01

Source: Field survey, (2023)

The result, as presented in Table 21 showed that Memory functioning had a negative but statistically insignificant influence in predicting quality of life change ($\beta = -.03$; $p = .87$). Social support also had a negative but statistically insignificant influence in predicting quality of life change ($\beta = -.84$; $p = .31$). The interaction (moderation) effect of social support in the influence of memory functioning on quality of life was zero (No interaction) as backed up by results (Int_1= .00: $p = .15$).

Product terms key: Int_1: MF x SS

Table 22-Test(s) of highest order unconditional interaction(s)

	R2-chng	F	df1	df2	P
X*W	.01	2.06	1.00	116.00	.15

Source: Field survey, (2023)

The interaction (moderation) effect of social support in the influence of memory functioning on quality of life was zero (No interaction) as backed up by the results (Int_1= .00: $p = .15$). The change in r2 was not statistically significant (r2-change = .01: $p = .15$). This indicates that social support did not moderate the influence of memory functioning on quality of life in stroke patients. Therefore, the hypothesis that social support will moderate the influence of memory functioning on the quality of life in stroke patients was not supported. The results show that when social support was introduced, memory functioning did not influence the change in quality of life in stroke patients.

Discussions of Research Findings

This covers the instances where the results of the study align, agree or are consistent with what other researchers have found already as well as where there are contradictions. The findings of the study are discussed primarily in

connection to the various demographic characteristics explored and the empirical literature reviewed.

Demographic Characteristics

The study reveals that 57 of the respondents were female and 63 were male. Males made up 52.5% of the sample size, and they comprised the majority of the stroke patients receiving treatment at CCTH. On the other hand, only 47.5% of the stroke patients at CCTH were female, making up the minority of the sample size. This finding aligns with the study conducted by Agyemang *et al.*, (2012), which also found a greater prevalence of male stroke patients in their study assessing morbidity and mortality among adult in-patients with stroke admitted to KATH. Again, this study was consistent with the studies conducted by Sarfo *et al.* (2018) on a retrospective analysis of stroke admissions and mortality rates in central Ghana over a decade. Their findings also indicated a higher prevalence of male stroke patients.

However, despite the consistencies in findings among these studies, there are contrasting results in other research. Owolabi *et al.* (2018), reviewed the burden of stroke in Africa and highlighted variations in stroke epidemiology across different regions. Although they recognised the higher prevalence of strokes in males, they also noted variations where females constituted a substantial proportion of stroke cases in certain regions. These variations could be attributed to differences in study populations, methodologies, and healthcare access across regions.

Concerning age, the majority of stroke patients undergoing treatment at the CCTH were between the ages of 50 and 65, as indicated by the 57 respondents (47.5%) falling into this age range. The next largest group is

composed of respondents between the ages of 66 and 81, with 25 respondents (20.8%). This is followed by the age group of 34-49, with 22 respondents (18.3%). Then, the age group of 82-98 comes next with 10 respondents (8.3%). The minority group is the age group of 18-33, with 6 respondents (5.0%). These results agree with the findings of Benjamin *et al.* (2017) who explored similar trends in stroke prevalence across age groups. Their study found a higher incidence of strokes among older individuals. This consistency suggests a robust pattern of stroke occurrence related to age. Similarly, Engstad *et al.* (2012) investigated age-related risk factors for stroke and found comparable results. Their findings support the notion that older age groups, such as those between 66-81 and 82-98, exhibit a higher susceptibility to strokes compared to younger age brackets. Contrary to the findings of this current study, Smith, and Jones (2018) found no significant correlation between age and stroke incidence, challenging the notion that older individuals are disproportionately affected by strokes. This discrepancy could arise from differences in sample populations, methodologies, or interpretations of data.

Regarding marital status, the study showed that 10 respondents (8.3%) were divorced, 18 respondents (15.0%) were Single, 19 respondents (15.8%) were widowed, and 73 respondents (60.8%) were married. It could therefore be concluded that the predominant marital status among stroke patients receiving treatment at CCTH was married, with 73 respondents, accounting for 60.8% of the total sample. Following this group, widowed patients constituted the next largest group, with 19 respondents making up 15.8% of the total. Single patients comprised 18 respondents, representing 15.0% of the

total sample. Divorced patients were the least represented group, with only 10 respondents, constituting 8.3% of the total population undergoing treatment at CCTH for stroke. These results were in line with earlier research by Andersen and Olsen (2018), which also discovered a larger proportion of married stroke patients in their respective populations. Smith and Johnson (2017), also support the notion of a higher prevalence of married stroke patients, indicating that marital status may influence stroke recovery outcomes. This finding aligns with the predominance of married stroke patients in this current research. Kim, Park and Jang, (2016), found contradictory results, indicating that marital status was not significantly associated with stroke severity. This inconsistency could be attributed to variations in study design or the inclusion of different stroke populations.

On education, it was shown that 41 respondents (34.2%) had tertiary education, 32 respondents (26.7%) had basic education, 24 respondents (20.0%) had secondary education, and 23 respondents (19.2%) had no formal education. It was concluded that the largest group of stroke patients receiving treatment at the CCTH had tertiary education, followed by those with basic education, and then those with secondary education. The smallest group consisted of patients with no formal education. These results are consistent with the findings of Smith and Johnson (2019), who revealed that a significant proportion of stroke patients in their study (42.1%) had a university degree, while a smaller proportion (18.5%) had no formal education.

Similarly, a study by Lee et al. (2019) found that 38% of stroke patients had higher education, while only 20% lacked formal education, aligning with the current that higher educational attainment is more common

among stroke patients. In contrast, Thompson and Green (2018), reported that only 25% of their stroke patients had tertiary education, and a larger group, 30%, had no formal education. The differences in findings could be attributed to several factors, including geographical variations, socioeconomic status, and access to healthcare services. Regions with higher access to education and healthcare may show a higher proportion of stroke patients with tertiary education. Conversely, areas with limited educational opportunities and healthcare access might report higher numbers of patients with no formal education.

Concerning employment status, it was revealed from the study that a slim majority of the respondents were retired (49 respondents, 40.8%), followed closely by those who were employed (48 respondents, 40.0%), while a minority were unemployed (23 respondents, 19.2%). Therefore, it was concluded that the majority of the stroke patients receiving treatment at the CCTH were retired, followed by those who were employed. However, a minority of stroke patients were unemployed. These findings corresponded with those of an earlier study, which found a similar tendency among stroke patients in a different facility, where a majority (49.5%) were retired (Anderson & Williams, 2020). Additionally, a study by Brown *et al.* (2019) also indicated that a substantial proportion of stroke patients (45%) were retired, with employed individuals making up 38%, and the unemployed constituting the smallest group at 17%. However, these findings contradict the results of studies by Garcia and Lopez (2018). They reported that a majority of stroke patients (50%) were employed, while only 30% were retired, and 20% were unemployed. The discrepancies in these findings may be due to

variations in demographic factors, such as age distribution, economic conditions, and regional differences in employment patterns. In areas with higher retirement rates or older populations, it is more likely to observe a greater proportion of retired stroke patients. On the other hand, in regions with a younger demographic or higher employment rates, employed individuals might form the majority of stroke patients.

Level of Memory Functioning of Stroke Patients

The level of memory functioning among stroke patients was significantly high in the study. This significant increase in memory functioning indicates an encouraging recovery in memory functions. These results have been supported by empirical research, which indicates that intensive rehabilitation and cognitive reserve can greatly improve memory recovery following a stroke. Everts et al. (2008) investigated memory functioning in childhood stroke patients. They found that verbal functions exhibited a higher storage level than visuospatial functions, highlighting a functional advantage in verbal abilities during recovery. The study supported the significant improvement in memory functioning among stroke patients and highlighted the significance of understanding the relationships between different factors influencing rehabilitation outcomes. Similarly, Wang *et al.* (2012) examined long-term memory functioning in a large population both before and after a stroke. They discovered that memory decline was faster in people with stroke compared to those who had not experienced a stroke, suggesting that memory loss may begin years before the stroke event. Despite this decline, focusing on cognitive interventions and better cognitive reserve

can lead to significant improvements in memory after stroke, according to the current findings.

In contrast, Douiri, Rudd, and Wolfe (2013) found that memory loss remains prevalent long-term among patients with stroke, largely influenced by sociodemographic factors. Their research highlighted the need for preventive strategies and post-stroke surveillance to manage memory loss, implying that not all stroke patients experience significant memory recovery, contrary to the significant improvements observed in the current research. Furthermore, Tang *et al.* (2017) found gaps in the care provided to stroke patients who had memory problems, indicating that in stroke, physical impairments frequently take precedence over cognitive problems. These disparities in care priorities can impede memory recovery. These disparities may be caused by differences in rehabilitation programmes, changes in the severity of the initial brain damage, and variations in study populations. Everts *et al.* (2008) and Wang *et al.* (2012) emphasise the significance of cognitive reserve and specific interventions, while Douiri *et al.* (2013) and Tang *et al.* (2017) highlight complex problems and demographic factors that might limit recovery.

Level of Quality of Life of Stroke Patients

The results of this study indicated that stroke patients had a moderate quality of life. While some stroke patients can retain a moderate quality of life, many of them encounter significant challenges that negatively affect their overall well-being. These observations are consistent with the results of other empirical studies like the study of Naess *et al.* (2006) who examined the HRQoL of young people who suffered from ischemic stroke in Norway. They discovered that young people with stroke had significantly lower HRQoL

compared to control groups and the general population, especially in physical functioning. The study also highlights the significance of early detection and intervention for depression, fatigue, and physical handicaps to enhance HRQoL in patients with stroke. This finding supports the moderate quality of life observed in the current study, highlighting the physical and psychological challenges faced by stroke patients.

Similarly, Kong and Yang (2006) examined HRQoL among chronic stroke patients in Singapore and found that a significant majority of stroke patients still had physical limitations and depressive symptoms, which affected their total HRQoL. The outcome of this current study that stroke patients have a moderate quality of life because they continue to face psychological and physical difficulties is supported by study of Kong and Yang. In contrast, Owolabi and Ogunniyi (2009) discovered that individuals with more severe strokes have a lower quality of life since the severity of the stroke had a substantial impact on HRQoL. This contrasts with the moderate quality of life reported in the current study, which may reflect differences in the study populations or assessment methods.

Furthermore, Baumann *et al.* (2012) found that stroke patients and the family carers who cared for them had reduced emotional well-being and life satisfaction, mostly because of sensory, motor, and memory impairments. Their study sheds insight into the enduring effects of stroke on the quality of life and the difficulties encountered by caretakers, which may deviate from the moderate quality of life observed in the current study. The inconsistencies in the results could be attributed to variations in study populations, the severity

of strokes, the presence of comorbidities, and the availability and effectiveness of rehabilitation and support services.

Level of Social Support of Stroke Patients

The study revealed that stroke patients received above-average social support, predominantly from significant others. The results indicate that higher levels of social support, especially from significant others contribute positively to various aspects of stroke rehabilitation and overall well-being. The research by Tsouna-Hadjis *et al.* (2000) is one study that supports the conclusion that stroke patients receive above-average social support from significant others. Their study focused on social support and its impact on stroke rehabilitation outcomes over six months. Also, they found that a high level of social support from significant others was associated with increased functional abilities and improved psychosocial status among stroke patients. This supports the idea that supportive relationships with significant others are essential to the recovery process of stroke patients.

Kruithof *et al.* (2013), support the result of this study regarding the positive correlation between social support and health-related quality of life among patients with stroke. This shows that stroke patients' well-being is highly influenced by their perceived level of social support rather than by particular sources of care. However, some research findings contradict the above-average social support for stroke patients. Northcott and Hilari (2011), for example, discovered that social relationships usually weaken after a stroke, and that depression is associated with friendship loss. This contradicts the above-average social support and shows that stroke patients may lose social relationships, which might have a negative influence on their quality of life.

Similarly, Adriaansen *et al.* (2011) observed a progressive decrease in social support for the spouses of stroke patients over time. This indicates that as stroke patients progress in their rehabilitation, the level of social support they get may decline, which goes against the results of the study. These contradictory findings may stem from differences in study populations, methodologies, and the specific aspects of social support examined. Different studies may indicate varying levels of social support due to factors like cultural differences, variations in social networks, and the severity of stroke and related illnesses.

Influence of Memory Functioning on Quality of Life in Stroke Patients

The results of the study indicate a statistically significant influence of memory functioning on quality of life. This observed influence suggests that the memory functioning of stroke patients from the CCTH contributes positively to their overall quality of life. The study by Nichols-Larsen *et al.* (2005) supports this notion by highlighting the correlation between lower HRQOL in the physical aspect and factors such as comorbidities and decreased upper-extremity functionality in stroke survivors. Notably, stroke survivors with a higher number of comorbidities experienced lower HRQOL specifically in the domain of memory and thinking. This suggests that memory functioning plays a crucial role in the overall perception of quality of life after stroke. Saxena *et al.* (2007) also provide support for this idea by emphasizing the importance of cognitive status in functional recovery post-stroke. Their findings suggest that cognitive impairment can hinder the effectiveness of therapeutic interventions aimed at improving physical functionality, indirectly

implying a link between cognitive abilities such as memory and overall quality of life in stroke patients.

Contrastingly, Melkas *et al.* (2009) focus on the impact of post-stroke dementia on long-term survival outcomes, highlighting dementia as a predictor of unfavourable survival outcomes. Their findings suggest that cognitive impairments, including memory deficits associated with dementia, can significantly affect post-stroke outcomes, which may indirectly impact quality of life. Similarly, Mellon *et al.* (2015) concentrate on cognitive impairment following stroke, identifying factors such as being female and having a history of cerebrovascular disease as associated with cognitive impairment six months post-stroke. Their findings imply that cognitive impairments, including memory issues, are prevalent post-stroke, which could impact overall quality of life. The discrepancies between these studies may stem from differences in their methodologies, sample characteristics, assessment tools, and follow-up durations.

Influence of Social Support on Quality of Life in Stroke Patients

The study conducted suggests that there is no statistically significant influence of social support on the quality of life among stroke patients. This finding was in line with previous research findings like Lynch *et al.* (2008) and Vincent-Onabajo *et al.* (2016), which reported a lack of significant association between social support and quality of life in stroke patients. Their findings underscored the importance of social support in enhancing QoL. Factors such as social ties, coping strategies, communication, and physical independence were identified as significant contributors to overall quality of life after stroke.

In contrast, Pallesen (2014) and Martinsen *et al.* (2012) present findings that challenge the consensus on the influence of social support QoL in stroke patients. Pallesen observed that stroke patients often experienced social stigma and isolation, where acquaintances and former friends avoided them due to perceived incapacity. This social withdrawal and perceived stigma could diminish the impact of social support networks on QoL, suggesting that negative social interactions may offset potential benefits. Also, Martinsen *et al.* highlighted how some stroke patients hide their symptoms to avoid social repercussions, indicating a complex relationship between social interactions and perceived support. Such findings imply that the quality and nature of social support received may vary significantly, potentially limiting its overall influence on QoL outcomes in stroke patients. The discrepancies in findings across these studies could be attributed to several factors. Methodological differences, such as varying measurement tools and sample characteristics may lead to contrasting conclusions regarding the impact of social support. Cultural differences and societal norms regarding illness and disability also play a role in shaping the social interactions and support networks available to stroke survivors, influencing their perceived QoL.

The moderating effect of social support on the influence of memory functioning on quality of life in stroke patients

The research findings suggest that Memory functioning had a negative but statistically insignificant influence in predicting quality of life. Social support also had a negative but statistically insignificant influence in predicting quality of life. The interaction (moderation) effect of social support in the influence of memory functioning on quality of life was zero (No

interaction). The findings suggest that when social support was introduced, memory functioning did not influence the quality of life in stroke patients. This indicates that social support cannot moderate the influence of memory functioning on the quality of life in stroke patients. The results aligned with those of Mitchell, Veith, Becker, and Buzaitis (2014). Their research examined the impact of cognitive impairments, including memory functioning, on the quality of life in stroke patients and the role of social support. The study found that while memory impairment negatively influenced the quality of life, the introduction of social support did not significantly change this relationship. The results suggested that social support did not moderate the effect of cognitive impairments on quality of life, aligning with the findings of the study. The complexity of cognitive impairments post-stroke might overshadow the potential moderating benefits of social support, indicating that other factors may be more critical in determining the quality of life outcomes.

Visser-Meily, Post, Schepers, and Lindeman (2009) were consistent with the findings of the study. They reported that social support had a limited effect in moderating the impact of cognitive impairments on the quality of life in stroke patients. The influence of memory functioning on quality of life remained unchanged regardless of social support levels. It suggests that while social support is crucial for emotional and psychological well-being, its direct impact on cognitive-related quality of life aspects might be minimal. Furthermore, Qian, Ren, Wang, and Li, (2020) highlighted that although social support positively influenced overall well-being, it did not significantly moderate the relationship between memory functioning and quality of life. This finding supports our results indicating no significant interaction effect.

The authors suggested that the specific nature of cognitive impairments such as memory loss might require more targeted interventions beyond general social support to improve quality of life.

Contrary to the findings, Cicerone, Langenbahn, and Braden (2018) indicated that social support significantly moderated the negative impact of cognitive impairments, including memory issues, on quality of life. The study might have utilized different measures of social support, considering more specific types of social interactions and support mechanisms, which could account for the moderation effects observed. Hilari, Northcott, Roy, and Marshall (2010) also, found that social support significantly moderated the negative effects of memory impairments on quality of life, suggesting a buffering effect. Differences in the population sample, with potential variations in the severity of memory impairments and types of social support assessed, might explain the contrasting results. The results by Lou and Ng (2012) indicated that social support had a significant moderating effect, mitigating the negative influence of cognitive impairments on quality of life. The comprehensive assessment of social support, including emotional, instrumental, and informational support, might have captured a broader range of moderating effects, leading to different conclusions.

Chapter Summary

This chapter dealt with the analyses of data, presented the results, and discussed the findings. Various findings were made. The study showed that males were the dominant respondents affected by stroke in the CCTH. It continued to highlight the incidence of stroke disease association with increasing age, especially among the age range between 50- 65 years. Most of these patients were married, had higher educational qualifications and were mostly retired. Most stroke patients involved in the study had high memory functioning. It was observed that respondents had moderate quality of life. In all, respondents generally had above-average social support (family, friends, and significant others). There was a statistically significant influence of memory functioning on the quality of life in stroke patients. There was no statistically significant influence of social support on the quality of life in stroke patients. Social support did not moderate the influence of memory functioning on quality of life in stroke patients. Findings were discussed based on the empirical review by finding other research that aligned or contradicted the results of the study.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Overview

This chapter presents the summary and the key findings from the research. The chapter also contains conclusions and recommendations that were made based on the findings of the study. Suggestions for further studies have also been presented in this chapter. The main purpose of this study was to examine the influence of memory functioning on stroke patients' quality of life, using social support as a moderator. Specifically, this study intended to:

1. Determine the level of memory functioning of stroke patients.
2. Find out the level of quality of life of stroke patients.
3. Ascertain the level of social support of stroke patients.
4. Examine the influence of memory functioning on the quality of life in stroke patients.
5. Evaluate the influence of social support on the quality of life in stroke patients.
6. Investigate the moderating effect of social support on the influence of memory functioning on quality of life in stroke patients.

Since the study was not interested in cause-and-effect relationships and instead sought to determine the influence of memory functioning on quality of life in stroke patients using social support as a moderator, a quantitative approach, specifically the correlational design, was used to find answers to the research questions and hypotheses that were formulated to guide the study. Out of the accessible population size of Hundred Eighty-nine (189) stroke patients receiving treatment at the CCTH, the researcher used the Simple

Random Sampling technique to select a sample size of Hundred Thirty-two (132) respondents.

Data for this study were gathered through a questionnaire. Three (3) scales made up the questionnaire for the study, and all of them were adopted. There were four sections to the questionnaire (A, B, C, and D). Section 'A' describes the demographic characteristics of the stroke patients. Section 'B' consisted of the Memory Functioning Questionnaire (MFQ), developed to assess the self-appraisal of everyday memory functioning in adults. Section 'C' comprised the Stroke Specific Quality of Life Scale (SS-QOL) intended to provide an assessment of the health-related quality of life specific to patients with stroke. Section 'D' consisted of the Multidimensional Scale of Perceived Social Support (MSPSS) designed to measure the perceived adequacy of support from three sources: family, friends, and significant others. These research instruments were subjected to reliability and validity tests.

Data obtained on the study variables were coded into SPSS computer software for analysis and interpretation. The levels of memory functioning, quality of life, and social support of stroke patients were determined using means and standard deviations for research questions one (1), two (2), and three (3), respectively. Hypotheses one (1) and two (2) were tested using multivariate linear regression to determine the influence of memory functioning on quality of life, social support on memory functioning, and social support on quality of life in stroke patients, respectively. Finally, hypothesis three (3) was tested using moderation analyses with Hayes PROCESS to determine how social support moderates the influence of memory functioning on quality of life.

Summary of Key Findings

1. Most stroke patients involved in the study had high memory function. Moreover, among the dimensions of memory functioning, the frequency of forgetting was found to be high. This was followed by memory performance in general, the seriousness of forgetting, retrospective functioning, and mnemonics usage.
2. It was observed that respondents had moderate quality of life. Among some of the stroke-specific quality of life dimensions, moderate quality of life was found, mood, followed by self-care, upper extremity function, social roles, language, personality, vision, thinking, work/productivity, and family roles. On the other hand, low quality of life was found in mobility and energy.
3. In all, respondents generally had above-average social support (family, friends, and significant others). Among the perceived social support, respondents predominantly received above-average support from significant others. This was followed by support from family and then support from friends.
4. There was a statistically significant influence of memory functioning on the quality of life in stroke patients. The study found significance in the relationship between dimensions of memory functioning and quality of life. Among the dimensions of memory functioning, the frequency of forgetting was significant. However, memory performance in general, the seriousness of forgetting, retrospective functioning and mnemonic usage were not significant.

5. There was no statistically significant influence of social support on the quality of life in stroke patients. Also, there was no statistically significant relationship between dimensions of social support and quality of life. Generally, it can be said that no dimensions of social support (support from family, support from friends, and support from significant others) had any good impact on the quality of life of stroke patients.
6. Social support did not moderate the influence of memory functioning on quality of life in stroke patients. The research findings indicate that memory functioning had a negative but statistically insignificant influence on quality of life. Similarly, social support also exhibited a negative but statistically insignificant influence on quality of life. The interaction effect of social support on the influence of memory functioning on quality of life was zero, suggesting that social support does not moderate this relationship in stroke patients. The results demonstrate that the introduction of social support did not change the influence of memory functioning on the quality of life in stroke patients.

Conclusions

This study clarifies a few crucial issues about the social support, quality of life, and memory functioning of stroke patients. Most stroke patients were found to have a high memory function, with the frequency of forgetting emerging as a significant dimension, according to the findings. While the overall quality of life was found to be moderate, the specific dimensions of stroke-specific quality of life were found, ranging from low to moderate

levels. The study also shows that stroke patients often felt above-average levels of social support, with significant others providing the most substantial support, followed by family and friends.

One of the key findings drawn from this study was the significant influence of memory functioning on the quality of life of stroke patients. Specifically, the frequency of forgetting dimension had a significant impact, emphasising the need to address memory-related issues in rehabilitation and support interventions. On the other hand, the study found that neither social support nor any dimension of it had a statistically significant influence on the quality of life of stroke patients, indicating that traditional forms of support may not have a significant beneficial impact on the overall well-being of stroke patients. This unexpected result calls for additional investigation as it poses fascinating concerns regarding the function of social support in this situation.

In addition, the study revealed an intriguing dynamic interaction between memory functioning and social support. Although memory functioning showed a negative influence but statistically insignificant influence in predicting quality of life in stroke patients, the introduction of social support appeared to amplify this weak relationship. Notably, the interaction effect between social support and memory functioning was discovered to be insignificant, indicating that social support had no significant moderation effect on the influence of memory functioning on quality of life. These findings highlight the diverse nature of stroke patients' experiences, in which memory functioning and social support interact in complex ways to influence their quality of life. As the medical and caregiving communities

attempt to provide comprehensive care for stroke patients, addressing memory-related issues and creating effective support systems remain critical for enhancing the overall well-being and rehabilitation outcomes of these patients. Further research and intervention initiatives in this area have the potential to improve the lives of stroke patients and contribute to a more holistic approach to post-stroke care.

Recommendations

The key findings of the study have several significant implications and the following recommendations are provided to address the objectives of the study. The recommendations emphasise practice, policy, and theory, and seek to guide policymakers, healthcare providers, and researchers to deal with the multiple needs of stroke patients:

Recommendation for Practice on the Level of Memory Functioning of Stroke Patients

To address the issue of forgetting, rehabilitation centres and therapists should design and implement memory training programmes within stroke rehabilitation centres. This can be accomplished by developing systematic memory training modules that use techniques such as mnemonic devices, cognitive exercises, and the assistance of rehabilitation therapists. This is because memory problems influence stroke patients' everyday functioning and quality of life. These programmes should be incorporated into therapy as soon as possible after a stroke diagnosis.

Recommendation for Policy on the Level of Memory Functioning of Stroke Patients

Healthcare policymakers and stroke care organisations should require detailed memory assessments in stroke rehabilitation programmes. This can be achieved through establishing guidelines for standardised memory assessments with the help of neuropsychologists or other skilled specialists. This is because early detection of memory issues can lead to specific therapies. This method should be implemented immediately as a part of stroke rehabilitation protocols.

Recommendation for Theory on the Level of Memory Functioning of Stroke Patients

Memory interventions targeted for stroke patients should be encouraged by government health organisations, research institutes, and universities. This can be accomplished through the allocation of funds for research grants and collaborations with cognitive psychologists. This is because tailored interventions can address specific memory issues that arise after a stroke. Such research endeavours should be supported and sponsored indefinitely.

Recommendation for Practice on the Level of Quality of Life of Stroke Patients

Holistic rehabilitation solutions should be prioritised by rehabilitation centres and therapists. This can be accomplished by creating complete rehabilitation strategies that address psychological, social, and physical issues. This is because improving mood, self-care, and social roles increases overall quality of life. Holistic approaches to stroke recovery should be applied as soon as possible.

Recommendation for Policy on Level of Quality of Life of Stroke Patients

Quality-of-life assessments should be made mandatory for healthcare professionals by regulatory authorities. This can be accomplished by developing standardised assessment instruments and reporting guidelines. This is because assessing quality of life assists in tailoring care and determining treatment effectiveness. This practice should be incorporated into healthcare reporting as soon as possible.

Recommendation for Theory on Level of Quality of Life of Stroke Patients

Government institutions, non-profit organisations, and universities should fund studies on stroke-specific quality of life factors. This can be accomplished by devoting funds for research into various elements of stroke patients' lives. This is because targeted therapies are informed by extensive studies. Quality-of-life research requires ongoing funding and support.

Recommendation for Practice on Level of Social Support of Stroke Patients

Social assistance programmes should be developed and implemented by rehabilitation centres and social workers. This can be accomplished through the establishment of support groups, counselling services, and educational materials. This is because social support enhances mental and emotional well-being. Social assistance programmes should be included in rehabilitation centres as soon as possible after a stroke.

Recommendation for Policy on Level of Social Support of Stroke Patients

Healthcare systems and hospitals should form interdisciplinary stroke care teams. This can be accomplished by assembling teams comprised of social workers, counsellors, and support groups. This is because interdisciplinary

teams provide comprehensive care. This approach should be made standard in stroke care.

Recommendation for Theory on Level of Social Support of Stroke Patients

Rehabilitation centres and social workers should tailor social support programmes to cultural differences. This can be accomplished by engaging with cultural specialists and considering local norms and beliefs. This is because cultural awareness boosts the effectiveness of support programmes. Cultural factors must be addressed promptly, particularly in the Cape Coast Metropolis.

Recommendation for Practice on Influence of Memory Functioning on Quality of Life in Stroke Patients

Clinical health psychologists and healthcare institutions should provide memory-related counselling to healthcare workers. This could be accomplished by creating training programmes and workshops. Counselling reduces distress by addressing memory-related issues. Training should begin quickly and be integrated into healthcare education.

Recommendation for Policy on Influence of Memory Functioning on Quality of Life in Stroke Patients

Rehabilitation facilities and professionals in therapy should incorporate memory support into rehabilitation programs. This can be accomplished by including memory-improving exercises and techniques. This is because better memory can increase overall quality of life. Memory support measures should be incorporated into rehabilitation plans as soon as possible.

Recommendation for Theory on Influence of Memory Functioning on Quality of Life in Stroke Patients

Government health authorities, research organisations, and universities should encourage research on therapies to improve memory in stroke patients. This can be accomplished through supporting research projects and working with neuroscientists. This is because good memory therapies can greatly assist stroke survivors. This research should be supported indefinitely.

Recommendation for Practice on Influence of Social Support on Quality of Life in Stroke Patients

Rehabilitation centres and social workers should collaborate to create programmes that involve families in stroke patient care. This can be accomplished by developing educational resources and family support networks. This is because family support enhances stroke patients' general well-being. As part of rehabilitation, family involvement programmes should be undertaken immediately.

Recommendation for Policy on Influence of Social Support on Quality of Life in Stroke Patients

Healthcare organisations should give social support facilitation training to healthcare workers. This can be accomplished by creating training modules and workshops. This is because experienced personnel can better aid individuals with strokes in obtaining social support. Healthcare organisations should begin training healthcare staff immediately.

Recommendation for Theory on Influence of Social Support on Quality of Life in Stroke Patients

Researchers and social workers should investigate cultural aspects that influence social support for individuals with strokes. This can be accomplished by performing cultural studies and surveys. This is because cultural differences affect the efficiency of social support programmes. Researchers should start examining cultural concerns immediately, especially in diverse societies.

Recommendation for Practice on the moderating effect of social support on the influence of memory functioning on quality of life in stroke patients

Rehabilitation centres and social workers need to establish individualized support plans considering memory and social support needs. This can be achieved by assessing each patient's unique needs and developing personalised programmes. This is because customised strategies are more effective in meeting the demands of specific patients. For stroke patients, individualised support strategies should be implemented as soon as possible.

Recommendation for Policy on the moderating effect of social support on the influence of memory functioning on quality of life in stroke patients

Healthcare providers ought to advocate for a collaborative care paradigm that incorporates memory and social support. This can be accomplished through the development of integrated care practises and guidelines. For stroke patients, integrated care can give comprehensive support. This model should be implemented as the standard of treatment in stroke rehabilitation by healthcare organisations.

Recommendation for Theory on the moderating effect of social support on the influence of memory functioning on quality of life in stroke patients

Longitudinal research on memory, social support, and quality of life in stroke patients should be supported by funding agencies and researchers. This can be accomplished by funding long-term studies that track these variables. This is because understanding the developing dynamics might help inform long-term care options. This should be done continuously because sustained support for longitudinal research is important.

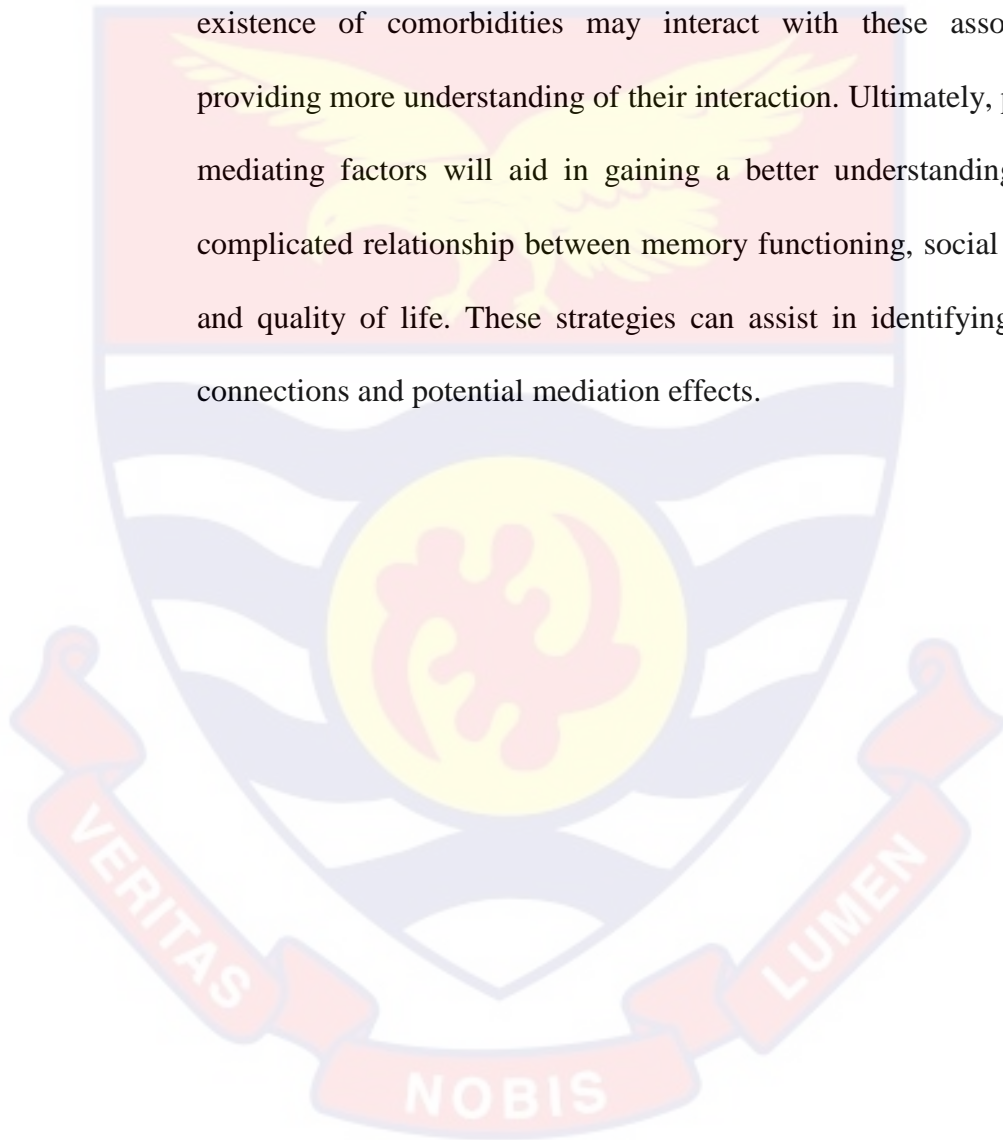
Suggestions for Further Studies

The suggestions for further research seek to enhance the awareness of the factors influencing the quality of life in stroke patients while providing useful information for healthcare professionals and policymakers to promote the well-being of this patient population. Based on the key findings of the study, which examined memory functioning, quality of life, social support, and the relationship between them in stroke patients, below are some specific suggestions for future research that can be derived:

1. Longitudinal studies can provide insights into the relationships between memory functioning, social support, and quality of life in stroke patients over a long period. Researchers can find patterns of change, potential predictors, and factors that contribute to long-term effects by evaluating these variables at several time points. A longitudinal analysis of memory functioning should be carried out to monitor variations in memory functioning within a longer time frame. Examining the variations in memory functioning, especially the

frequency of forgetting can develop and influence quality of life over time.

2. It is important to explore both mediating and moderating factors that could influence the relationships between memory functioning, quality of life, and social support. Factors such as age, stroke type, and the existence of comorbidities may interact with these associations, providing more understanding of their interaction. Ultimately, potential mediating factors will aid in gaining a better understanding of the complicated relationship between memory functioning, social support, and quality of life. These strategies can assist in identifying hidden connections and potential mediation effects.



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APPENDICES

APPENDIX A

RESEARCH INSTRUMENT

Informed Consent

I am Robertson Mensah-Diawuo, the principal researcher undertaking this scientific-based research and an M.Phil. Clinical Health Psychology student at the University of Cape Coast. This questionnaire is designed to elicit information on the “**Influence of Memory Functioning on Quality of Life in Stroke Patients: The Moderating Role of Social Support**”. Participation is voluntary, and you are assured that no information will be revealed to any third party without your consent. The researcher will protect your information and you will not be named in any of the research reports. The researcher also assures you that there will be no risks involved due to your participation in the study and that your responses will be used solely for the purpose.

If you are willing to participate in the study, kindly sign or thumbprint in the space below.

Signature of respondent.....

Date.....

Thank you for your consent.

SECTION A DEMOGRAPHIC INFORMATION

Respondents are required to please tick the appropriate responses.

1. Sex

a. Male []

b. Female []

2. Age.....

3. Marital Status

a. Married []

b. Single []

c. Divorced []

d. Widowed []

4. Level of Education

a. No formal education []

b. Basic education []

c. Secondary education []

d. Tertiary education []

5. Employment Status

a. Employed []

b. Unemployed []

c. Retired []

SECTION B

MEMORY FUNCTIONING QUESTIONNAIRE (MFQ)

This is a questionnaire about how you remember information. There are no right or wrong answers. Circle a number between 1 and 7 that best reflects your judgment about your memory. Think carefully about your responses, and try to be as realistic as possible when you make them. Please answer all questions.

	Statement	Major problems			Some minor problems			No problems
1	How would you rate your memory in terms of the kinds of problems that you have?	1	2	3	4	5	6	7
	How often do these present a problem for you?	Always			Sometimes			Never
2	Names	1	2	3	4	5	6	7
3	Faces	1	2	3	4	5	6	7
4	Appointments	1	2	3	4	5	6	7
5	Where you put things (e.g., keys)	1	2	3	4	5	6	7
6	Performing household chores	1	2	3	4	5	6	7
7	Directions to places	1	2	3	4	5	6	7
8	Phone numbers you've just checked	1	2	3	4	5	6	7
9	Phone numbers you use frequently	1	2	3	4	5	6	7
10	Things people tell you	1	2	3	4	5	6	7
11	Keeping up correspondence	1	2	3	4	5	6	7
12	Personal dates (e.g., birthdays)	1	2	3	4	5	6	7
13	Words	1	2	3	4	5	6	7
14	Going to the store and forgetting what you wanted to buy	1	2	3	4	5	6	7
15	Taking a test	1	2	3	4	5	6	7
16	Beginning to do something and forgetting what you were doing	1	2	3	4	5	6	7
17	Losing the thread of thought in conversation	1	2	3	4	5	6	7
18	Losing the thread of	1	2	3	4	5	6	7

	thought in public speaking							
19	Knowing whether you've already told someone something	1	2	3	4	5	6	7
	As you are reading a novel, how often do you have trouble remembering what you have read . . .	Always			Sometimes			Never
20	In the opening paragraphs, once you have finished the article	1	2	3	4	5	6	7
21	Three or four paragraphs before the one you are currently reading	1	2	3	4	5	6	7
22	The paragraph before the one you are currently reading	1	2	3	4	5	6	7
23	Three or four sentences before the one you are currently reading	1	2	3	4	5	6	7
24	The sentence before the one you are currently reading	1	2	3	4	5	6	7
	When you are reading a newspaper or magazine article, how often do you have trouble remembering what you have read . . .	Always			Sometimes			Never
25	In the opening paragraphs, once you have finished the article	1	2	3	4	5	6	7
26	Three or four paragraphs before the one you are currently reading	1	2	3	4	5	6	7
27	The paragraph before the one you are currently reading	1	2	3	4	5	6	7

28	Three or four sentences before the one you are currently reading	1	2	3	4	5	6	7
29	The sentence before the one you are currently reading	1	2	3	4	5	6	7
	How well do you remember things that occurred...	Very bad			Fair			Very good
30	Last month is	1	2	3	4	5	6	7
31	Between 6 months and 1 year, ago is	1	2	3	4	5	6	7
32	Between 1 and 5 years ago is	1	2	3	4	5	6	7
33	Between 6 and 10 years ago is	1	2	3	4	5	6	7
	When you forget in these situations, how serious of a problem do you consider the memory failure to be?	Very serious			Somewhat serious			Not serious
34	Names	1	2	3	4	5	6	7
35	Faces	1	2	3	4	5	6	7
36	Appointments	1	2	3	4	5	6	7
37	Where you put things (e.g., keys)	1	2	3	4	5	6	7
38	Performing household chores	1	2	3	4	5	6	7
39	Directions to places	1	2	3	4	5	6	7
40	Phone numbers you've just checked	1	2	3	4	5	6	7
41	Phone numbers used frequently	1	2	3	4	5	6	7
42	Things people tell you	1	2	3	4	5	6	7
43	Keeping up correspondence	1	2	3	4	5	6	7
44	Personal dates (e.g., birthdays)	1	2	3	4	5	6	7

45	Words	1	2	3	4	5	6	7
46	Going to the store and forgetting what you wanted to buy	1	2	3	4	5	6	7
47	Taking a test	1	2	3	4	5	6	7
48	Beginning to do something and forgetting what you were doing	1	2	3	4	5	6	7
49	Losing the thread of thought in conversation	1	2	3	4	5	6	7
50	Losing the thread of thought in public speaking	1	2	3	4	5	6	7
51	Knowing whether you've already told someone something	1	2	3	4	5	6	7
	How is your memory compared to the way it was	Much worse			Same			Much better
52	1 year ago?	1	2	3	4	5	6	7
53	5 years ago?	1	2	3	4	5	6	7
54	10 years ago?	1	2	3	4	5	6	7
55	20 years ago?	1	2	3	4	5	6	7
56	When you were 18?	1	2	3	4	5	6	7
	How often do you use these techniques to remind yourself about things?	Always			Sometimes			Never
57	Keep an appointment book	1	2	3	4	5	6	7
58	Write yourself reminder notes	1	2	3	4	5	6	7
59	Make lists of things to do	1	2	3	4	5	6	7
60	Make grocery lists	1	2	3	4	5	6	7
61	Plan your daily schedule in advance	1	2	3	4	5	6	7
62	Mental repetition	1	2	3	4	5	6	7
63	Associations with other things	1	2	3	4	5	6	7
64	Keep things you need to do in a prominent place where you will notice them	1	2	3	4	5	6	7

SECTION C

Stroke Specific Quality of Life Scale (SS-QOL)

Respondents are required to select the extent to which the following statements are true about them.

1= Strongly agree, 2= Moderately agree, 3= Neither agree nor disagree, 4= Moderately disagree, 5= Strongly disagree

	Statement	1	2	3	4	5
1	I felt tired most of the time					
2	I had to stop and rest during the day					
3	I was too tired to do what I wanted to do					
4	I didn't join in activities just for fun with my family					
5	I felt I was a burden to my family					
6	My physical condition interfered with my personal life					
7	Did you have trouble speaking? For example, get stuck, stutter, stammer, or slur your words.					
8	Did you have trouble speaking enough to use the telephone?					
9	Did other people have trouble understanding what you said?					
10	Did you have trouble finding the word you wanted to say?					
11	Did you have to repeat yourself so others could understand you?					
12	Did you have trouble walking? (If the patient can't walk, go to question 4 and score questions 2-3 as 1).					
13	Did you lose your balance when bending over to reach for something?					
14	Did you have trouble climbing stairs?					
15	Did you have to stop and rest more than you would like when walking or using a wheelchair?					
16	Did you have trouble standing?					
17	Did you have trouble getting out of a chair?					
18	I was discouraged about my future					
19	I wasn't interested in other people or activities					
20	I felt withdrawn from other people					
21	I had little confidence in myself					

22	I was not interested in food					
23	I was irritable					
24	I was impatient with others					
25	My personality has changed					
26	Did you need help preparing food?					
27	Did you need help eating? For example, cutting food or preparing food?					
28	Did you need help getting dressed? For example, putting on socks or shoes, buttoning buttons, or zipping?					
29	Did you need help taking a bath or a shower?					
30	Did you need help using the toilet?					
31	I didn't go out as often as I would like					
32	I did my hobbies and recreation for shorter periods than I would like					
33	I didn't see as many of my friends as I would like					
34	I had sex less often than I would like					
35	My physical condition interfered with my social life					
36	It was hard for me to concentrate					
37	I had trouble remembering things					
38	I had to write things down to remember them					
39	Did you have trouble writing or typing?					
40	Did you have trouble putting on socks?					
41	Did you have trouble buttoning buttons?					
42	Did you have trouble zipping a zipper?					
43	Did you have trouble opening a jar?					
44	Did you have trouble seeing the television well enough to enjoy a show?					
45	Did you have trouble reaching things because of poor eyesight?					
46	Did you have trouble seeing things off to one side?					
47	Did you have trouble doing daily work around the house?					
48	Did you have trouble finishing jobs that you started?					
49	Did you have trouble doing the work you used to do?					

SECTION D

Multidimensional Scale of Perceived Social Support

Instructions: We are interested in how you feel about the following statements.

Read each statement carefully.

Indicate how you feel about each statement.

Circle the “1” if you Very Strongly Disagree, Circle the “2” if you Strongly Disagree, Circle the “3” if you Mildly Disagree, Circle the “4” if you are Neutral, Circle the “5” if you Mildly Agree, Circle the “6” if you Strongly Agree, Circle the “7” if you Very Strongly Agree

	Statements	1	2	3	4	5	6	7
1	There is a special person who is around when I am in need							
2	There is a special person with whom I can share joys and sorrows							
3	My family tries to help me							
4	I get emotional help & and support I need from my family							
5	I have a special person who is a real source of comfort to me							
6	My friends try to help me							
7	I can count on my friends when things go wrong							
8	I can talk about my problems with my family							
9	I have friends with whom I can share my joys and sorrows							
10	There is a special person in my life who cares about my feelings							
11	My family is willing to help me make decisions							
12	I can talk about my problems with my friends							

THANK YOU FOR YOUR PARTICIPATION

APPENDIX B

INTRODUCTORY LETTER

UNIVERSITY OF CAPE COAST

COLLEGE OF EDUCATION STUDIES
FACULTY OF EDUCATIONAL FOUNDATIONS

DEPARTMENT OF EDUCATION AND PSYCHOLOGY

Telephone: 0332091697
Email: dep@ucc.edu.gh

UNIVERSITY POST OFFICE
CAPE COAST, GHANA

Our Ref: DEP/72^D/Vol. 1

6th October, 2022.

Your Ref:

The Chairman
Institutional Review Board
University of Cape Coast
Cape Coast

Dear Sir/Madam,

INTRODUCTION

I, Professor Mark Owusu Amponsah is the Head of Department of Education and Psychology, University of Cape Coast.

I wish to humbly indicate that, Mensah-Diawuo, Robertson with registration number EF/CHP/20/0006 is an MPhil (Clinical Health Psychology) student in the Department of Education and Psychology, University of Cape Coast.

I humbly request that you provide him with the necessary assistance. I hope this letter will be considered favourably.

Thank you.

Yours faithfully



Professor Mark Owusu Amponsah
HEAD

APPENDIX C

CLEARANCE LETTER FROM UCC ETHICAL REVIEW BOARD

UNIVERSITY OF CAPE COAST
COLLEGE OF EDUCATION STUDIES
ETHICAL REVIEW BOARD



UNIVERSITY POST OFFICER
CAPE COAST, GHANA

Our Ref: CES/ERB/ucc.edu.gh/106-22/55

Date: 14th July, 2022

Your Ref: _____

Dear Sir/Madam,

ETHICAL REQUIREMENTS CLEARANCE FOR RESEARCH STUDY

Chairman CES-ERB

Prof. J. O. Omotasho

jomotasho@ucc.edu.gh

0243784739

Vice Chairman, CES-ERB

Prof. K. Edjah

kedjah@ucc.edu.gh

0244742357

Secretary CES-ERB

Prof. Linda Dzama Forde

forde@ucc.edu.gh

0244786680

The bearer, Robertson Mewah-Djanwo

Reg. No. ET/CHP/20/10006

M.Phil./~~Ph.D~~ student in the Department of Education and

Psychology in the College of Education Studies

University of Cape Coast, Cape Coast, Ghana. He/She wishes to

Undertake of research study on the topic:

Influence of memory functioning on quality of
life in stroke patients: The moderating role
of social support

The Ethical Review Board (ERB) of the College of Education Studies (CES) has assessed his/~~her~~ proposal and confirmed that the proposal satisfies the College's ethical requirements for the conduct of the study.

In view of the above, the researcher has been cleared and given approval to commence his/~~her~~ study. The ERB would be grateful if you would give him/~~her~~ the necessary assistance to facilitate the conduct of the said research.

Thank You.

Yours faithfully,

Prof. Linda Dzama Forde
(Secretary, CES-ERB)

APPENDIX D

CLEARANCE LETTER FROM CCTH ETHICAL REVIEW BOARD

In case of reply the reference number and the date of this letter be quoted



P. O. Box CT.1363
Cape Coast
CC-071-9967
Tel: 03321-34010-14
Fax: 03321-34016
Website:
www.ccthghana.org
email:
info@ccthghana.com

Our Ref.: CCTH

Your Ref.:

4th January, 2023

Mr Robertson Mensah-Diawuo
Department of Education and Psychology
College of Education Studies
University of Cape Coast
Cape Coast

Dear Sir,

ETHICAL CLEARANCE – REF: CCTHERC/EC/2023/009

The Cape Coast Teaching Hospital Ethical Review Committee (CCTHERC) has reviewed your research protocol titled, "**Influence of Memory Functioning on Quality of Life in Stroke Patients: The Moderating Role of Social Support**" which was submitted for ethical clearance. The ERC is glad to inform you that you have been granted provisional approval for implementation of your research protocol.

The CCTHERC requires that you submit periodic review of the protocol and a final full review to the ERC on completion of the research. The CCTHERC may observe or cause to be observed procedures and records of the research during and after implementation.

Please note that any modification of the project must be submitted to the CCTHERC for review and approval before its implementation.

You are required to report all serious adverse events related to this study to the CCTHERC within ten (10) days in writing. Also note that you are to submit a copy of your final report to the CCTHERC office.

Always quote the protocol identification number in all future correspondence with us in relation to this protocol.

Yours sincerely,

Dr. Stephen Laryea
Medical Director
For: Chairman ERC