AWARENESS AND PERCEPTION OF THE ROLES OF PHYSIOTHERAPY IN STROKE MANAGEMENT AMONG COLLEGE OF MEDICAL SCIENCE STUDENTS IN UNIVERSITY OF BENIN.

BY

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CERTIFICATION

This dissertation by Daramola Temitope Joshua is accepted in its present form as satisfying the dissertation requirement of the degree of Bachelor of Physiotherapy of the School of Basic Medical Sciences, College of Medical Sciences, University of Benin.

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DEDICATION

I dedicate this work to Almighty God, my refuge, helper and salvation. To my parents, Mr. and Mrs. Daramola, myself, my siblings, family, and friends, for their love, prayers, and unwavering support throughout this incredible journey of my life.

ABSTRACT

Background/Purpose of the Study: Stroke remains one of the leading causes of death and long-term disability globally, with its burden particularly high in low and middle-income countries such as Nigeria. It requires a comprehensive multidisciplinary approach for effective management. Physiotherapy plays a vital role in restoring mobility, promoting functional independence, and improving quality of life for stroke survivors. However, awareness and perception of its importance among students in other health-related disciplines may remain inadequate. Understanding these perceptions is crucial in promoting interprofessional collaboration and strengthening patient-centered rehabilitation practices. Therefore, this study aimed to assess the level of awareness and perception of the roles of physiotherapy in stroke management among College of Medical Sciences students, University of Benin. The study also explored the influence of gender, department, and academic level on awareness and perception.

Methods: A descriptive cross-sectional survey was conducted among 295 undergraduate students (300 level and above) from seven departments within the College of Medical Sciences. A self-administered structured questionnaire adapted from validated instruments was used to collect data on knowledge, awareness, and perception of physiotherapy in stroke management. Data were analyzed using descriptive statistics such as frequency, mean, and percentage, while chi-square tests were used to determine associations at a 0.05 level of significance.

Results: Over half of the respondents (52.2%) demonstrated good knowledge of physiotherapy, and 84.7% showed good understanding of both medical and physiotherapy aspects of stroke management. The majority acknowledged that physiotherapists are essential in restoring mobility and functional independence in stroke survivors. No statistically significant associations were found between knowledge and gender, department, or academic level. The major sources of information on physiotherapy and stroke management were social media (16.6%), lectures (14.3%), and online medical articles (12.4%).

Conclusion: The study concludes that most college of medical science students at the University of Benin possess a good level of awareness and positive perception of the role of physiotherapy in stroke management. However, some misconceptions persist, highlighting the need for improved educational exposure and interprofessional learning opportunities. Integrating physiotherapy awareness into medical curricula and leveraging digital health education platforms could foster better collaboration among future healthcare providers and enhance stroke rehabilitation outcomes.

Keywords: Stroke, Physiotherapy, Awareness, Perception, College of Medical Science.

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CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

The World Health Organization (WHO) defines stroke as "rapidly developing clinical signs of focal (or global) disturbance of cerebral function, with symptoms lasting 24 hours or longer or leading to death, with no apparent cause other than vascular origin" (Feigin et al., 2025). According to the World Stroke Organization (WSO, 2022), one in four individuals aged 25 and older is projected to experience a stroke in their lifetime. Globally, low- and middle-income countries (LMICs) account for 70% of all strokes and 85% of stroke-related deaths (Aguirre et al., 2023).

The Global Burden of Disease (GBD) 2019 report identified stroke as the second leading cause of death and the third leading cause of combined death and disability worldwide. In 2017, there were an estimated 9.53 million stroke survivors in the European Union, with projections indicating a rise to approximately 12.11 million by 2047—an increase of 27% (Wafa et al., 2020). In Africa, the stroke incidence is reported at 316 per 100,000 people, while in Nigeria, it stands at 26 per 100,000 annually (Akinyemi et al., 2021). The growing prevalence of stroke across Nigeria and other African countries is closely linked to epidemiological and demographic transitions (Adeloye, 2014), driven largely by rural-to-urban migration and rapid economic development (Adeloye et al., 2019). Although stroke is a major health concern due to its high rates of mortality, disability, and recurrence, the

complications that follow a stroke are often even more alarming than the initial event itself (Guo et al., 2021).

Stroke impact nearly 13 million new individuals annually (Aguirre et al., 2023). While outcomes have significantly improved in high-income countries over recent decades, low- and middle- income countries have not experienced the same progress (Aguirre et al., 2023). This disparity is partly attributed to limited awareness and knowledge of stroke-related risk factors and management strategies in sub-Saharan Africa (Boateng et al., 2017). Additionally, barriers such as inadequate healthcare infrastructure, shortages of trained healthcare professionals, limited access to diagnostic tools, and delayed presentation to health facilities further compound the challenges in stroke prevention, timely diagnosis, and effective treatment in the region.

One of the first line of management of stroke is medications (Marto et al., 2017). In cases of ischaemic stroke, some of these medications are designed to dissolve existing clots, prevent the formation of new ones, and lower the risk of stroke recurrence (Goldstein, 2014). In the case of haemorrhagic stroke, treatment primarily focuses on relieving the pressure caused by bleeding in the brain and controlling elevated blood pressure. Commonly used medications include diuretics, beta-blockers, and angiotensin-converting enzyme (ACE) inhibitors (Martin and Kessler, 2015).

The goal of these acute medical interventions is to stabilize the patient, control intracranial bleeding, regulate blood pressure, and minimize further damage to brain tissue (Wang et al., 2025).

However, stroke survivors often experience a range of complications, including reduced functional abilities, muscle weakness, joint contractures, impaired balance and coordination, dysphagia, and dysarthria (Kim et al., 2017). These complications collectively hinder their ability to return to normal functional activities and perform activities of daily living independently.

Stroke is a key public health concern worldwide, and Nigeria has one of the highest stroke mortality rates in Africa (Ognlana et al., 2023). In the rehabilitation of stroke survivors, Physiotherapy play a vital role in the management and rehabilitation of stroke survivors. Physiotherapists play a frontline role in managing the complications associated with stroke and are key to the rehabilitation of stroke survivors (Luker et al., 2015). They address each complication using evidence-based practices aimed at reducing rehospitalization, lowering mortality rates, and enhancing the overall quality of life for individuals affected by stroke (Alatawi et al., 2021; Okonkwo et al., 2024). Their involvement extends beyond outpatient care to include critical intervention during the acute stage of stroke, ensuring a continuum of care from the earliest phase of recovery through long-term rehabilitation. Akinyemi et al. (2019) in their recent study emphasized the need for improved awareness and perception of physiotherapy role in the management of stroke survivors among healthcare professionals.

Raising awareness about physiotherapy roles in stroke survivors is crucial for the early reversal of the complications associated with chronic conditions like stroke (Liu et al., 2020). The World Health Organization emphasizes the importance of promoting education and awareness about disease conditions and risk factors, driving efforts to inform and empower individuals and communities. In university settings, students from non-physiotherapy disciplines in college of medical science may hold misconceptions or lack sufficient knowledge about the scope and significance of physiotherapy in stroke. Such gaps in awareness could affect interdisciplinary collaboration, referral practices, and overall perceptions of the physiotherapy profession.

1.2 Statement of the Problem

Despite the significant role physiotherapy play in the rehabilitation and overall management of stroke survivors, there remains a concerning lack of awareness and understanding of their contributions among non-physiotherapy students in college of medical science, particularly in university settings such as the University of Benin. This gap in knowledge may lead to undervaluing the importance of physiotherapy in stroke care, potentially influencing future health-related decisions, collaboration across disciplines, and advocacy for comprehensive rehabilitation services. In a country like Nigeria, where stroke prevalence and mortality remain high, and where multidisciplinary care is critical to improving outcomes, limited perception of physiotherapy' roles can hinder efforts to provide holistic care. Therefore, there is a pressing need to investigate the awareness and perception of the roles of physiotherapy in stroke management among college of

medical science students at the University of Benin, in order to inform educational strategies and promote interdisciplinary respect and collaboration in future healthcare environments.

1.2.1 Research question(s)

i. What is the level of awareness among college of medical science students at the University of Benin regarding the roles of physiotherapy in the management of stroke?

ii. What are the perceptions of college of medical science students about the contributions of physiotherapy to stroke management?

iii. Are there significant differences in awareness and perception based on students' gender, departments, level of study?

1.3 Aim of Study

To investigate the awareness and perception of the roles of physiotherapy in stroke management among college of medical science students at the University of Benin.

1.3.1 Specific Objectives

i. To assess the level of awareness of college of medical science clinical students regarding the roles of physiotherapy in stroke management.

ii. To evaluate the perception of college of medical science clinical students towards the effectiveness and importance of physiotherapy in stroke recovery.

iii. To identify sources of information through which college of medical science students learn about physiotherapy and its roles in stroke management.

iv. To examine the influence of demographic factors (such as age, gender, level of study, and faculty) on college of medical science students' awareness and perception of physiotherapy.

v. To determine the gaps or misconceptions college of medical science clinical students may have about physiotherapy in stroke management.

1.4 Hypotheses

1.4.1 Main Hypothesis

There would be no significant difference in the awareness and perception of the roles of physiotherapy in stroke management based on the gender of college of medical science students at the University of Benin.

1.4.2 Sub-Hypotheses

i. There would be no significant difference in the awareness and perception of the roles of physiotherapy in stroke management based on the department of college of medical science students at the University of Benin.

ii. There would be no significant difference in the awareness and perception of the roles of physiotherapy in stroke management based on the level of study of college of medical science students at the University of Benin.

1.5 Scope the of Study

The study was delimited to college of medical science students at the University of Benin who are enrolled in non-physiotherapy medical-related programs in college of medical science. It specifically targeted students from the following departments: Medicine and Surgery, Medical Laboratory Science (MLS), Dentistry, Anatomy, Nursing, Medical Biochemistry (MBC) and Radiography.

1.6 Limitations of the study

i. The study focused exclusively on undergraduate students within the college of medical sciences at the University of Benin. As such, the results may not represent perceptions of students from other Universities.

ii. The sample size limitations; the intended sample size, as calculated using Slovin's formula, was 338 participants. However, only 295 responded, yielding a response rate of approximately 87%.

iii. Limited scope of measurement; the questionnaire primarily assessed awareness and perception, without evaluating practical knowledge, clinical application or behavioural intention toward physiotherapy and stroke management.

1.7 Significance of the Study

i. Promotes awareness: The result of this study will enhance understanding of the vital roles physiotherapy play in the management of stroke patients among college of medical science students.

ii. Informs curriculum development: The result of the study will provide insight that could support the integration of basic physiotherapy knowledge into general health education in universities.

iii. Fills a knowledge gap: Provides empirical data on the level of awareness and perception of roles of physiotherapy in stroke management among college of medical science students, a topic with limited existing research.

1.8 Definition of terms

i. **Stroke Management:** This includes all medical and rehabilitative care given to a person who have suffered a stroke, aimed at reducing the brain damaged, preventing complications, and promoting recovery.

ii. **Physiotherapy:** A healthcare profession focused on promoting physical function, mobility, and overall well-being through physical interventions such as exercise, manual therapy, and education. In stroke rehabilitation, physiotherapy aims to restore movement, strength, coordination, and independence.

iii. **Perception:** The way individuals interpret, understand, and form opinions about a particular concept or role based on their knowledge, experiences, or beliefs. In this context, it refers to how other college medical science students view or understand the role of physiotherapy in stroke management.

iv. **Awareness:** The level of knowledge or familiarity individuals have about a subject or issue. In this study, it refers to the extent to which students are informed about the functions, responsibilities, and significance of physiotherapists in managing stroke survivors.

CHAPTER TWO

LITERATURE REVIEW

2.1 Definition of Stroke

In previous decades, the World Health Organization (WHO) defined stroke as the rapid onset of clinical symptoms indicating a localized or generalized disruption in brain function lasting more than 24 hours or leading to death, with no apparent cause other than of vascular origin (WHO, 1971). However, the American Heart Association/American Stroke Association has since deemed this definition outdated. This is due to its exclusive focus on clinical symptoms and the significant progress in understanding the timing, nature of strokes, their mimicry in other conditions, and advancements in imaging techniques. Consequently, an updated definition is considered necessary (Coupland *et al.*, 2017). American Heart Association/American Stroke Association stroke defined as the irreversible death of brain, spinal cord, and retinal cells due to vascular causes, supported by radiological, pathological, or other objective evidence of ischemic cell death in these areas (AHA/ASA, 2013).

2.1.1 Epidemiology of Stroke

The recent Global Burden of Disease (GBD) 2019 report highlighted that stroke remains as the second leading cause of death and the third leading cause of both death and disability combined. Each year, it is estimated that over 15 million individuals worldwide suffer from a stroke. Among them, at least 5 million dies as a result of stroke, while an additional 5 million are left permanently disabled,

creating significant challenges for their caregivers (Grysiewicz *et al.*, 2008). Prior studies in 2005 revealed that 87% of these stroke-related deaths occurred in low and middle-income countries. Without effective interventions, projections suggest that by 2030, approximately 23 million people will have experienced their first stroke, resulting in an estimated 7.8 million deaths (Strong *et al.*, 2007; Mukherjee and Patil, 2011). In 2017, it was estimated that there were around 9.53 million stroke survivors in the European Union and projections suggest that by the year 2047, this number could increase significantly to about 12.11 million, indicating a relative rise of 27% (Wafa *et al.*, 2020).

The prevalence of stroke, typically associated with aging, is expected to increase substantially in the coming years, mainly due to the annual growth of around 9 million individuals aged over 65 worldwide (Mukherjee and Patil, 2011). In Africa, the occurrence of stroke is 316 per 100, 000 individuals, while in Nigeria it was reported to be 26 per 100,000 individuals annually (Akinyemi *et al.*, 2021). Stroke has emerged as the leading cause of adult neurological admissions in various studies conducted within the West African sub-region, constituting as much as 65 percent of such admissions (Ekenze, 2010). Additionally, it stands out as the primary reason for admissions linked to hypertension-related issues, contributing to 40% of hypertensive complications (Onwuchekwa and Chinenye, 2010).

Research on the epidemiology of stroke in Nigeria has been limited. Enwereji *et al.* (2014) reported a prevalence of stroke at 1.63 per 1,000 population in 2011. They found a higher prevalence in males, reaching 1.99 per 1,000 compared to females at 1.28 per 1,000 population. In a study conducted by Adeloye *et al.* (2019), the annual incidence of stroke in Nigeria was reported at 26.0/100,000 population, with a higher rate observed among men (34.1/100,000 population per year) compared to women (21.2/100,000 population per year). Additionally, Adeloye *et al.* (2019) noted that the prevalence of stroke survivors in Nigeria was 6.7/1000 population of stroke victims, with a higher prevalence among men (6.4/1000) compared to women (4.4/1000 population of stroke victims). Furthermore, Adeloye *et al.* (2019) highlighted regional disparities, indicating that the prevalence of stroke survivors was highest in the South-south region at 13.4/100,000 population and among rural dwellers at 10.8/100,000.

2.2 Relevant Anatomy

2.2.1 The Brain

The brain serves as the central control system for nearly all physiological and cognitive functions in the human body. Its intricate workings elevate humans beyond all other species, governing and coordinating various bodily processes. Protected by the sturdy skull, the brain is a delicate organ susceptible to damage from severe brain injuries, compression caused by tumours, or oxygen deprivation due to either a cerebral artery blockage or rupture (Moore *et al.*, 2017). This complex organ not only regulates bodily functions but also enables higher

cognitive abilities, making it an essential element in shaping human capabilities and experiences.

2.2.2 Parts of the Brain

The brain is divided into three basic parts, which include the cerebrum, cerebellum and brainstem.

I. Cerebrum

The right and left cerebral hemispheres are the two main divisions of the cerebrum, which makes up the majority of the brain. Often referred to as the brain in its whole, the great longitudinal fissure is a noticeable groove that divides the brain into these hemispheres (Moore *et al.*, 2017). The corpus callosum connects these hemispheres at the base, enabling message transfer and communication between the two parts of the brain. The cerebral cortex is made up of billions of neurons and glial cells that are located on the surface of the cerebrum.

The cerebral cortex, which is the outermost layer, has a grayish-brown appearance and is sometimes referred to as "gray matter." Sulci, which are tiny grooves, fissures, which are bigger grooves, and gyri, which are elevated areas in between these grooves, give the surface an appearance of being convoluted. The cerebral cortex's surface area is greatly increased by this delicately folded structure, which enhances the brain's ability to process information and form more synaptic connections.

II. Cerebellum

The cerebellum, situated at the posterior part of the brain beneath the occipital lobes and separated from the cerebrum by the tentorium (a dural fold), plays a crucial role in refining motor activities. It is instrumental in controlling fine movements, such as the intricate finger movements involved in surgery or painting. Additionally, the cerebellum contributes to maintaining posture, equilibrium, and balance by regulating muscle tone and limb positioning (Moore *et al.*, 2017).

An essential function of the cerebellum involves enabling rapid and repetitive actions. When abnormalities occur on the right side of the cerebellum, symptoms manifest on the corresponding side of the body. This brain region is pivotal in regulating and coordinating somatic motor abilities, adjusting muscle tone, and ensuring the smooth, synchronized, and precise actions of muscles.

While historically debated, current perspectives suggest that the cerebellum might also play a role in various other behaviors beyond motor control. These potential roles encompass motor learning, cognitive tasks, memory, emotional processing, and language functions (Bruni, 2009). Ongoing research continues to explore and expand our understanding of the diverse contributions an

d functionalities of the cerebellum beyond its traditional association solely with motor control.

III. Brainstem

The brain stem acts as the vital conduit linking the forebrain (comprising the cerebral hemispheres and diencephalon) to the spinal cord, encompassing three primary divisions: the midbrain, the pons, and the medulla oblongata (Bruni, 2009).

The midbrain, situated as the most rostral and shortest section of the brainstem, measuring approximately 2cm in length, resides between the diencephalon above and the pons below, extending through the tentorial incisure. Noteworthy is the presence of nuclei originating cranial nerves III and IV within the midbrain (Bruni, 2009; Bhuiyan *et al.*, 2014).

The posterior surface of the midbrain is distinguished by the presence of two small pairs of eminences each approximately 7mm in diameter, known collectively as midbrain colliculi. The slightly larger and more flattened rostral pairs are the superior colliculi, the more caudal pairs are the inferior colliculi. (Bruni, 2009; Bhuiyan *et al.*, 2014).

The anterior aspect of the midbrain has two large bundles of fibres. These are seen on each side of the midline. These are the cerebral peduncles. They are separated by a deep fissure. (Bruni, 2009; Bhuiyan *et al.*, 2014).

The pons, a stout segment of the brain stem, spans 2.5cm in length and is situated between the midbrain above and the medulla oblongata below. It occupies the posterior cranial fossa on the clivus, positioned anteriorly to the cerebellum. Notably, within the pons reside nuclei associated with cranial nerves V, VI, VII, and VIII (Bruni, 2009; Bhuiyan *et al.*, 2014). The anterior aspect of the pons appears convex and is distinguished by prominent transversely running fibers. The trigeminal nerve emerges from this surface, marking the boundary between the pons and the middle cerebellar peduncle. Additionally, the abducent nerve emerges just above the pyramid and runs upward in proximity to the anterior surface. The facial and vestibulocochlear nerves emerge from the space between the olive and the pons (Bruni, 2009; Bhuiyan *et al.*, 2014).

On the posterior aspect, the pons forms the upper portion of the floor of the fourth ventricle. Within this region lie the facial, vestibulocochlear, and glossopharyngeal nerves, the nervus intermedius, and occasionally, the labyrinthine arteries (Bruni, 2009; Bhuiyan *et al.*, 2014).

The medulla oblongata widens at its upper connection with the pons and tapers down toward its continuity with the spinal cord. Approximately 3cm in length and 2cm in width at its upper end, the medulla is subdivided into a lower closed part enclosing the central canal and an upper open part related to the lower portion of the fourth ventricle.

Its anterior aspect features the pyramid—an elevated area situated between the anterior median fissure and the anterolateral sulcus. Rootlets of the hypoglossal nerve, glossopharyngeal nerve, vagus nerve, spinal accessory nerve, and the inferior cerebellar peduncle are notable in this region (Bhuiyan *et al.*, 2014).

2.2.3 Arterial blood supply to the brain

The brain, a vital organ in the human body, relies on a complex network of arteries to ensure a continuous and adequate blood supply, crucial for its proper functioning. The arterial blood supply to the brain is primarily facilitated by two main paired arteries—the internal carotid arteries and the vertebral arteries—along with their branches, which merge to form the cerebral arterial circle, also known as the Circle of Willis.

I. The Internal Carotid Arteries

The internal carotid arteries, originating from the common carotid arteries in the neck, ascend through the carotid canals of the skull base to enter the cranial cavity. These arteries then divide into two branches: the anterior cerebral artery (ACA) and the middle cerebral artery (MCA). The ACA supplies blood to the medial aspects of the frontal and parietal lobes, while the MCA primarily nourishes the lateral surfaces of these lobes, including areas involved in motor and sensory functions, language, and vision.

II. Vertebral arteries

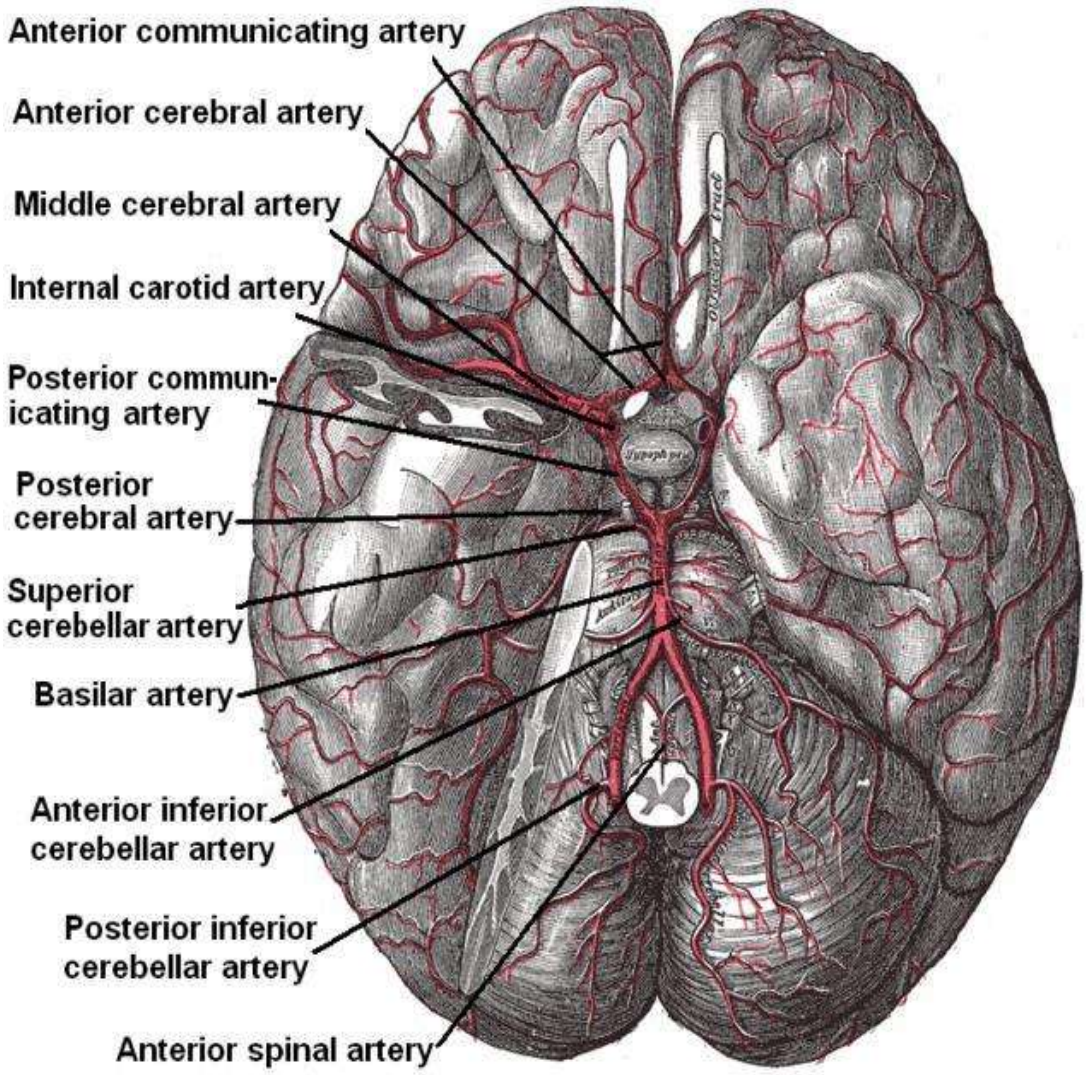
The vertebral arteries arise from the subclavian arteries and ascend through the transverse foramina of the cervical vertebrae, entering the cranial cavity through the foramen magnum. These arteries converge to form the basilar artery, which supplies blood to the brainstem and the posterior aspects of the brain. The basilar artery gives rise to important branches such as the posterior cerebral arteries (PCAs) that provide blood to the occipital lobes and parts of the temporal and inferior parietal lobes.

2.2.3.1 Circle of Willis

Thomas Willis provided a comprehensive anatomical description of the arterial connections at the base of the brain, enveloped by cerebrospinal fluid, which he named the Circle of Willis (CW) (Vrselja *et al.*, 2014). This intricate vascular structure is closely associated with various neighboring anatomical features such as the optic chiasma, tuber cinereum, mammillary bodies, and the posterior perforated substance (Bhuiyan *et al.*, 2014).

Willis's work on the Circle of Willis highlighted its functional significance as a compensatory mechanism in instances of occlusion or narrowing of the internal carotid artery or vertebral artery (Vrselja *et al.*, 2014; Rosner *et al.*, 2023). This vascular arrangement serves a crucial role in maintaining cerebral blood flow and minimizing potential damage or ischemia caused by restricted blood supply to the brain.

The Circle of Willis acts as a vital safety net, offering an alternate route for blood to reach different parts of the brain, particularly in cases where there is a blockage or reduced blood flow through one of the major arteries supplying the brain (Rosner *et al.*, 2023). By redistributing blood through its interconnected network of arteries, the Circle of Willis aids in maintaining adequate perfusion to critical brain regions, thereby helping to mitigate the impact of vascular insufficiencies or blockages. The cerebral arterial circle, a critical structure at the base of the brain, interconnects the major arteries supplying the brain and acts as a safety net, ensuring collateral circulation in case of arterial blockages or disruptions (Rosner *et al.*, 2023). This network helps maintain cerebral blood flow and serves as a protective mechanism to mitigate potential ischemic damage. The intricate arrangement and redundancy in the arterial blood supply to the brain, via the internal carotid and vertebral arteries and their branches forming the Circle of Willis, play a pivotal role in sustaining the brain's metabolic demands and overall functionality, underscoring the importance of this intricate vascular system in preserving brain health and function.



The brain and arteries at base of the brain with Circle of Willis is formed near center. Adopted from Rosner *et al.* (2023) Neuroanatomy, Circle of Willis.

2.3 Types of Stroke

Ischemic stroke is the most prevalent type, accounting for over 80% of all stroke cases, while haemorrhagic stroke constitutes less than 20% (Grysiewicz *et al.*, 2008). However, there's ongoing debate among researchers regarding these percentages. A study highlighted a significant increase in the occurrence of haemorrhagic stroke within a specific population compared to earlier reports

(Shiber *et al.*, 2010). This rise was attributed to enhanced accessibility and utilization of CT scans. It's noteworthy that haemorrhagic stroke carries a higher mortality rate compared to ischemic stroke (Andersen *et al.*, 2009).

2.3.1 Ischaemic Stroke

Ischemic stroke, also termed cerebral infarction, is the most prevalent type of stroke characterized by diminished oxygen supply to brain tissues due to inadequate blood flow (Martin & Kessler, 2015).

There are two subtypes of ischemic stroke:

I. **Thrombotic Stroke:** This type of ischemic stroke stems from the development of a thrombus within the cerebral arteries, predominantly caused by atherosclerosis. Accumulation of plaque in arterial walls narrows the artery lumen, reducing blood flow and restricting oxygen delivery to cerebral regions. If the plaque completely blocks the vessel, the tissue supplied by the artery can undergo cerebral infarction (Martin & Kessler, 2015).

II. Embolic Stroke: Embolic stroke arises from the formation of a thrombus in extracerebral arteries that travels to and lodges within the lumen of cerebral arteries. The lodged embolus can obstruct a brain blood vessel, resulting in tissue damage. These strokes are commonly associated with cardiovascular diseases, particularly atrial fibrillation (Martin & Kessler, 2015).

2.3.2 Haemorrhagic Stroke

Haemorrhagic stroke occurs due to the rupture of a blood vessel, leading to bleeding within the brain. This type of stroke can be categorized into two main subtypes: intracerebral hemorrhage (ICH), involving bleeding into the brain tissue, and subarachnoid hemorrhage (SAH), which involves bleeding into the subarachnoid space. Haemorrhagic stroke is linked with significant morbidity and carries a high mortality rate (Chen *et al.*, 2014).

The progression of a haemorrhagic stroke often leads to poorer outcomes. Timely diagnosis and treatment are crucial due to the usual rapid expansion of the haemorrhage, causing sudden declines in consciousness and neurological function (Unnithan *et al.*, 2023).

In the United States, the United Kingdom, and Australia, haemorrhagic strokes constitute 8-15% of all stroke cases, while in Japan and Korea, this percentage rises to 18-24%. The annual incidence is estimated to be around 12-15 cases per 100,000 individuals (An *et al.*, 2017). Notably, lower and middle-income countries, as well as Asian populations, tend to have higher incidences of this type of stroke. Haemorrhagic strokes are more prevalent in men and the likelihood increases with age (Unnithan *et al.*, 2023).

2.4 Risk Factors of Stroke

Stroke is a complex ailment influenced by various factors rather than a single cause, much like many other neurological conditions. These factors are categorized into modifiable and non-modifiable risk factors.

2.4.1 Modifiable risk factors

i. Hypertension

Hypertension stands as a critical public health concern and represents the primary modifiable risk factor for stroke. It accounts for more than half of all strokes globally (Lawes, 2001). Notably, hypertension is particularly significant in relation to hemorrhagic stroke. The American Heart Association defines hypertension as systolic blood pressure values greater than 140 mm Hg or diastolic blood pressure values greater than 90 mm Hg. About 90-95% of hypertension cases result from genetic predisposition or lifestyle factors (Carretero, 2001). To address this issue, the American Stroke Association/American Heart Association (ASA/AHA) suggests regular blood pressure screenings to promptly detect any elevation in blood pressure and identify its underlying causes.

ii. Diabetes

Diabetes mellitus encompasses a group of metabolic disorders where the body either inadequately produces insulin or fails to respond effectively to it, leading to elevated levels of glucose in the blood (hyperglycemia). The accumulation of glucose in diabetes can trigger hyperglycemia, characterized by abnormally high blood sugar levels. Prolonged hyperglycemia can induce pathological changes and harm blood vessels, elevating the risk of stroke, particularly when the cerebral vessels are affected (Chen *et al.*, 2016). In diabetic individuals, a fasting blood glucose level exceeding 125 mg/dL is indicative of the condition (Villegas-Valverde, 2018). It's crucial to manage diabetes effectively as a preventive

measure against initial stroke occurrences. Uncontrolled diabetes significantly increases an individual's susceptibility to both ischemic and haemorrhagic stroke. Controlling blood sugar levels through proper management of diabetes is essential in mitigating the risk of stroke development. Implementing measures to regulate glucose levels can significantly contribute to reducing the likelihood of experiencing a stroke.

iii. Smoking

Tobacco smoking stands as a significant modifiable risk factor for cerebrovascular diseases (Ambrose, 2004; Shah and Cole, 2010). Approximately 15% of stroke-related deaths per year are attributed to smoking (Thun *et al.*, 2000). The mechanisms linking tobacco smoking to vascular injury encompass inflammation, endothelial damage, infection, and the generation of free radicals within blood vessels, potentially leading to stroke over time. Observational studies reveal a substantial reduction in the risk of developing vascular diseases after several months of smoking cessation, with the risk being eliminated after around 5 years (Wolf *et al.*, 1988).

iv. Obesity

Obesity is a multifaceted condition characterized by an excess accumulation of body fat, often defined as having a body mass index (BMI) greater than 30 kg/m², as per the World Health Organization (WHO). Over recent decades, its prevalence has surged significantly, becoming a paramount global public health concern. Obesity exhibits a direct correlation with cardiovascular diseases like stroke. Implementing positive lifestyle changes alone can notably reduce the risk of developing cerebrovascular diseases such as stroke by up to 55% (Kurth *et al.*, 2006; Horn *et al.*, 2021). Lowering the risk of obesity involves engaging in physical activity and exercise, adopting a nutritious diet rich in fruits and vegetables, shedding excess weight, and modifying lifestyle habits by reducing alcohol consumption and quitting smoking.

v. Hyperlipidaemia

Hyperlipidemia is a medical condition characterized by elevated levels of cholesterol in the body, posing a significant risk factor for strokes caused by atherosclerosis in both the extra cranial and intracranial blood arteries (Tirschwell *et al.*, 2004). Individuals diagnosed with hyperlipidemia are encouraged to manage their weight, follow healthy dietary practices, and engage in regular exercise. Additionally, pharmacological interventions like statins are employed to reduce cholesterol levels. Various trials and meta-analyses have shown that patients taking statins to lower cholesterol have a reduced likelihood of developing cardiovascular complications (Silverman *et al.*, 2016).

vi. Physical Inactivity and Sedentary Lifestyle

Recent observational studies have established a connection between a sedentary lifestyle and the risk of stroke and other cardiovascular diseases. Engaging in a sedentary lifestyle can compromise cardiopulmonary health, thereby increasing the risk of stroke. Moderate to high-intensity exercise has demonstrated remarkable effectiveness in stroke prevention. Beyond preventing stroke, moderate-intensity exercise has shown promise in reducing other risk factors contributing to stroke, such as hypertension, hyperlipidaemia, obesity, and diabetes (Manson *et al.*, 1999).

vii. Alcohol Intake

The consumption of alcohol has been directly associated with haemorrhagic stroke. Heavy alcohol consumption can elevate the risk of stroke by potentially leading to hypertension (Ohira, 2009). Reducing alcohol intake stands as a crucial preventive measure to minimize the likelihood of experiencing a first-time stroke. Decreasing alcohol consumption significantly contributes to reducing the risk of stroke occurrence.

2.4.2 Non-Modifiable Risk Factors

i. Age

Advanced age is a non-modifiable risk factor for stroke. Risk increases with age due to the cumulative effect of other risk factors. As individuals grow older, changes occur in blood vessels, increasing susceptibility to stroke (Sacco *et al.*, 2013).

ii. Gender

Gender differences influence stroke risk. Men tend to have a higher risk at younger ages, while women's risk increases post-menopause. Hormonal fluctuations and differences in risk factors contribute to this variation (Glymour *et al.,* 2009). Disparities in stroke risk and outcomes between genders have been linked to several factors, encompassing variations in hormone levels, genetic predispositions, and lifestyle choices like smoking and physical inactivity (Petrea *et al.*, 2009). Specifically, men tend to exhibit a higher prevalence of smoking and other detrimental behaviors that elevate their susceptibility to stroke (Petrea *et al.*, 2009). Conversely, women might face unique stroke risk factors such as conditions related to pregnancy (Abdu and Seyoum, 2022).

iii. Race/Ethnicity

Variations in stroke risk among different racial and ethnic groups exist. African Americans have a higher incidence of stroke due to a combination of genetic, socioeconomic, and healthcare disparities (Howard, 2001).

iv. Family History

Individuals with a family history of stroke are at higher risk. Genetic predispositions and shared lifestyle factors contribute to this heightened risk (Meschia *et al.*, 2014). Consistent findings highlight family history as a significant risk factor for stroke. Research indicates that having a family history of stroke can

elevate the risk by as much as 50% (Meschia *et al.*, 2014). This increased risk seems to stand independently of other factors like hypertension or smoking. Moreover, the likelihood of experiencing a stroke is notably higher when a first-degree relative, such as a parent or sibling, has a history of stroke (Meschia *et al.*, 2014).

2.5 Prevention of stroke

The American Heart Association (AHA) and American Stroke Association (ASA) (Bushnell et al., 2024) emphasize a comprehensive approach to stroke prevention, which includes lifestyle modifications, medical management, and consideration of social determinants of health. The key prevention strategies are listed below:

i. Blood Pressure Management: High blood pressure has been associated with increase risk of developing stroke. Regular screening and control of high blood pressure are crucial, as hypertension is a significant risk factor for stroke.

ii. Cholesterol and Blood Sugar Control: Monitoring and managing elevated cholesterol and blood sugar levels can reduce stroke risk. Cholesterol and blood sugar level can be controlled effectively through medications such as statins for lowering cholesterol and metformin to lower sugar levels for diabetic patients.

iii. Healthy Diet: Adopting a Mediterranean-style diet, rich in fruits, vegetables, whole grains, and healthy fats, is recommended to lower stroke

risk. Poor diet has been linked with increase in developing stroke especially high consumption of salt intake.

iv. Physical Activity: American Heart Association recommended engaging in at least 150 minutes of moderate-intensity aerobic activity per week is advised to promote cardiovascular health and this is one of the most effective ways of lowering the risk of developing stroke.

v. Smoking Cessation: Smoking has been associated with an increased risk of developing stroke. Avoiding tobacco use is essential, as smoking significantly increases stroke risk.

vi. Sleep Health: Ensuring adequate and quality sleep is highlighted as a factor in stroke prevention. Sleeping helps promotes adequate relaxation and can lower blood pressure which is one of the major causes of stroke.

vii. Weight Management: Maintaining a healthy weight through diet and exercise is emphasized to reduce stroke risk. Weight management can be achieved through proper dieting and engaging in adequate physical activity or exercise.

viii. Social Determinants of Health: Addressing factors such as education, economic stability, and access to healthcare is important in a comprehensive stroke prevention strategy.

ix. Sex-Specific Risk Factors: Women should be screened for unique risk factors, including the use of oral contraceptives and pregnancy-related complications.

2.6 Signs and Symptoms of Stroke

The American Heart Association/American Stroke Association (AHA/ASA) outline the signs and symptoms of stroke for both haemorrhagic and ischemic strokes. Ischemic stroke commonly manifests with abrupt onset of facial, arm, or leg weakness or numbness, difficulty speaking or understanding speech, vision disturbances, dizziness, loss of balance and coordination, and intense headaches (Johnston *et al.*, 2018).

On the other hand, haemorrhagic stroke is characterized by a sudden and severe headache, accompanied by symptoms such as nausea, vomiting, facial, arm, or leg weakness or numbness, seizures, and loss of consciousness (Johnston *et al.*, 2018).

Additional symptoms that might indicate a stroke encompass dysarthria (difficulty speaking), dysphagia (trouble swallowing), sensory deficits, cognitive impairment, hemineglect (neglect of one side of the body), thalamic pain syndrome (persistent pain in the thalamus region), and pusher syndrome (a condition causing a person to

push away from the weaker side) (Martin & Kessler, 2015). The FAST Acronym (for both Ischemic and Hemorrhagic strokes) has been a major identifier for stroke according to the World Health Organization. Face drooping, Arm weakness, Speech difficulty and Time to call emergency services if any of these signs are observed.

2.7 Diagnosis of Stroke

Stroke can be diagnosed through a combination of medical history, physical examination, and various diagnostic tests to determine the type, location, and extent of the stroke.

i. Medical history

Gathering information about the patient's medical history, risk factors (like hypertension, diabetes), family history of stroke, and current medications is crucial. Physical Examination:

ii. Physical examination

Physical examination involves neurological Examination such as assessing motor skills, reflexes, sensation, coordination, and vision to detect any neurological deficits. This also involve checking vital signs such as checking blood pressure, heart rate, and other vital signs to identify any irregularities or fluctuations.

iii. Radiological test

Radiological test using recent technology can be used to diagnose stroke across all age group and the commonly used imaging test are:

A. **CT Scan (Computed Tomography):** Often the initial imaging choice to distinguish between ischemic and hemorrhagic strokes and rule out other conditions like tumors or hemorrhages.

B. **MRI (Magnetic Resonance Imaging):** Provides detailed images of the brain to detect ischemic areas and identify the type and extent of the stroke.

C. **CT Angiography:** Used to visualize blood vessels in the brain to identify blockages or abnormalities.

iv. Laboratory tests

Laboratory tests play a crucial role in confirming the diagnosis of stroke, excluding alternative causes, and aiding treatment decisions. Among these tests, a complete blood count (CBC) stands as one of the frequently utilized ones. It assists in detecting conditions like anemia, thrombocytopenia, and other blood disorders that could potentially contribute to the occurrence of a stroke (Mehta, 1984).

Another significant test is the coagulation profile, which helps identify any irregularities in blood clotting. These abnormalities may heighten the risk of stroke or impact the patient's response to anticoagulant therapy (Watson *et al.*, 2009).

2.8 Management of stroke

2.8.1 Medical Management of stroke

Medications like tissue plasminogen activator (tPA), Heparin, warfarin, and Aspirin are commonly administered to ischemic stroke patients. These medications aim to dissolve clots, prevent further clot formation, and reduce the risk of recurrence (Goldstein, 2014). Treatment for haemorrhagic stroke focuses on alleviating pressure on the brain caused by bleeding and managing high blood pressure in the blood vessels. Medications such as diuretics, beta-blockers, and angiotensin-converting enzyme inhibitors are often utilized for these purposes (Martin & Kessler, 2015).

This acute medical intervention aims to stabilize the patient's condition, control bleeding, manage blood pressure, and prevent further damage to the brain tissue. Individualized treatment plans are essential based on the patient's specific condition and medical history.

2.8.2 Surgical Management

i. Decompressive Hemicraniectomy: This surgical intervention entails the removal of a sizable bone flap from the skull, followed by the placement of a dural patch. This procedure aims to alleviate increased intracranial pressure resulting from extensive brain damage due to infarction (Doberstein *et al.*, 2017).

ii. Open Craniotomy: This surgical approach involves removing a portion of the skull bone to access and evacuate the bleeding within the brain. It's performed to manage intracerebral haemorrhage (Zuccarello *et al.*, 1999).

iii. Stereotaxic Aspiration: Utilizing CT guidance, a catheter is inserted through a small opening in the skull to reach and evacuate deep-seated bleeding in the brain. This procedure is employed when the bleeding is located in the deeper regions of the brain (Zuccarello *et al.*, 1999).

iv. Carotid Endarterectomy: This surgical procedure involves removing plaque buildup that causes the narrowing of the carotid artery. It is performed to restore proper blood flow through the artery (Doberstein *et al.*, 2017).

These surgical interventions are crucial in managing the complications of stroke by alleviating pressure, removing obstructions, and addressing bleeding within the brain. They are considered in specific cases and are tailored to the individual's condition and the type of stroke.

2.8.3 Physiotherapy management

Rehabilitative physiotherapy's main goal is to lessen impairment and disabilities so that stroke victims can resume their regular self-care and daily activities as independent as possible (Dobkin & Dorsch, 2013). There are different physiotherapy approaches or concepts that have been developed to manage stroke patients.

Generally, physiotherapy techniques in stroke management include;

i. Strengthening exercise: Stroke often results in muscle weakness and impaired motor function. Strengthening exercises are an integral part of stroke rehabilitation to help regain muscle strength, improve mobility, and enhance functional abilities. These exercises should be tailored to each individual's specific needs, abilities, and stage of recovery. These exercises typically involve repetitive and progressive resistance training to target specific muscle groups affected by stroke-related weakness. The exercises may focus on both the upper and lower extremities, depending on the individual's impairments (Dobkin & Dorsch, 2013).

ii. Constraint-induced movement therapy (CIMT): CIMT seeks to counteract "learned non-use" by restricting the movement of the unaffected limb while intensively training the affected limb. By doing so, it encourages the use and relearning of motor skills in the affected limb, promoting functional recovery (Dobkin & Dorsch, 2013).

iii. Functional electrical stimulation (FES): Functional Electrical Stimulation (FES) is a therapeutic technique used in stroke rehabilitation to improve muscle strength, mobility, and functional abilities. It involves the use of electrical stimulation to activate specific muscles or muscle groups that may have been weakened or paralyzed due to stroke. FES can help individuals regain movement and improve motor control. Electrodes are placed on the skin over the targeted

muscles or nerve pathways. When electrical impulses are delivered, they trigger muscle contractions, helping paralyzed or weakened muscles to contract and perform movements (Dobkin & Dorsch, 2013).

iv. Balance and coordination training: Balance and coordination training are crucial interventions in stroke management as stroke often leads to compromised balance, coordination, and postural control. These deficits substantially affect functional abilities and escalate the risk of falls. These specialized training programs encompass exercises designed to address particular balance and coordination impairments. These exercises typically focus on aspects like weight shifting, static standing balance, and dynamic stability to enhance these essential skills in stroke survivors (Dobkin & Dorsch, 2013).

v. Proprioceptive Neuromuscular facilitation (PNF): PNF is a rehabilitation technique used in physical therapy to improve motor function, strength, and mobility in stroke patients. It involves patterns of movement and diagonal patterns of resistance to facilitate motor learning and enhance neuromuscular control. PNF exercises for stroke rehabilitation typically focus on functional movements and often involve a therapist guiding the patient through specific patterns of movement. These techniques can be applied to various body parts, such as the upper and lower extremities, depending on the individual's impairments (Dobkin & Dorsch, 2013).

vi. Sustained Passive Stretching (SPS): Stroke often leads to muscle spasticity and limited joint mobility. SPS involves prolonged stretching of muscles and connective tissues to enhance relaxation, increase muscle length, improve joint range of motion, and subsequently enhance functional outcomes (Dobkin & Dorsch, 2013).

vii. **Mirror Therapy:** This intervention employs a mirror to create an illusion of movement in the affected limb by reflecting the movement of the unaffected limb. By stimulating mirror neurons and fostering neuroplasticity, mirror therapy aids in retraining the brain, facilitating motor learning, and fostering the recovery of motor function (Dobkin & Dorsch, 2013).

viii. Virtual Reality (VR): VR-based interventions utilize immersive computer-generated environments for motor and cognitive rehabilitation. These interactive and engaging environments facilitate motor learning, provide sensory feedback, and engage cognitive processes. Customizable and realistic virtual settings can enhance motivation, attention, and active participation in rehabilitation activities. VR offers a stimulating platform for stroke rehabilitation, promoting functional recovery through engaging and customizable experiences (Dobkin & Dorsch, 2013).

2.9 Empirical Review of Literature on Awareness and Perception of the roles of Physiotherapy

AUTHOR/ YEAR/COUNTRY	TITLE	SAMPLE SIZE	AIM OF STUDY	STUDY TYPE	OUTCOME/MEASURE	FINDINGS/LIMITATIONS
Abaraogu et al., 2019 / Nigeria	Knowledge, Attitudes, and the Practice of Health Promotion among Physiotherapists in Nigeria	To determine the level of knowledge and practices of health promotion among physiotherapists in Nigeria	299 physiotherapists	Cross sectional design	A self-developed questionnaire	A total of 229 physiotherapists (62%) responded to the survey. The majority (approximately 70%) demonstrated good knowledge of health promotion, with 63% reporting that they frequently incorporated health promotion into patient treatment. However, fewer than one-fifth strongly agreed that their entry-level education adequately covered health promotion and provided them with the necessary skills.

Alhaki et al., 2022 / Nigeria	Stroke-related knowledge and attitudes among university students in Northeast Nigeria	To determine the level of knowledge and attitudes towards stroke among university students	844 participants	Cross sectional design survery	A self-developed questionnaire	Only 15.7% of participants correctly identified the brain as the primary site of stroke. Awareness of at least one stroke warning sign was observed in 42.2% of participants, while 49.6% recognized one or more risk factors. The mean knowledge score was 1.08 ± 0.99. Overall, 13.2% demonstrated adequate knowledge of stroke, with a higher percentage among females (17.7% vs. 10.7%; P = 0.01).
Alhenki et al., 2024 / Saudi Arabia	Assessing the Awareness and Practices of Physical Therapists in Managing Modifiable Risk Factors for Stroke in Saudi Arabia	To evaluate physical therapists' knowledge in Saudi Arabia on managing modifiable stroke risk factors and their prioritizatio	384 physical therapists	Cross sectional design	A self-developed questionnaire that assesses awareness and practices of physical therapist in managing modifiable risk factors for stroke	The survey results indicate that although most physical therapists in Saudi Arabia have a strong understanding of stroke risk factors, certain knowledge gaps remain. The uncertainty among a notable percentage of respondents regarding

		n of stroke prevention.				the connection between specific risk factors and stroke underscores the importance of continuous education and training in this area.
Ibikunle et al., 2019 / Nigeria	Perceived barriers to evidence-based practice in stroke management among physiotherapists in a developing country	To determine factors that affects evidence based practice in stroke management among physiotherapists in Nigeria	170 physiotherapists	Cross sectional design study	The Practitioner and Organizational Barriers to Evidence-based Stroke Rehabilitation Questionnaire was used to collect data on EBP among the physiotherapists.	The most commonly reported barriers included insufficient time (47.6%), lack of information resources (42.9%), lack of organizational mandate (42.9%), limited research skills (30.6%), and difficulty in critically appraising literature (29.4%). Despite these challenges, most participants had received formal training in evidence-based practice (EBP), held positive attitudes and beliefs about EBP, were confident in their ability to implement it,

						recognized their role in the process, and were eager to develop and enhance the necessary skills for effective implementation.
Rivzi et al., 2023 / Saudi Arabia	Knowledge, Attitude, and Practice of Stroke and Its Risk Factors and Warning Signals Among the Students of the College of Applied Medicine at Majmaah University, Saudi Arabia	To evaluate knowledge, attitude, and practice of stroke and its risk factors and warning signals among the students of the college of applied medicine	284 students	Cross sectional design	A pre validated questionnaire that assess KAP of stroke and its risk factors	The majority of participants (230; 81%) recognized stroke as a medical emergency. Knowledge levels varied, with 54.2% scoring poorly, 40.5% demonstrating satisfactory knowledge, and only 5.3% achieving a good score. Attitudes toward stroke were divided, with 44% displaying positive attitudes and 56% showing negative attitudes. High blood pressure (82.7%) and high cholesterol levels (72.5%) were the most commonly identified risk factors, while diabetes (34.5%) and irregular heartbeat

						(33.1%) were the least recognized risk factors.
Syed et al., 2023 / Saudi Arabia	Evaluation of knowledge of risk factors and warning signs of stroke – An observational study among future health care professional	To determine the level of knowledge regarding risk factors and warning signs of stroke	205 healthcare students	Cross sectional design	A self-administered 34-item questionnaire, divided into five sections, was used to assess participants' knowledge of stroke risk factors, warning signs, management, and sources of information about stroke.	Regarding risk factors, students most commonly identified high blood pressure (182; 88.8%), followed by heart disease (175; 85.4%), advanced age (164; 80%), previous stroke history (158; 77.1%), and lack of physical activity (156; 76.1%). As for stroke warning signs, difficulty in speaking or slurred speech was recognized by 164 students (80%), while dizziness and loss of balance were identified by 163 students (79.5%).

CHAPTER THREE

MATERIALS AND METHODS

3.1 Material

3.1.1 Population

The study included full time undergraduates at the University of Benin who are enrolled in non-physiotherapy medical-related programs in college of medical science. Undergraduates was recruited from the following departments: Medicine and Surgery, Medical Laboratory Science (MLS), Dentistry, Anatomy, Nursing, Medical Biochemistry (MBC) and Radiography.

3.1.2 Selection Criteria

3.1.2.1 Inclusion Criteria

i. Full time undergraduates of University of Benin studying Medicine and Surgery, Medical Laboratory Science (MLS), Dentistry, Anatomy, Nursing, and Radiography.
ii. Undergraduates who were in 300 level and above
iii. Participants aged 18 years and above.
iv. Those who could provide informed consent to participate in the study.

3.1.2.2 Exclusion Criteria

i. Post graduate (Master's degree) students of the University of Benin.
ii. Physiotherapy students

3.1.3 List of Instruments

i. A self-administered questionnaire.

3.1.4 Description of Instrument

i. A self-administered questionnaire was used to assess Awareness and Perception of the roles of physiotherapy in stroke management: A structured, researcher-adapted questionnaire derived from standardized tools previously validated in sub-saharan Africa settings (Bolarinde *et al., 2020;* Okonkwo *et al., 2025*) designed to assess the awareness, knowledge and perception of roles of physiotherapy in stroke management.

The questionnaire is divided into the main sections:

- SECTION A: Socio-demographic information (first name, age, sex, department, and academic level etc.)
- SECTION B: Knowledge of Physiotherapy Service (involves physiotherapy definition, clinic setup, techniques and conditions treated)
- SECTION C: Perceived knowledge of medical and physiotherapy stroke management (medical and physiotherapy roles in stroke management)

3.2 Methods

3.2.1 Research Design

This research adopted a cross sectional study.

3.2.2 Sampling Techniques

Purposive sampling was used to recruit respondents for this study.

3.2.3 Sample Size

Sample size was calculated using the formula;

$n=N / (1+N[e]^2)$ (Slovin's Formula).

The total number of students in each department from 300 level and above was collected and a total number (N) was determined and sample size was calculated using Slovin's formula to get an appropriate sample of the population.

$n=N / (1 + N [e]^2)$

n is the sample size

N is the population size

e is the margin of error

With a population size of N=2170 and a margin error of e=0.05, we calculated the sample size using the Slovin's formula as:

n= 2170 / (1 + 2170(0.05^2))

n≈338

Therefore, the sample size required for this study is approximately 338 participants.

3.2.4 Ethical consideration

Ethical approval for this study was obtained from the Health Research Ethics Committee of the University of Benin, in accordance with institutional guidelines. Informed consent was obtained from all participants prior to data collection, ensuring their voluntary participation and understanding of the study.

3.2.5 Procedure for data collection

All participants who met the inclusion criteria was recruited into the study using a convenient sampling technique. Prior to participation, informed consent was obtained from each participant after providing detailed information about the study. The researcher clearly explained the study's objectives, procedures, potential risks, and benefits to ensure that participants fully understand their involvement and rights, including the right to withdraw at any stage without penalty.

Following consent, participants was invited to complete a set of standardized questionnaires. These included:

1. A structured sociodemographic questionnaire, designed to gather relevant background information such as age, gender, department, and level of study; and
2. A self-administered questionnaire specifically designed to assess participants' awareness and perception of the roles of physiotherapy in stroke management.

To ensure data quality and prevent loss of completed questionnaires, all forms was collected immediately upon completion. Each questionnaire was reviewed briefly on-site to ensure completeness and accuracy before the participant was dismissed. The collected data was stored securely and treated with strict confidentiality, with only the researcher and authorized personnel having access to it.

3.2.6 Data analysis

The was analysed using the International Business Machine (IBM) Statistical Package for Social Sciences (SPSS) version 27.0. Descriptive statistics of frequency, mean and standard deviation and percentages was used to summarize participant's socio-demographic variables (gender, age, level and department). Awareness and Perception of college of medical science students was presented with frequency and percentage while inferential statistics was used to determine the differences in level of awareness and perception between groups with p level set at 0.05.

CHAPTER FOUR

RESULTS

4.1 Demographic characteristics of study participants

A total of 295 clinical students participated in the study. The largest age group was 21–25 years (53.6%), and females made up a slight majority (52.2%) of the sample. By department, Medicine accounted for the single largest share of participants (19.7%), while most students were in level 300 (55.9%) as shown in table 1.

4.2 Perceived level of knowledge of physiotherapy among college of medical science students

When asked to define physiotherapy, the most common response was "a healthcare profession focused on restoring movement and function" (73.2%). Nearly all respondents identified that physiotherapy is practiced by physiotherapists (87.8%). Regarding what a physiotherapy unit contains, the modal response was "a section for manual treatments using bandages, tapes and splints" (58.3%). For where physiotherapy services are obtained, government hospitals were cited most often (73.6%), and the most frequently selected treatments were electrotherapy and exercise therapy (66.8%). When asked when to consult a physiotherapist, the commonest answer was "when there is pain arising in any body part" (53.2%). Musculoskeletal conditions were the condition most frequently associated with physiotherapy use (68.5%), as presented in table 2.

Table 1: Demographic Characteristics (n=295)

Variable	Frequency (n)	Percentage (%)
Gender		
Male	141	47.8
Female	154	52.2
Total	295	100.0
Age Range (Years)		
15 – 20	120	40.7
21 – 25	158	53.6
26 – 30	15	5.1
Above 30	2	0.7
Total	295	100.0
Department		
Anatomy	46	15.6
Dentistry	43	14.6
MCB	33	11.2
Medicine	58	19.7
MLS	33	11.2
Nursing	29	9.8
Physiology	28	9.5
Radiography	25	8.5
Total	295	100.0
Level		
300	165	55.9
400	89	30.2
500	39	13.2
600	2	0.7
Total	295	100.0

Table 2: Perceived level of knowledge of physiotherapy among college of medical science clinical students (n=295).

Questions	Answers	Frequency	%
Physiotherapy is	A healthcare profession focused on restoring movement and function	216	73.2
	A specialization that carry out surgery to correct disabilities	37	12.5
	A healthcare profession that majorly prescribe medication to relieve pain	54	18.3
	A specialty that involves assessing, diagnosing and treatment of physical impairments.	154	52.2
Physiotherapy is	Practiced by the doctors	29	9.8
	A branch of acupuncture	26	8.8
	Practiced by masseurs	42	14.2
	Practiced by Physiotherapist	259	87.8
A Physiotherapy unit contains	A gymnasium with exercising machines, gym balls and other equipment	163	55.3
	Electrical modalities	141	47.8
	a section for manual treatments using bandages, tapes and splints	172	58.3
	A therapeutic pool	106	35.9
Places where the physiotherapy services can be gotten	Private clinics	178	60.3
	Government hospitals	217	73.6
	Private hospitals	190	64.4
	Sport centers	140	47.5
	NGOs	91	30.8
Physiotherapy treatments include	Manual therapy	179	60.7
	Ice/Heat therapy	137	46.4
	Hydrotherapy	146	49.5
	Electrotherapy and exercise therapy	197	66.8
	Oral medication	54	18.3
Do you know when to meet a physiotherapist?	When you have an injury	82	27.8
	When there is pain arising in any body part with or without a known cause	160	54.2
	When you feel pain or discomfort in any	96	32.5

	of the sporting technique		
	When you have fever or flu.	89	30.2
	When you muscle pain, weakness or paralysis	106	35.9
When a sport injury happens, physiotherapy,	Involves reducing the pain	143	48.5
	Can be used to improve the quality of muscles	157	53.2
	Helps to regain the full motion of the joints as it was before the injury	190	64.4
	Helps to prevent complications after injury	192	65.1
Uses of physiotherapy in any other conditions than in sport injuries	Neurological conditions (stroke, Parkinson)	185	62.7
	Musculoskeletal conditions (Osteoarthritis and other joint problems)	202	68.5
	Pediatric conditions (Cerebral palsy, Injection palsy)	169	57.3
	Chest conditions (Bronchitis)	121	41.0

4.3 Overall levels of knowledge (summary scores)

Using the study's knowledge classification, good knowledge was the modal category: 154 (52.2%) of respondents were classified as having good knowledge about physiotherapy, as shown in table 3.

4.4 Perceived effectiveness and importance of physiotherapy in stroke management

Table 4 reveals that participants largely agreed that physiotherapy is central to stroke management. Majority agreed that management of stroke in hospital is time-sensitive (46.8% agree; 30.2% strongly agree), and most respondents agreed/strongly agreed that the primary goal of physiotherapy is to improve mobility and functional independence. Participants also affirmed the need for regular monitoring of vital signs in stroke patients and that physiotherapists play a major role in hospital stroke management; overall attitude toward the role of physiotherapy in stroke was positive (grand mean $\approx 3.78 \pm 0.54$).

Table 3: Knowledge of physiotherapy among college of medical science clinical students (n=295).

Level of knowledge	Frequency (n)	Percentage (%)
Poor (0 - 2.44)	93	31.5
Fair (2.5 - 3.44)	48	16.3
Good (3.5 - 5.0)	154	52.2

Table 4: Perceived knowledge of college of medical science clinical students towards the effectiveness and importance of physiotherapy in stroke management (n=295).

Variable	Strongly Disagree (%)	Disagree (%)	Neutral (%)	Agree (%)	Strongly Agree (%)	Mean ± SD
Management of stroke in hospital is a time sensitive procedure	35 (11.9)	9 (3.1)	24 (8.1)	138 (46.8)	89 (30.2)	3.89 ± 1.24
Brain imaging is not a necessary diagnostic investigation in stroke management	76 (25.8)	108 (36.6)	40 (13.6)	41 (13.9)	30 (10.2)	3.54 ± 1.29
Tissue plasminogen activator can be used in the management of both types of stroke.	17 (5.8)	42 (14.2)	133 (45.1)	83 (28.1)	20 (6.8)	2.84 ± 0.95
Stroke surgical procedures majorly targets the heart	65 (22.0)	96 (32.5)	73 (24.7)	49 (16.6)	12 (4.1)	3.52 ± 1.13
There is need for regular monitoring of the blood pressure and respiratory rate of stroke patients in the hospital	24 (8.1)	20 (6.8)	33 (11.2)	102 (34.6)	116 (39.3)	3.90 ± 1.23
Physiotherapists play a major role in hospital management of stroke patients	11 (3.7)	11 (3.7)	14 (4.7)	126 (42.7)	133 (45.1)	4.22 ± 1.0
The primary goal of physiotherapy is to improve mobility and functional independence	7 (2.4)	9 (3.1)	16 (5.4)	103 (34.9)	160 (54.2)	4.36 ± 0.90

Paralysis or weakness of one side of the body is a common symptom of stroke that physiotherapy aim to address	8 (2.7)	9 (3.1)	19 (6.4)	116 (39.3)	143 (48.5)	4.28 ± 0.92
Physiotherapists mainly improves recovery of stroke patients through heat and electrical therapeutic devices	19 (6.4)	26 (8.8)	58 (19.7)	122 (41.4)	70 (23.7)	3.67 ± 1.12
Physical therapy stroke management intervention should be discontinued once post-stroke patient is discharged from hospital	67 (22.7)	106 (35.9)	41 (13.9)	54 (18.3)	27 (9.2)	3.45 ± 1.27
Management of stroke involves a multi-systematic approach by different medical specialists	22 (7.5)	16 (5.4)	31 (10.5)	121 (41.0)	105 (35.6)	3.92 ± 1.16

Grand mean = 3.78 ± 0.54 SD

4.5 Knowledge about medical and physiotherapy stroke management

When knowledge about both medical and physiotherapy aspects of stroke management was examined, the majority had good knowledge: 250 (84.7%) scored in the "good" category for this specific domain, as shown in table 5.

4.6 Association between level of knowledge and sociodemographic variables

Cross-tabulation of knowledge categories with sociodemographic factors showed that good knowledge predominated across groups, and there were no statistically significant associations between knowledge level and gender ($\chi^2 = 1.42$, $p = 0.49$), department ($\chi^2 = 3.60$, $p = 0.51$) or academic level ($\chi^2 = 6.19$, $p = 0.47$), as presented in table 6.

4.7 Predominant sources of information on stroke management practice

The single most frequently reported source of information was social media platforms (n = 49; 16.6%), followed by lectures/classroom teaching (n = 42; 14.3%) and medical articles online (n = 37; 12.4%) as shown in table 7.

Table 5: Knowledge about medical and physiotherapy stroke management (n=295).

Level of knowledge	Frequency (n)	Percentage (%)
Poor (0 - 2.44)	4	1.4
Fair (2.5 - 3.44)	41	13.9
Good (3.5 - 5.0)	250	84.7

Table 6: Cross tabulation of level of knowledge and socio-demographics (n=295)

Sociodemographics	Poor Knowledge (%) n = 4	Fair Knowledge (%) n = 41	Good Knowledge (%) n = 250	X^2	P-value
Gender					
Male	3 (75.0)	21 (51.2)	117 (46.8)		
Female	1 (25.0)	20 (48.8)	133 (45.2)		
				1.42	**0.49**
Department					
Anatomy	1 (25.0)	3 (7.3)	42 (16.8)		
Dentistry	0 (0.0)	11 (26.8)	32 (12.8)		
MCB	0 (0.0)	2 (4.9)	31 (12.4)		
Medicine	0 (0.0)	10 (24.4)	48 (19.2)		
MLS	1 (25.0)	5 (12.2)	27 (10.8)		
Nursing	1 (25.0)	6 (14.6)	22 (8.8)		
Physiology	1 (25.0)	2 (4.9)	25 (10.0)		
Radiography	0 (0.0)	2 (4.9)	23 (9.2)		
				3.6	**0.51**
Level					
300	3 (75.0)	20 (48.8)	142 (56.8)		
400	0 (0.0)	13 (31.7)	76 (30.4)		
500	1 (25.0)	8 (19.5)	30 (12.0)		
600	0 (0.0)	0 (0.0)	2 (0.8)		
				6.19	**0.47**

Table 7: Predominant source of information on stroke management practice (n=295).

Source of Information	Frequency (n)	Percentage (%)
Radio	10	3.6
Television	27	9.1
Social media platforms	49	16.6
Friends/Peers	30	10.2
Family members	25	8.4
Counselling from medical specialists	23	7.8
Counselling from traditional practitioners	3	1.0
Informal meetings	12	4.0
Medical articles online	37	12.4
Lectures/Classroom teaching	42	14.3
Health campaigns/seminars/workshops	25	8.5
Newspapers/Magazines	12	4.1

4. 8 Hypothesis Testing

4.8.1 Main hypothesis

Statement: There would be no significant difference in the awareness and perception of the roles of physiotherapy in stroke management based on the gender of College of Medical Sciences students at the University of Benin.

Test statistics: Cross-tabulation and chi-square test (see Table 6). $\chi^2 = 1.42$, $p = 0.49$, $\alpha = 0.05$**.**

Judgment: The p-value (0.49) is greater than α (0.05); therefore I fail to reject the null hypothesis. There is no significant difference in awareness and perception of the roles of physiotherapy in stroke management between male and female students.

4.8.2 Sub-hypothesis 1

Statement: There would be no significant difference in the awareness and perception of the roles of physiotherapy in stroke management based on the department of College of Medical Sciences students at the University of Benin.

Test statistics: Cross-tabulation and chi-square test (see Table 6). $\chi^2 = 3.60$, $p = 0.51$, $\alpha = 0.05$**.**

Judgment: The p-value (0.51) is greater than α (0.05); therefore I fail to reject the null hypothesis. There is no significant difference in awareness and perception of the roles of physiotherapy across departments.

4.8.3 Sub-hypothesis 2

Statement: There would be no significant difference in the awareness and perception of the roles of physiotherapy in stroke management based on the level of study of College of Medical Sciences students at the University of Benin.

Test statistics: Cross-tabulation and chi-square test (see Table 6). $\chi^2 = 6.19$, $p = 0.47$, $\alpha = 0.05$.

Judgment: The p-value (0.47) is greater than α (0.05); therefore I fail to reject the null hypothesis. There is no significant difference in awareness and perception of the roles of physiotherapy between study levels.

CHAPTER FIVE

DISCUSSION, CONCLUSION AND RECOMMENDATIONS

5.1 Discussion

This study examined the level of awareness, knowledge, and perception of physiotherapy particularly in stroke management among college of medical students at the University of Benin. The findings reveal that the majority of respondents had a reasonably strong foundational understanding of physiotherapy. More than half of the respondents (52.2%) were classified as having good knowledge of the field, indicating that physiotherapy is recognized not just as a profession but as a vital component of patient care. The findings of this study are consistent with previous study from Varghese et al. (2012) and Odebiyi et al. (2008) who reported that majority of college of medical science students demonstrate a good knowledge of the role of physiotherapy among medical professionals. Most participants correctly defined physiotherapy and associated it with its core goals, such as restoring movement and function. However, some misconceptions still persist for example, 18.3% of the respondents wrongly associated physiotherapy with medication prescription, and 12.5% misidentified it as a surgical specialization. This mixed understanding aligns with previous studies highlighting inconsistent awareness of physiotherapy's role among non-physiotherapy medical students (Odebiyi et al., 2008; Abaraogu et al., 2019). These gaps may stem from a lack of structured interprofessional learning

opportunities, underscoring the need for more formal exposure to physiotherapy within medical training (Reeves et al., 2016).

The students generally showed a positive perception of the role of physiotherapy in stroke management. With a grand mean score of 3.78 ± 0.54, there was general agreement that physiotherapists are key players in stroke management, particularly in promoting mobility and functional recovery. This finding agrees with a previous study conducted in Nigeria by Vincent-Onabajo et al. (2014) who reported a high-level awareness and perception among medical students about the role of physiotherapists. However, another study in Zambia by Zangata et al. (2019) among medical students shows that majority of the participants were unable to correctly identify the role of physiotherapists in the management of neurological conditions such as stroke, a result which contradicts the findings of the result of this study. Furthermore, most respondents recognized the importance of timely intervention and the necessity of regular monitoring, affirming that stroke care is a multidisciplinary endeavor (Karki and Manandhar, 2024). Notably, 84.7% of respondents demonstrated good knowledge in both medical and physiotherapy aspects of stroke management. This high score suggests that academic exposure to stroke-related content has been effective. It also implies that most students understand the practical role of physiotherapists in addressing paralysis, functional deficits, and post-stroke recovery (Kayola et al., 2022).

Furthermore, the result of the study found no statistically significant relationship between level of knowledge and gender, academic level, or department. This finding suggests a relatively uniform exposure to physiotherapy-related information across the student population, indicating that educational opportunities and access to relevant information may be fairly consistent irrespective of demographic or academic differences. It also implies that the dissemination of physiotherapy knowledge within the institution is likely equitable and not confined to specific subgroups. However, this uniformity could also point to a general need for enhanced, targeted educational interventions to further improve the overall knowledge base of students beyond the current standard exposure.

Interestingly, social media was the most cited source of stroke-related information (16.6%), followed by classroom teaching and online articles. This reflects an ongoing shift in the way medical students access learning materials, with informal platforms now rivaling traditional academic sources (Devittori et al., 2024). While digital tools offer flexibility, their content is often unregulated, raising concerns about accuracy. This underscores the need for institutions to guide students toward credible, peer-reviewed resources. Additionally, lectures and classroom teaching were identified as another major source of knowledge and awareness regarding the role of physiotherapy in stroke management. This highlights the importance of formal academic instruction in shaping students' understanding of physiotherapy practices and underscores the value of integrating comprehensive, evidence-based

stroke rehabilitation content into the curriculum to enhance learning outcomes (Kato et al., 2017).

5.2 Conclusion

This study revealed that non-physiotherapy medical students in college of medical science at the University of Benin possess a generally good level of awareness and perception of physiotherapy in stroke management. The majority of participants demonstrated an accurate understanding of physiotherapy's role in restoring movement, improving function, and contributing to multidisciplinary stroke care. The findings of the study showed there was no significant differences in the level of awareness and perception regarding role of physiotherapy in stroke management among sex, departments or academic level. Overall, the findings underscore that physiotherapy is well-recognized among clinical students as an integral aspect of patient recovery, especially for neurological conditions like stroke.

5.3 Implication of study

The results highlight several important implications for healthcare education and interprofessional collaboration:

i. Curriculum Development: The generally positive perception and knowledge level among students suggest that existing training programs effectively introduce physiotherapy concepts. However, the persistence of misconceptions points to the need for more integrated,

interprofessional modules that clarify physiotherapy's distinct role in patient care.

ii. Knowledge Dissemination: The prominence of social media as a learning source underscores the shifting landscape of medical education. Institutions should harness digital platforms to promote credible, evidence-based physiotherapy information, ensuring accuracy and accessibility.

iii. Equitable Learning Exposure: The lack of significant demographic differences suggests that physiotherapy-related knowledge dissemination is relatively uniform. This provides a foundation for developing institution-wide educational interventions that build on existing awareness to promote deeper understanding and clinical application.

5.4 Recommendations

i. Integrate Physiotherapy Modules: Introduce compulsory physiotherapy-focused sessions or seminars within non-physiotherapy curricula, emphasizing stroke rehabilitation and multidisciplinary teamwork.

ii. Enhance Interprofessional Learning: Develop joint workshops or simulation-based learning experiences involving medical, nursing, and physiotherapy students to promote collaboration and clarify role boundaries.

iii. Leverage Digital Platforms: Encourage the use of verified digital learning tools and institutional social media pages to share accurate physiotherapy information and best practices.

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APPENDICES

INFORMED CONSENT

Dear Sir/Madam,

My name is DARAMOLA TEMITOPE JOSHUA, a final year student of the Department of Physiotherapy, Basic medical science I am conducting a study on the ‘‘Awareness And Perception Of The Roles Of Physiotherapy In Stroke Management Among College Of Medical Science Students In University Of Benin” This study is in partial fulfilment of the requirements for the award of a Bachelor of Physiotherapy degree.

I hereby solicit your cooperation in completing this questionnaire. Kindly note that all information provided will remain confidential and will be used solely for the purpose of this research. Your name will not be required and will not be linked with any information provided. Participation in this study is entirely voluntary, and you may withdraw at any point without consequence.

Please answer all questions as sincerely as possible.

Thank you for your participation.

Consent: Now that this study has been explained to me and I understand the nature and purpose, I willingly agree to participate.

Signature of Participant/Date **Signature of Researcher/Date**

MODIFIED QUESTIONNAIRE ON AWARENESS AND PERCEPTION OF ROLES OF PHYSIOTHERAPY IN STROKE MANAGEMENT AMONG COLLEGE OF MEDICAL SCIENCE STUDENTS IN UNIBEN

SECTION A
SOCIODEMOGRAPHIC

1. First name .....

2. Gender: MALE ☐ FEMALE ☐

3. AGE: .....

4. Department

- ○ Anatomy
- ○ Dentistry
- ○ MBC
- ○ Medicine
- ○ Nursing
- ○ Radiography
- ○ MLS
- ○ Physiology

5. Level: 300L ☐

400L ☐

500L ☐

600L ☐

SECTION B: PERCEPTION OF PHYSIOTHERAPY SERVICES

PERCIEVED LEVEL OF KNOWLEDGE OF PHYSIOTHERAPY

How do you qualify your knowledge about physiotherapy services?

POOR	FAIR	GOOD

Topic Question	Sub Questions	Tick
1. Physiotherapy is	a. A healthcare profession focused on restoring movement and function	
	b. A specialization that carry out surgery to correct disabilities	
	c. A healthcare profession that majorly prescribe medication to relieve pain	
	d. A specialty that involves assessing, diagnosing and treatment of physical impairments.	
2. Physiotherapy is	a. Practiced by the doctors	
	b. A branch of acupuncture	
	c. Practiced by masseurs	
	d. Practiced by Physiotherapist	
3. A Physiotherapy unit contains	a. A gymnasium with exercising machines, gym balls and other equipment	
	b. Electrical modalities	
	c. a section for manual treatments using bandages, tapes and splints	
	d. A therapeutic pool	
4. Places where the physiotherapy services can be gotten	a. Private clinics	
	b. Government hospitals	
	c. Private hospitals	
	d. Sport centers	
	e. NGOs	

5. Physiotherapy treatments include	a. Manual therapy	
	b. Ice/Heat therapy	
	c. Hydrotherapy	
	d. Electrotherapy and exercise therapy	
	e Oral medication	
6. Do you know when to meet a physiotherapist?	a. When you have an injury	
	b. When there is pain arising in any body part with or without a known cause	
	c. When you feel pain or discomfort in any of the sporting technique	
	d. When you have fever or flu.	
	e. When you muscle pain, weakness or paralysis	
7. When a sport injury happens, physiotherapy,	a. Involves reducing the pain	
	b. Can be used to improve the quality of muscles	
	c. Helps to regain the full motion of the joints as it was before the injury	
	d. Helps to prevent complications after injury	
8. Uses of physiotherapy in any other conditions than in sport injuries	a. Neurological conditions (stroke, Parkinson)	
	b. Musculoskeletal conditions (Osteoarthritis and other joint problems)	
	c. Pediatric conditions (Cerebral palsy, Injection palsy)	
	d. Chest conditions (Bronchitis)	

SECTION C

PERCIEVED LEVEL OF KNOWLEDGE ABOUT MEDICAL AND PHYSIOTHERAPY STROKE MANAGEMENT

How do you qualify your awareness and perception about medical and physiotherapy stroke management?

POOR	FAIR	GOOD

SPECIFY YOUR LEVEL OF AGGREABILITY WITH THE FOLLOWING STATEMENTS

	QUESTION	STRONGLY DISAGREE	DISAGREE	NEITHER	AGREE	STRONGLY AGREE
9	Management of stroke in hospital is a time sensitive procedure					
10	Brain imaging is not a necessary diagnostic investigation in stroke management					
11	Tissue plasminogen activator can be used in the management of both types of stroke.					
12	Stroke surgical procedures majorly targets the heart					
13	There is need for regular monitoring of the blood pressure and respiratory rate of stroke patients in the hospital					
14	Physiotherapists play a major role in hospital management of stroke patients					
15	The primary goal of physiotherapy is to improve mobility					

	and functional independence					
16	Paralysis or weakness of one side of the body is a common symptom of stroke that physiotherapy aim to address					
17	Physiotherapists mainly improves recovery of stroke patients through heat and electrical therapeutic devices					
18	Physical therapy stroke management intervention should be discontinued once post-stroke patient is discharged from hospital					
19	Management of stroke involves a multi-systematic approach by different medical specialists					

SECTION D

SOURCE OF INFORMATION

CHOOSE THE MOST APPROPRIATE ANSWER.

20. What is your predominant source of information on stroke management Practice?

- ○ Radio
- ○Counselling from medical Specialist
- ○Counselling from traditional Practitioners
- ○Informal Meetings
- ○Medical articles online.

ETHICAL APPROVAL

RESEARCH ETHICS COMMITTEE
COLLEGE OF MEDICAL SCIENCES
UNIVERSITY OF BENIN, BENIN CITY, NIGERIA.

Chairman: Prof. F. A Imarhiagbe
MBChb, FMCP
Cert Clin Res and ethics (NIH), MD.
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P.M.B 1154, BENIN CITY
Email: researchethics.cms@gmail.com

Our Ref: CMS/REC/01/VOL.2/833 **Date:** 5th September, 2025

Re: PERCEPTION AND AWARENESS OF THE ROLES OF PHYSIOTHERAPY IN STRIKE MANAGEMENT AMONG COLLEGE OF MEDICAL SCIENCE STUDENTS IN UNIVERSITY OF BENIN

Name of Principal Investigator: **DARAMOLA TEMITOPE JOSHUA**
Department Of Physiotherapy,
School of Basic Medical Science
College of Medical Sciences,
University of Benin

REC Approval No: CMS/REC/2025/833

This is to inform you that the research described in the submitted proposal, the Informed Consent Forms and other participant information materials have been reviewed and approved by the College Research Ethics Committee, University of Benin.

This approval dates from **5th September, 2025 to** 4th September, 2026. In multi-year research, Endeavour to submit your annual repcrt to the REC early in order to obtain renewal of your approval and avoid disruption of your research.

The National Code of Health Research Ethics requires you to comply with all institutional guidelines, rules and regulations and with the tenets of the code including ensuring that all adverse events are reported promptly to the REC. No, changes are permitted in the research without prior approval by REC except in circumstances outlined in the code. REC reserves the right to conduct compliance visit to your research site without prior notice. Thank you.

PROF. F.A IMARHIAGBE
Chairman, REC