



NURSES ROLE IN EARLY DETECTION AND MANAGEMENT OF ACUTE STROKE: SAVING PATIENTS FROM COMPLICATIONS.

Ssempebwa Kato Daniel^{1*}, David Bakunzi², and Alex Awio³

¹Department of Medical-Surgical Nursing, School of Nursing and Midwifery,
Bugema University.

Email: med.surg.oncology@gmail.com

²Department of Medical-Surgical Nursing, School of Nursing and Midwifery,
Bugema University;

Kisoro Lay Adventists Development Organization, (KLADO).

Email: bakunzidavid@gmail.com

³Department of Medical-Surgical Nursing, School of Nursing and Midwifery,
Bugema University.

Email: alexawio25@gmail.com

*Corresponding Author's Email: med.surg.oncology@gmail.com

Cite this article:

Ssempebwa, K. D., Bakunzi, D., Awio, A. (2025), Nurses Role in Early Detection and Management of Acute Stroke: Saving Patients from Complications. African Journal of Health, Nursing and Midwifery 8(3), 138-149. DOI: 10.52589/AJHNM-1IBZCKVT

Manuscript History

Received: 12 Sep 2025

Accepted: 14 Oct 2025

Published: 23 Oct 2025

Copyright © 2025 The Author(s).

This is an Open Access article distributed under the terms of Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International (CC BY-NC-ND 4.0), which permits anyone to share, use, reproduce and redistribute in any medium, provided the original author and source are credited.

ABSTRACT: *Introduction: stroke remains a leading cause of disability and mortality worldwide, necessitating prompt identification and effective management to optimize patient outcomes. Nurses play a critical role across the stroke care continuum, from early recognition to acute intervention and rehabilitation. Methodology: data was obtained from searching across different databases including PubMed, Scopus, google scholar, and Medline the search was limited to peer-reviewed publications excluding non-English publications and non-research articles to maintain focus and quality. Results: an outline of multiple challenges in stroke nursing care were discovered to be a great hinderance in nursing stroke care. Key challenges include the need for rapid assessment, managing acute-stroke symptoms, providing patient and family education, and overcoming resource limitations. Discussion: Future innovations such as telemedicine, artificial intelligence (AI), robotic rehabilitation, and interdisciplinary care models present promising solutions to the challenges discovered. Standardizing nursing training in stroke recognition tools (e.g., FAST, NIHSS), implementation of rapid response protocols, and close nursing collaboration with multidisciplinary teams will further improve stroke care. Conclusion: this paper underscores the vital role of nurses in stroke care and calls for ongoing education, systemic support, and technological integration to advance stroke management practices globally.*

KEYWORDS: Stroke, nurses' role, early identification, acute stroke management.



INTRODUCTION

The World Health Organization defines stroke as a clinical syndrome characterized by rapidly developing clinical signs of focal or global disturbance of cerebral function lasting more than 24 hours or leading to death, with no apparent cause other than vascular origin (Ahmed et al., 2024; Shumaila Abdul Rehman et al., 2024).

Stroke remains one of the leading causes of mortality and disability worldwide. Nearly 15 million strokes occur each year, resulting in 6 million deaths and 5 million cases of permanent disability. Although it is declining in developed nations, the number of deaths due to stroke in developing countries is increasing. It affects individuals across all age groups, necessitating a comprehensive understanding of its global and regional burden (Aziz et al., 2025; Hou et al., 2024).

The importance of early detection is very relevant in the context of public health; by detecting diseases early, we can prevent their wider spread, thereby reducing the social, economic and health impacts caused by certain diseases. Early discovery of disease by screening or diagnostic tests can help in identifying health problems early so that appropriate treatment can be provided promptly. This in turn can reduce the cost of long-term care required when diseases are detected at an advanced stage and develop into chronic conditions that require more complex and costly interventions (Ginsburg et al., 2020; Utami & Adiwjaya, 2024)

Nurses play a crucial role in the management and care of stroke patients. They are often the frontline healthcare providers responsible for identifying early signs of stroke, implementing timely interventions, and providing essential post-stroke education to patients and their families. Additionally, they focus on the patient's comprehensive care from the point the patient is admitted into the hospital until the patient is discharged to a rehabilitation department. Furthermore, nurses provide a plan of care to ensure continuity of care for stroke patients after discharge (Babkair et al., 2023; Katan & Luft, 2018; Shumaila Abdul Rehman et al., 2024)

METHODOLOGY

This narrative review adopted a structured approach to examine the evolving role of nurses in stroke care, with particular emphasis on early identification, acute management, and emerging innovations. To ensure comprehensive coverage of the topic, we implemented a rigorous multi-stage methodology that combined literature searching with critical analysis and thematic synthesis.

Our investigation began with an extensive search across major academic databases including PubMed, Scopus, and Web of Science. We employed a carefully designed search strategy using key terms such as "nursing AND stroke care," "early stroke identification," and "technological innovations in stroke management." The search was limited to peer-reviewed publications from 2015 to 2024 to capture contemporary evidence and practice guidelines while excluding non-English publications and non-research articles to maintain focus and quality.

Stroke pathophysiology and signs and symptoms

Strokes can be classified into three primary categories: ischemic, hemorrhagic, and transient ischemic attack (TIA) with each type having distinct causes and requiring specific interventions. (Ma et al., 2021; Shumaila Abdul Rehman et al., 2024)

Ischemic stroke is defined as disrupted blood flow to a region of the brain due to obstruction of the blood vessels that supply it, leading to inadequate oxygen delivery, ischemia, and neuronal death. In thrombosis, the blood flow is affected by narrowing of vessels due to atherosclerosis (Musuka et al., 2015). The build-up of plaque will eventually constrict the vascular chamber and form clots, causing thrombotic stroke. In an embolic stroke, decreased blood flow to the brain region causes an embolism; the blood flow to the brain reduces, causing severe stress and untimely cell death (necrosis). Necrosis is followed by disruption of the plasma membrane, organelle swelling and leaking of cellular contents into extracellular space, and loss of neuronal function (Broughton et al., 2009). Other key events contributing to stroke pathology are inflammation, energy failure, loss of homeostasis, acidosis, increased intracellular calcium levels, excitotoxicity, free radical-mediated toxicity, cytokine-mediated cytotoxicity, complement activation, impairment of the blood–brain barrier, activation of glial cells, oxidative stress and infiltration of leukocytes (Kuriakose & Xiao, 2020).

Hemorrhagic stroke results from the rupture of blood arteries resulting in condition like stress in the brain tissue and internal injury. It produces toxic effects in the vascular system, resulting in infarction. It is classified into intracerebral and subarachnoid hemorrhage. In ICH, blood vessels rupture and cause abnormal accumulation of blood within the brain. The main reasons for ICH are hypertension, disrupted vasculature, excessive use of anticoagulants and thrombolytic agents. In subarachnoid hemorrhage, blood accumulates in the subarachnoid space of the brain due to a head injury or cerebral aneurysm (Ahmed et al., 2024; Kuriakose & Xiao, 2020)

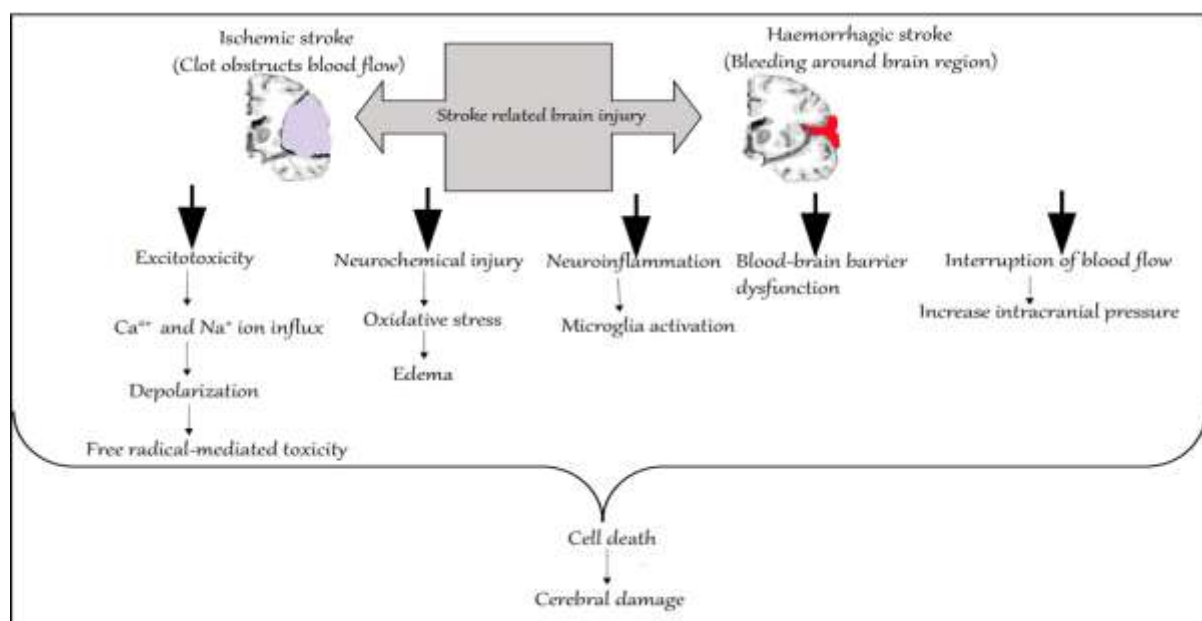


Figure 1; Source (Kuriakose & Xiao, 2020)

Stroke Signs and Symptoms

Stroke syndromes present clinically as neurologic deficits of sudden onset. Symptoms depend upon the affected region of brain involved. Common symptoms of stroke in the left hemisphere include aphasia, right hemiparesis and right hemianopia, and in the right hemisphere, left hemispatial neglect, left hemiparesis and left hemianopia (Musuka et al., 2015).

The majority (90%) of strokes are supratentorial; as such, the public can be taught to recognize and act upon stroke using the acronym FAST, for facial droop, arm drop, speech disturbance and time. Posterior circulation or infratentorial stroke has a multitude of additional symptoms, including diplopia, bulbar palsies, dysphagia, unilateral dysmetria and incoordination, as well as reduced levels of consciousness. Although headache or head, facial or neck pain may be an ancillary symptom, stroke is typically painless. The most important historical feature of stroke is the suddenness of its onset (AHA/ASA Guideline, 2013; Musuka et al., 2015; Powers et al., 2019)

Assessment tools for stroke in nursing practice

The outcome of stroke may be predicted using some of the rating scales, for example, the National Institutes of Health Stroke Scale (NIHSS), which has shown a reliable correlation with good clinical outcomes if the score is less than 4 in the first 48 h. On the other hand, some scales might be useful for determining eligibility criteria; for example, patients with moderate disability before recurrent stroke with a modified Rankin score ≥ 2 are not eligible candidates for mechanical thrombectomy according to American Heart Association/American Stroke Association (AHA/ASA) guidelines (Budinčević et al., 2022)

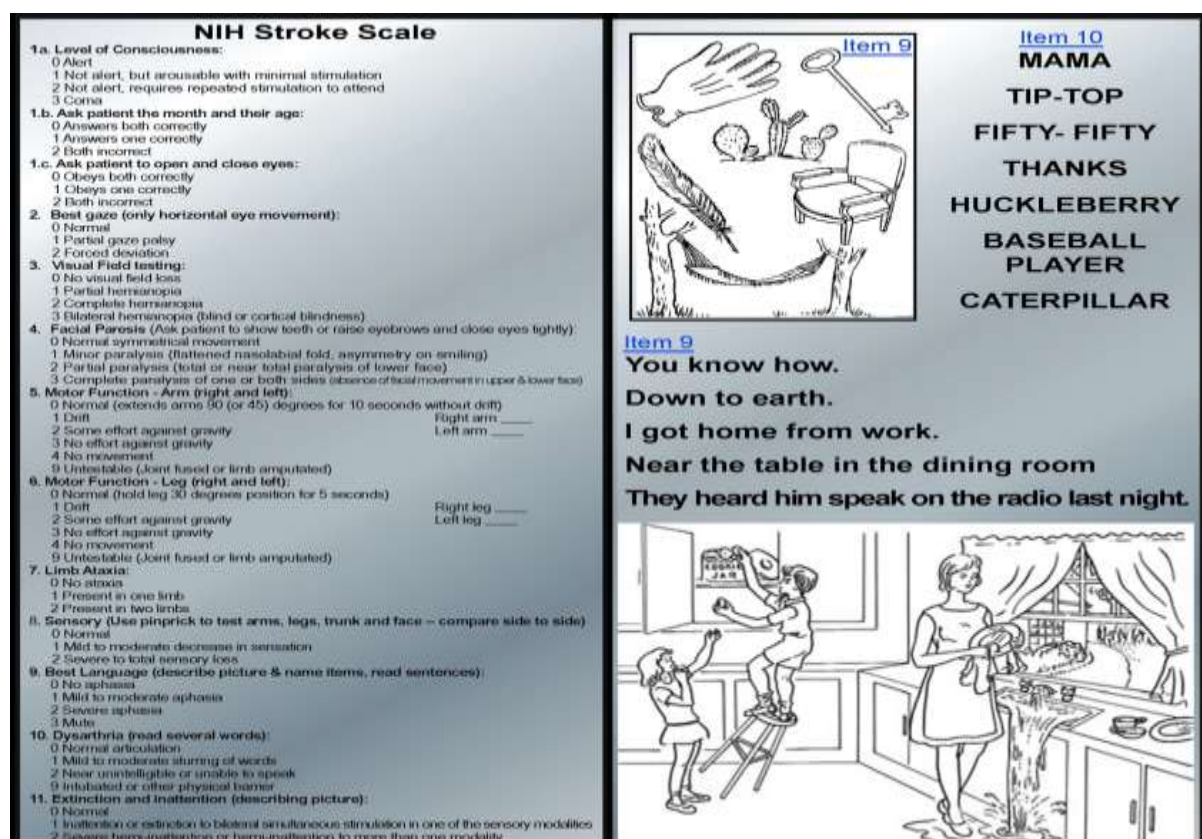


Figure 2: showing the NIHSS scale. source (Ganti, 2025)



The (NIHSS) is a broadly adopted stroke impairment and severity scale in hospital settings. It consists of 15 evaluating segments that are used to estimate and measure stroke severity, with a maximum score of 42 points (Lyden et al., 1999; Williams et al., 2000). The NIHSS may be performed quickly and can predict neurological short-term and long-term outcomes. It is also feasible for trained healthcare providers without expertise in neurology. It was originally developed in 1989 and is now widely used for outcome measures (Budinčević et al., 2022).

There are several other stroke screening scales that have been created for stroke recognition within the population. The most commonly used tool is the Face, Arms, Speech, Time (FAST) test, especially in emergency settings. Despite FAST being very useful for anterior circulation strokes, it can miss over 70% of patients with posterior circulation strokes (Aroor et al., 2017; Budinčević et al., 2022). A useful tool for stroke screening is the Gaze, Face, Arms, Speech, Time (G-FAST) test, in which the gaze evaluation is also included. For a better diagnosis of posterior circulation strokes, it can be helpful to also assess balance (B) and eye (E) symptoms in FAST, known as BE-FAST (Aroor et al., 2017). Another modification of the FAST scale is the FAST-ED scale, which includes eye deviation and anosognosia/neglect. The FAST-ED scale has a higher predictive value for strokes related to large vessel occlusion and eligible candidates for mechanical revascularization (thrombectomy) (Budinčević et al., 2022; Lima et al., 2016).

High risk factors for stroke

The main risk factors for stroke are common to other Non-Communicable Diseases (NCDs) and most are modifiable with effective interventions while others are non-modifiable. Age, gender, family history, and race/ethnicity are non-modifiable risk factors; while hypertension, smoking, diet, and physical inactivity are among the modifiable risk factors identified. (Alemu et al., 2023; Mekonen et al., 2020; Yi et al., 2022)

Different risk factors apply to an African population when developing a stroke. Africa could be increasingly affected by the high burden of strokes and other vascular diseases resulting from changes in the field of health according to constantly changing social, economic, and demographic models. Various studies conducted in different parts of the world have revealed that the factors associated with stroke are age, sex, smoking, low physical activity, obesity, alcohol, nonadherence to antihypertensive drugs, uncontrolled blood pressure, diabetes, and cholesterol levels (Alemu et al., 2023.)

Nurses' role in early detection and management of stroke

When a patient presents at the emergency department with symptoms suggestive of a stroke, time is of the essence. Nurses are often the first healthcare professionals to encounter these patients. Their ability to rapidly and accurately assess the situation is crucial. A thorough assessment includes gathering a detailed medical history, evaluating the patient's vital signs, and performing a neurological examination. The nurse's assessment skills are critical in determining the type of stroke the patient is experiencing, whether it is ischemic (caused by a blocked blood vessel) or hemorrhagic (caused by a ruptured blood vessel). The use of stroke scales, such as the National Institutes of Health Stroke Scale (NIHSS), helps emergency nurses quantify the severity of stroke symptoms. This objective measurement aids in the rapid identification of stroke and guides treatment decisions (Ganti, 2025).



Madu & Ajibade (2025) states in the case of ischemic strokes, which make up the majority of stroke cases, the administration of thrombolytic therapy is a standard of care therefore nurses play a pivotal role in ensuring that protocols for thrombolytic therapy, such as the administration of intravenous tissue plasminogen activator (tPA), are followed accurately and within the recommended time window.

Nurses must act swiftly to initiate time-sensitive interventions. Tissue Plasminogen Activator (tPA) is a clot-busting medication that can be administered to dissolve the blood clot causing the stroke. However, tPA must be administered within a narrow time window, typically within 4.5 hours of symptom onset. Emergency nurses play a central role in ensuring that tPA is administered as quickly as possible. This involves verifying eligibility criteria, accurately calculating and preparing the medication, and closely monitoring the patient for any signs of improvement or deterioration during and after treatment. They must also be prepared to manage potential complications, such as bleeding, which can occur as a result of tPA administration (Ganti, 2025).

Ganti (2025), says that nursing care shifts toward preventing complications and promoting neurological recovery. They play a vital role in ongoing monitoring and support for stroke patients when admitted to a stroke unit or intensive care unit for further care and observation. Monitoring includes assessing vital signs, neurological status, and evaluating for potential complications such as post-stroke seizures, infection, aspiration pneumonia, deep vein thrombosis, and pressure injuries. This involves positioning techniques, early mobilization where appropriate, administration of prophylactic medications, and the use of assistive devices to maintain functional positioning (Fekadu et al., 2019; Madu & Ajibade, 2025)

Nurses are responsible for maintaining airway patency, optimizing oxygenation, and ensuring hemodynamic stability, all of which are vital in preventing secondary brain injury. Blood glucose and temperature control are also critical components of nursing care, as hyperglycemia and fever have been associated with poorer stroke outcomes. Stroke patients may also require support in activities of daily living, as stroke can result in various degrees of physical and cognitive impairment (Madu & Ajibade, 2025; Saceleanu et al., 2023)

Nurses also play a key role in supporting the initiation of rehabilitation therapies, coordinating with physical, occupational, and speech therapists to begin early interventions that support recovery. They work closely with physicians, radiologists, and other healthcare professionals to expedite the diagnostic process. The diagnosis of stroke often requires imaging studies, such as Computed Tomography (CT) scans, to confirm the type and location of the stroke. Nurses coordinate the patient's transportation to the radiology department and ensure that the results are promptly communicated to the medical team (Ganti, 2025; Madu & Ajibade, 2025)

Equally important is the emotional and psychological support provided by nurses. Patients and their families often experience significant distress and uncertainty following a stroke. They may require emotional support to cope with the sudden and life-altering nature of their condition. Nurses are uniquely positioned to provide this support, offering reassurance, listening to concerns, and promoting a positive outlook. (Ganti, 2025; Quinn, 2023)

Rehabilitation is a key component of stroke recovery. Nurses assist in the planning and implementation of rehabilitation programs, which can include physical therapy, speech therapy, and occupational therapy. They help patients set realistic goals and work towards regaining their independence and quality of life. Nurses serve as educators and advocates,



providing information about the condition, treatment options, and prognosis, while also addressing emotional needs through compassionate communication and supportive care (Ganti, 2025; Kwame & Petrucka, 2021; Madu & Ajibade, 2025)



Figure 3 showing the process of nursing management at different stages. Source (Han et al., 2023)

Challenges of nurses in recognition and management of stroke

One major challenge is the need for rapid assessment and intervention during the acute phase. Nurses must quickly recognize stroke symptoms using tools such as the NIH Stroke Scale (NIHSS) and ensure timely administration of thrombolytic therapy or endovascular procedures (Powers et al., 2019). Delays in treatment can lead to worsened outcomes, making efficient triage and coordination with multidisciplinary teams essential.

Patients' sociocultural or religious beliefs and practices emerged as another predominant barrier. Cultural beliefs and practices (e.g. view stroke having a spiritual cause, retribution from their gods and not a condition which can be managed medically) influence patient health-seeking behavior. A common practice from such beliefs makes defer medical care for herbal or traditional medical care or make attempts to combine both while hospitalized. Nurses noted that such practices or beliefs often compels families of patients to abandon medical care in the hospital for alternative care provided by traditional or faith healers (Baatiema et al., 2017)

Shortage of healthcare providers in hospitals including primarily frontline nurses and doctors, leading to a high patient to-provider ratio. This reduces the quality of nursing care. (Adelin Jørgensen et al., 2025)

The insufficiency of working equipment and medical supplies in hospital, ranging from medication, blood pressure monitors, oxygen concentrators, and malfunction of CT-scanners, laboratory equipment, cannulas and catheters to more trivial work essentials like plasters and gloves, all these together hinder proper nursing care (Adelin Jørgensen et al., 2025; Baatiema et al., 2017; Gache et al., 2014)

Future Directions and Innovations in nursing stroke care

Telemedicine has transformed stroke care by enabling rapid assessment and treatment, particularly in rural and underserved areas. Tele stroke programs allow nurses to collaborate with neurologists remotely, ensuring timely administration of thrombolytics and thrombectomy



referrals (Green et al., 2021) Future developments may include wearable devices that monitor stroke risk factors in real time, allowing nurses to intervene before a stroke occurs.

Rehabilitation is a critical component of stroke recovery, and future innovations will focus on personalized therapy. Robotic exoskeletons and virtual reality (VR) systems are being used to enhance motor recovery, with nurses playing a key role in guiding patients through these therapies (Veerbeek et al., 2017). Additionally, genetic and biomarker research may enable tailored rehabilitation programs based on individual patient responses.

Future stroke nursing will emphasize stronger collaboration among neurologists, physiotherapists, psychologists, and social workers. Nurses will also focus more on family-centered care, recognizing the crucial role caregivers play in long-term recovery. Digital platforms for caregiver training and support will likely become standard practice (Bakas et al., 2014).

RECOMMENDATIONS

1. Nurses should undergo regular training on stroke symptoms using standardized tools such as the FAST (Face, Arm, Speech, Time) and NIH Stroke Scale (NIHSS) to improve early detection.
2. Hospitals should implement stroke alert systems where nurses can activate emergency responses without delay, ensuring timely administration of thrombolytics (if applicable) within the golden 4.5-hour window.
3. Nurses should collaborate with Multidisciplinary Teams such as neurologists, radiologists, and emergency staff to streamline stroke pathways, reducing door-to-needle times.
4. Nurses should educate high-risk patients (e.g., those with hypertension, diabetes, or atrial fibrillation) on lifestyle modifications and medication adherence to prevent recurrent stroke.
5. Nurses must provide clear instructions on rehabilitation exercises, dietary changes, and signs of recurrent stroke to patients and caregivers.
6. Nurses in rural or underserved areas should leverage telemedicine to consult stroke specialists for real-time decision-making and also Nurses can use mobile health apps such as stroke risk assessment apps and wearable devices to monitor at-risk patients remotely.

CONCLUSION

Nurses are at the forefront of stroke care, from early identification to acute management and long-term recovery. By improving stroke recognition skills, collaborating with multidisciplinary teams, educating patients, and embracing technological advancements, nurses can significantly enhance stroke outcomes. Continued training, standardized protocols,



and systemic support are essential to empowering nurses in their critical role in stroke care. Future innovations, such as AI-driven diagnostics and personalized rehabilitation, will further strengthen nursing contributions to stroke management, ultimately reducing disability and mortality rates worldwide.

Acknowledgement

We sincerely appreciate all authors for their contributions to this publication in the various steps of compiling this data.

List of abbreviations

AHA/ASA	American Heart Association/American Stroke Association.
AI	Artificial Intelligence
CT	Computed tomography
NIH	National Institutes of Health Stroke Scale
VR	Virtual Reality
NIHSS	National Institute of Health Stroke Scale
tPA	Tissue plasminogen activator
ICP	Intracranial pressure

Financial support and sponsorship

Special thanks to Dr. Bakunzi B. David CEO KLADO for covering part of the publication charges. This has been a great step in the publication process.

Conflicts of interest

There are no conflicts of interest.

REFERENCES

- Adelin Jørgensen, J. M., Ditlevsen, E., Said, S. S., Walker, R. W., Christensen, D. L., & Nielsen, K. K. (2025). Understanding healthcare providers' perspectives on barriers to accessing stroke care at a resource-limited hospital in East Africa: A qualitative study from Mnazi Mmoja Referral Hospital in Zanzibar. *PLOS Global Public Health*, 5(2). <https://doi.org/10.1371/journal.pgph.0004278>
- AHA/ASA Guideline. (2013). <https://doi.org/10.1161/STR.0b013e318284056a/-/DC1>
- Ahmed, Z., Chaudhary, F., & K. Agrawal, D. (2024). Epidemiology, Pathophysiology, and Current Treatment Strategies in Stroke. *Cardiology and Cardiovascular Medicine*, 8(4). <https://doi.org/10.26502/fccm.92920399>



- Alemu, B., Hamilton, J., Spikes, T., & Gary, R. (n.d.-a). Identify the Stroke Risk Factors among Stroke Patients at the Hospital Corresponding Author*. *Journal of Neurology & Neurophysiology*, 2023, 1–004. [https://doi.org/10.35248/2332-2594.23.14\(3\).341](https://doi.org/10.35248/2332-2594.23.14(3).341)
- Alemu, B., Hamilton, J., Spikes, T., & Gary, R. (n.d.-b). Identify the Stroke Risk Factors among Stroke Patients at the Hospital Corresponding Author*. *Journal of Neurology & Neurophysiology*, 2023, 1–004. [https://doi.org/10.35248/2332-2594.23.14\(3\).341](https://doi.org/10.35248/2332-2594.23.14(3).341)
- Aroor, S., Singh, R., & Goldstein, L. B. (2017). BE-FAST (Balance, Eyes, Face, Arm, Speech, Time): Reducing the Proportion of Strokes Missed Using the FAST Mnemonic. *Stroke*, 48(2), 479–481. <https://doi.org/10.1161/STROKEAHA.116.015169>
- Aziz, M., Bipasha, N., Gupta, U., Ramnarine, I. V. P., Redgrave, J., Ali, A. N., Majid, A., & Bell, S. M. (2025). Stroke in Bangladesh: A Narrative Review of Epidemiology, Risk Factors and Acute Stroke Services. In *Journal of Cardiovascular Development and Disease* (Vol. 12, Issue 2). Multidisciplinary Digital Publishing Institute (MDPI). <https://doi.org/10.3390/jcdd12020058>
- Baatiema, L., De-Graft Aikins, A., Sav, A., Mnatzaganian, G., Chan, C. K. Y., & Somerset, S. (2017). Barriers to evidence-based acute stroke care in Ghana: A qualitative study on the perspectives of stroke care professionals. *BMJ Open*, 7(4). <https://doi.org/10.1136/bmjopen-2016-015385>
- Babkair, L. A., Safhi, R. A., Balshram, R., Safhei, R., Almahamdy, A., Hakami, F. H., & Alsaleh, A. M. (2023). Nursing Care for Stroke Patients: Current Practice and Future Needs. *Nursing Reports*, 13(3), 1236–1250. <https://doi.org/10.3390/nursrep13030106>
- Bakas, T., Clark, P. C., Kelly-Hayes, M., King, R. B., Lutz, B. J., & Miller, E. L. (2014). Evidence for Stroke Family Caregiver and Dyad Interventions A Statement for Healthcare Professionals From the American Heart Association and American Stroke Association. <https://doi.org/10.1161/STR.0000000000000033/-/DC1>
- Broughton, B. R. S., Reutens, D. C., & Sobey, C. G. (2009). Apoptotic mechanisms after cerebral ischemia. In *Stroke* (Vol. 40, Issue 5). <https://doi.org/10.1161/STROKEAHA.108.531632>
- Budinčević, H., Meštrović, A., & Demarin, V. (2022). Stroke Scales as Assessment Tools in Emergency Settings: A Narrative Review. In *Medicina (Lithuania)* (Vol. 58, Issue 11). MDPI. <https://doi.org/10.3390/medicina58111541>
- Fekadu, G., Chelkeba, L., Melaku, T., Gamachu, B., Gebre, M., Bekele, F., & Fetensa, G. (2019). Management protocols and encountered complications among stroke patients admitted to stroke unit of Jimma university medical center, Southwest Ethiopia: Prospective observational study. *Annals of Medicine and Surgery*, 48, 135–143. <https://doi.org/10.1016/j.amsu.2019.11.003>
- Gache, K., Leleu, H., Nitenberg, G., Woimant, F., Ferrua, M., & Minvielle, E. (2014). Main barriers to effective implementation of stroke care pathways in France: A qualitative study. *BMC Health Services Research*, 14. <https://doi.org/10.1186/1472-6963-14-95>
- Ganti, L. (2025). Management of acute ischemic stroke in the emergency department: optimizing the brain. In *International Journal of Emergency Medicine* (Vol. 18, Issue 1). BioMed Central Ltd. <https://doi.org/10.1186/s12245-024-00780-5>
- Ginsburg, O., Yip, C. H., Brooks, A., Cabanes, A., Caleffi, M., Yataco, J. A. D., Gyawali, B., McCormack, V., de Anderson, M. M. L., Mehrotra, R., Mohar, A., Murillo, R., Pace, L. E., Paskett, E. D., Romanoff, A., Rositch, A. F., Scheel, J. R., Schneidman, M., Unger-Saldaña, K., ... Anderson, B. O. (2020). Breast Cancer Early Detection: A Phased Approach to Implementation. *Cancer*, 126(S10), 2379–2393. <https://doi.org/10.1002/cncr.32887>



- Green, T. L., McNair, N. D., Hinkle, J. L., Middleton, S., Miller, E. T., Perrin, S., Power, M., Southerland, A. M., & Summers, D. V. (2021). Care of the Patient With Acute Ischemic Stroke (Posthyperacute and Prehospital Discharge): Update to 2009 Comprehensive Nursing Care Scientific Statement: A Scientific Statement From the American Heart Association. In *Stroke* (Vol. 52, Issue 5, pp. E179–E197). Wolters Kluwer Health. <https://doi.org/10.1161/STR.0000000000000357>
- Han, X., Qin, Y., Mei, C., Jiao, F., Khademolqorani, S., & Nooshin Banitaba, S. (2023). Current trends and future perspectives of stroke management through integrating health care team and nanodrug delivery strategy. In *Frontiers in Cellular Neuroscience* (Vol. 17). Frontiers Media SA. <https://doi.org/10.3389/fncel.2023.1266660>
- Hou, S., Zhang, Y., Xia, Y., Liu, Y., Deng, X., Wang, W., Wang, Y., Wang, C., & Wang, G. (2024). Global, regional, and national epidemiology of ischemic stroke from 1990 to 2021. *European Journal of Neurology*, 31(12). <https://doi.org/10.1111/ene.16481>
- Katan, M., & Luft, A. (2018). Global Burden of Stroke. *Seminars in Neurology*, 38(2), 208–211. <https://doi.org/10.1055/s-0038-1649503>
- Kuriakose, D., & Xiao, Z. (2020). Pathophysiology and treatment of stroke: Present status and future perspectives. In *International Journal of Molecular Sciences* (Vol. 21, Issue 20, pp. 1–24). MDPI AG. <https://doi.org/10.3390/ijms21207609>
- Kwame, A., & Petrucka, P. M. (2021). A literature-based study of patient-centered care and communication in nurse-patient interactions: barriers, facilitators, and the way forward. In *BMC Nursing* (Vol. 20, Issue 1). BioMed Central Ltd. <https://doi.org/10.1186/s12912-021-00684-2>
- Lima, F. O., Silva, G. S., Furie, K. L., Frankel, M. R., Lev, M. H., Camargo, É. C. S., Haussen, D. C., Singhal, A. B., Koroshetz, W. J., Smith, W. S., & Nogueira, R. G. (2016). Field Assessment Stroke Triage for Emergency Destination: A Simple and Accurate Prehospital Scale to Detect Large Vessel Occlusion Strokes. *Stroke*, 47(8), 1997–2002. <https://doi.org/10.1161/STROKEAHA.116.013301>
- Lyden, P., Lu, M., Jackson, C., Marler, J., Kothari, R., Brott, T., & Zivin, J. (1999). Underlying Structure of the National Institutes of Health Stroke Scale Results of a Factor Analysis. <http://ahajournals.org>
- Ma, Q., Li, R., Wang, L., Yin, P., Wang, Y., Yan, C., Ren, Y., Qian, Z., Vaughn, M. G., McMillin, S. E., Hay, S. I., Naghavi, M., Cai, M., Wang, C., Zhang, Z., Zhou, M., Lin, H., & Yang, Y. (2021). Temporal trend and attributable risk factors of stroke burden in China, 1990–2019: an analysis for the Global Burden of Disease Study 2019. *The Lancet Public Health*, 6(12), e897–e906. [https://doi.org/10.1016/S2468-2667\(21\)00228-0](https://doi.org/10.1016/S2468-2667(21)00228-0)
- Madu, C. S., & Ajibade, V. M. (2025). Acute Stroke Management and Nursing Intervention. *Cureus*. <https://doi.org/10.7759/cureus.86820>
- Mekonen, H. H., Birhanu, M. M., Mossie, T. B., & Gebreslassie, H. T. (2020). Factors associated with stroke among adult patients with hypertension in Ayder Comprehensive Specialized Hospital, Tigray, Ethiopia, 2018: A case-control study. In *PLoS ONE* (Vol. 15, Issue 2). Public Library of Science. <https://doi.org/10.1371/journal.pone.0228650>
- Musuka, T. D., Wilton, S. B., Traboulsi, M., & Hill, M. D. (2015). Diagnosis and management of acute ischemic stroke: Speed is critical. In *CMAJ* (Vol. 187, Issue 12, pp. 887–893). Canadian Medical Association. <https://doi.org/10.1503/cmaj.140355>
- Powers, W. J., Rabinstein, A. A., Ackerson, T., Adeoye, O. M., Bambakidis, N. C., Becker, K., Biller, J., Brown, M., Demaerschalk, B. M., Hoh, B., Jauch, E. C., Kidwell, C. S., Leslie-Mazwi, T. M., Ovbiagele, B., Scott, P. A., Sheth, K. N., Southerland, A. M., Summers, D. V., & Tirschwell, D. L. (2019). Guidelines for the early management of



- patients with acute ischemic stroke: 2019 update to the 2018 guidelines for the early management of acute ischemic stroke a guideline for healthcare professionals from the American Heart Association/American Stroke Association. In *Stroke* (Vol. 50, Issue 12, pp. E344–E418). Lippincott Williams and Wilkins. <https://doi.org/10.1161/STR.0000000000000211>
- Quinn, C. (2023). Rapid Communication Stroke care in the emergency department: The nurse's role. *J Intensive Crit Care Nurs*, 6(5), 171. <https://doi.org/10.35841/aaiccn-6.5.171>
- Saceleanu, V. M., Toader, C., Ples, H., Covache-Busioc, R. A., Costin, H. P., Bratu, B. G., Dumitrascu, D. I., Bordeianu, A., Corlatescu, A. D., & Ciurea, A. V. (2023). Integrative Approaches in Acute Ischemic Stroke: From Symptom Recognition to Future Innovations. In *Biomedicines* (Vol. 11, Issue 10). Multidisciplinary Digital Publishing Institute (MDPI). <https://doi.org/10.3390/biomedicines11102617>
- Shumaila Abdul Rehman, Amir Sohail, Habib, M. F., Shagufta Parveen, Rehana Yasmin, & Akbar Ali. (2024). Assessment of Nurses' Knowledge Regarding Patient Education Post-Stroke in Allied Hospital Faisalabad: A Cross-Sectional Study. *Journal of Health and Rehabilitation Research*, 4(3), 1–5. <https://doi.org/10.61919/jhrr.v4i3.1522>
- Utami, T. P., & Adiwjaya, S. (2024). The Importance of Early Detection in Disease Management. Article in *Journal of World Future Medicine Health and Nursing*. <https://doi.org/10.55849/health.v2i1.692>
- Veerbeek, J. M., Langbroek-Amersfoort, A. C., Van Wegen, E. E. H., Meskers, C. G. M., & Kwakkel, G. (2017). Effects of Robot-Assisted Therapy for the Upper Limb after Stroke. In *Neurorehabilitation and Neural Repair* (Vol. 31, Issue 2, pp. 107–121). SAGE Publications Inc. <https://doi.org/10.1177/1545968316666957>
- View of MENINGKATKAN PEMAHAMAN MASYARAKAT PENTINGNYA DETEKSI DINI DIABETES MELITUS MELALUI PENYULUHAN DAN PENGUKURAN GULA DAN TEKANAN DARAH. (n.d.).
- Williams, L. S., Yilmaz, E. Y., & Lopez-Yunez, A. M. (2000). Retrospective Assessment of Initial Stroke Severity With the NIH Stroke Scale. <http://ahajournals.org>
- Yi, X., Chen, H., Wang, Y., Yu, M., Luo, H., Wang, C., Wei, W., Chen, X., & Bao, S. (2022). Prevalence and Risk Factors of High-Risk Population for Stroke: A Population-Based Cross-Sectional Survey in Southwestern China. *Frontiers in Neurology*, 13. <https://doi.org/10.3389/fneur.2022.693894>