A RETROSPECTIVE STUDY ON THE PREVALENCE OF CEREBROVASCULAR ACCIDENT AND ITS ASSOCIATED RISK FACTORS AMONG PATIENTS ADMITTED INTO THE NEUROLOGICAL WARD OF A TETIARY HEALTH FACILITY (2015- 2020)

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DECLARATION

This is to declare that this research project titled **A retrospective study on the Prevalence of cerebrovascular accident and it's associated risk factors among patients admitted into the neurological ward of a tertiary health facility (2015-2020)**, was carried out by **OGIEVA OSAZEE** and is solely the result of work except where acknowledged as being derived from other person(s) or resources.

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CERTIFICATION

This is to certify that the project is done by **OGIEVA OSAZEE** with matriculation number **BMS1601919** a student of the Department of Nursing, School of Basic Medical Sciences, University of Benin, Benin city. This work was supervised by **DR. T.A EHWARIEME** and all corrections has been effected and approved for the award of Bachelor of Nursing Science Degree.

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DEDICATION

This research project work is dedicated to Almighty God for his grace through the period of this research and to my dear parents, Engr & Mrs. S.I Ogieva for their continuous support and encouragement throughout this journey.

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ABSTRACT

Stroke is a leading cause of death and disability worldwide. This study was conducted to investigate the prevalence of stroke and it's associated risk factors among patients admitted at the neurological ward of University of a tertiary health facility. The objectives this research work aims to determine the prevalence of Cerebrovascular accident, identify the associated risk factors, determine the percentage of stroke survivors and distribution of mortality rate. The study employed a retrospective descriptive survey design method. The area of study was the neurology ward in the University of Benin Teaching hospital, Benin City, Edo State, Nigeria. Of a total population of two thousand three hundred and thirty-nine patients admitted, one thousand three hundred and ninety-seven patients were diagnosed of CVA and their data was collated. Purposive sampling technique was used. A well-structured checklist was used to elicit items relevant to the research objectives. The study showed that the prevalence of CVA was 58.9% of the total population, and the most prevalent risk factors were hypertension and diabetes mellitus. The percentage of survivors was 69.4% and the distribution of mortality was highest amongst the males, age group 50-69, married patients, tertiary level of education, Christians, and Bini. The study therefore recommends that community education on lifestyle modifications, beneficial nutritional practices, maintaining appropriate body weight should be ensured. Also health workers should make anthropometric measurements, blood pressure and blood glucose level a routine procedure to ensure prompt treatment and eradication of these risk factors.

KEY WORDS: CEREBROVASCULAR ACCIDENT, NEUROLOGICAL WARD, PATIENTS, PREVALENCE, RISK FACTORS.

CHAPTER ONE

INTRODUCTION

1.1 Background to the study

Cerebrovascular accident (CVA), a medical term for stroke occurs when an artery to the brain becomes blocked or ruptures, resulting in death of an area of brain tissue due to loss of it's blood supply (cerebral infarction) (Chong, 2020). Stroke is different from transient ischaemic attack (TIA) as its symptoms last longer than 24 hours and it carries an increased risk of mortality; diagnosis is supported by evidence of focal infarction or haemorrhage on imaging. Conversely, a TIA is a dysfunction of vascular origin lasting less than 24 hours, with no evidence of infarction on imaging (Puthenpurakal & Crussell, 2017).

Stroke is the second leading cause of death, accounting for 11.13 % of total deaths, and the main cause of disability worldwide (Habibi-koolaee, Shahmoradi et.al, 2018). The major type of stroke is ischemic, which occurs in about 87% of all stroke cases (Mozaffarian, Benjamin et. al, 2015).

Stroke has different risk factors, which can be grouped into modifiable and non-modifiable risk factors (Boehme, Esenwa & Elkind, 2017). Major risk factors for stroke include age, history of cerebrovascular event, smoking, alcohol consumption, physical inactivity, hypertension, dyslipidemia, diabetes mellitus, cardiovascular diseases, obesity, metabolic syndrome, diet, nutrition, and genetic risk factors (Hopewell & Clarke, 2016). Existing studies on knowledge of stroke risk factors in Nigeria have focused on individuals diagnosed with hypertension and diabetes, on general populations, and on the population in an educational institution (Onagbajo & Taritei 2016). Epidemiological studies have identified risk factors for stroke for some years, , these are classified into the non-modifiable and the modifiable risk factors (Ekeh, Ogunniyi et.al, 2015).

The non-modifiable risk factors are older age, male gender, black race and family history and the commonest modifiable risk factor is hypertension while other common risk factors are diabetes mellitus, central obesity, dyslipidemias, cardiac disorders, vasculitis, heavy alcohol consumption and cigarette smoking (Ekeh, Ogunniyi et.al, 2015). Additional well recognized risk factors are Sickle cell disease, oral contraceptives, vasculitic lesions and hypercoagulable states. More recently, HIV and hyperhomocysteinaemia have been noted as novel risk factors for stroke. The commonest risk factor in Nigeria remains hypertension. Others notable risk factors in Nigeria are Diabetes mellitus, central obesity, previous stroke, cardiac disease and HIV (Ekeh, Ogunniyi et.al, 2015).

The current prevalence of stroke in Nigeria is 1.14 per 1000 while the 30-day case fatality rate is as high as 40% (Komolafe, Olaogu et.al, 2015). It has been documented that 90% of incident stroke is due to modifiable risk factors while the recurrent stroke is 80% preventable through optimal risk factor modification (Komolafe, Olaogu et.al ,2015). Thus, identifying risk factors of stroke can help healthcare providers to establish prevention strategies. Therefore, this study seeks to investigate the prevalence of stroke and it's associated risk factors among patients in the University of Benin Teaching Hospital. All medical records with a diagnosis of stroke in the neurology ward for a six-year period are analyzed.

1.2 Statement of the problem

Stroke is a condition that is known to affect virtually every aspect of the survivor's life (Onabajo & Taritei 2016). Adverse consequences on the physical, psychological, emotional, social, and economic status of stroke survivors place stroke among the leading causes of diminished quality of life globally(Onabajo & Taritei 2016). Stroke is a leading cause of morbidity and mortality

worldwide, and it is likely to worsen in developing countries over the next two decades based on the projections by the World Health Organization (WHO) (Ajidahun & Bekibele 2020) .

With the current scourge of HIV/AIDS and the battle against other communicable diseases like multi-drug resistant malaria and tuberculosis; Nigeria, the most populous black nation in the world, stands to risk the further straining of its resources as a result of the increasing prevalence of stroke and other cardiovascular diseases due to the epidemiology (Onana 2017). Stroke is the leading cause of neurological disability in adults (Katona, Schmidt, Schupp & Graessel, 2015). Stroke is also a leading cause of morbidity and mortality in adults in the productive ages that contribute the work force of the society (Boehme, Esenwa et.al 2017). Stroke patients suffer from post stroke depression, a complication which occurs in 30% of cases and is associated with increase in morbidity and reduced survival (Towfighi, Ovbiagele et. al 2016) . Apart from the burden of stroke on the survivors, caregivers of people with stroke experience mental disorders and burden negatively affecting their quality of life (Efi, Fani et. al 2017) making them also prone to emotional distress and a reduced quality of life. Not only does the burden of stroke lie in the high mortality but the high morbidity also results in up to 50% of survivors being chronically disabled, thus, stroke is a disease of immense public health importance with serious economic and social consequences (Donkor, 2018). Though several studies have assessed the knowledge of stroke and its risk factors in Nigeria, but there is dearth of empirical literature on the prevalence of CVA and its associated risk factors in Edo state particularly in Benin City. Hence the researcher is conducting this study to assess the prevalence of stroke and its associated risk factors in a tertiary health facility in Benin City.

1.3 Objectives of the study

The main objective of the study is to determine the prevalence of Cerebrovascular Accident and it's associated factors among patients admitted to the neurological ward of a tertiary health facility within 2015 to 2020.

The specific objective of the study includes to:

1. To determine the prevalence of CVA among patients admitted to the neurological ward of tertiary health facility from 2015 to 2020.
2. To identify the associated risk factors of CVA among the patients admitted during the period under review.
3. To determine the percentage of stroke survivors among the patients admitted during the period under review.
4. To determine the distribution of stroke mortality rate among patients admitted during the period of study.

1.4 Research questions

1. What is the prevalence of CVA among patients admitted to the neurological ward of tertiary health facility from 2015 to 2020?
2. What are the associated risk factors of CVA?
3. What is the percentage of stroke survivors among the patients admitted during the period under review?
4. What is the distribution of mortality rate among patients admitted during the period of study?

1.5 Research hypothesis.

1. There is no significant difference between stroke survival and social demographical characteristics.
2. There is no significant difference between the rates of survival among male and female patient within the period of study.
3. There is no significant relationship between outcome of CVA and its associated risk factors.

1.6 Significance of the study

The study on the prevalence of CVA and its associated risk factors among patients admitted in into the neurological ward of the University of Benin Teaching Hospital will be of immense benefit to the entire neurological ward in Edo metropolis in the sense that findings from this study would help the government authorities especially health policy makers to determine the present and projected burden of the disease and monitor the impact of interventions. This information would also assist in devising feasible strategies to enhance knowledge and consequently aid in effective prevention of recurrent stroke. Rigorous stroke epidemiology is prerequisite for the efficient planning and delivery of stroke services, the effective application of current stroke prevention strategies, the development of new strategies, and our understanding of the mechanisms of stroke. This will also allow comparison of estimates across regions and nations without methodological bias.

1.7 Scope of the study

This study is delimited to assessing the prevalence of CVA and its associated risk factors among patients admitted to the neurological ward of a tertiary hospital in Benin City, Nigeria, namely the University of Benin Teaching hospital (UBTH). It is also delimited to all the males and females of

the neurological ward irrespective of their ages, status and educational levels. The source of information will be limited to patients' case files admitted into the neurological ward from January, 2015 to December, 2020 resident in the medical records of the hospital.

1.8 Operational definition of terms

Prevalence: The total number of cases of a disease in a given statistical population at a given time, divided by the number of individuals in that population.

Cerebrovascular Accident (CVA): It is a condition that occurs when an artery to the brain becomes blocked or ruptures, resulting in death of an area of brain tissue due to loss of it's blood supply (cerebral infarction).

Risk factors: these are situations or diseases that increases a person's chance of developing a disease

Patients: These are persons receiving or registered to receive medical treatment.

Neurological Ward: This is subsection of a hospital concerned with the medical specialty of diagnosis and treatment of disorders of the nervous system, which includes the brain, the spinal cord, and the nerves.

CHAPTER TWO

LITERATURE REVIEW

This chapter reviewed the related literature on prevalence of cerebrovascular accident and its associated risk factors among patients admitted to the neurological ward in a tertiary hospital in Benin city under the following sub-headings; conceptual literature review, theoretical literature review, empirical literature review and summary.

2.1 Conceptual review

2.1.1 Concept of cerebrovascular accident

For several decades, the meaning of "stroke" (in scientific and lay literature) has most often been consistent with the 1980 World Health Organization (WHO) definition as "rapidly developed clinical signs of focal (or global) disturbance of cerebral function, lasting more than 24 h or leading to death, with no apparent cause other than of vascular origin (Abbott, Silverestrini et.al, 2017). However this definition was updated in 2013 by the American Heart Association/American Stroke Association to one that includes silent infarctions (inclusive of cerebral, spinal and retinal) and silent haemorrhages (Coupland, Thapar et.al, 2017). What separates this definition from historical precedent is the inclusion of 'silent' brain, retinal and spinal infarcts and silent cerebral haemorrhages,thereby removing an association with clearly defined clinical symptoms (Coupland, Thapar et.al, 2017).

2.1.2 Classification of stroke

Donkor, 2018, generally classified stroke into two major types, namely;

- Ischemic stroke: Ischemic stroke is caused by interruption of the blood supply to a part of the brain resulting in sudden loss of function (Donkor, 2018).

- Hemorrhagic stroke: Hemorrhagic stroke is attributed to rupture of a blood vessel or an abnormal vascular structureand it is less common than an ischemic stroke but can be more serious (Donkor, 2018).

Generally, ischaemic strokes account for about 80% of stroke cases while haemorrhagic stroke accounts for 20% but the actual proportions of stroke types depend on the population (Donkor, 2018). Recent data from the Stroke Investigative Research and Educational Network (SIREN) study in Nigeria and Ghana reported 68% of ischaemic stroke and 32% of haemorrhagic stroke (Sarfo, Ovbiagele & Gebregziabher , 2018) which partly confirms the proportions of stroke subtypes in Africa reported by the INTERSTROKE study. In some countries such as Ghana, there appears to be an evolution of stroke subtypes showing a sharp decline in haemorrhagic stroke and a trend of increasing ischaemic stroke (Donkor, 2018).

Types of Ischemic Stroke

A system for categorization of subtypes of ischemic stroke mainly based on etiology has been developed for the Trial of Org 10172 in Acute Stroke Treatment (TOAST). According to the TOAST classification (Adams, Bendixen & Kappelle, 2018). There are five pathological types of ischemic stroke

- large-artery atherosclerosis,
- Small vessel occlusion
- Stroke of other determined factor
- Stroke of undetermined factor
- cardio embolism

Types of hemorrhagic stroke

- Intracerebral haemorrhage is the most common type of nontraumatic intracranial haemorrhage; it accounts for 80% of haemorrhagic stroke and 10-15% of all strokes (Ziai & Carhuapoma, 2018). Intracerebral haemorrhage is mostly caused by uncontrolled hypertension leading to rupture of small vessels. The rupture leads to an avalanche type effect with breakage of nearby vessels resulting in haematoma expansion in up to 40% of cases (Donkor,2018).
- Subarachnoid haemorrhage is mainly due to saccular aneurysms though, it is also associated with arteriovenous malformation, intracranial neoplasm, and some medications such as anticoagulants. About 65% of subarachnoid haemorrhage patients survive, but half remain disabled primarily due to severe cognitive deficit (Donkor, 2018).

Stroke subtypes are reliably determined using CT imaging or Magnetic Resonance Imaging (MRI), though CT imaging is more commonly used in stroke diagnosis, MRI gives more accurate information and can earlier than CT imaging distinguish between haemorrhage and thrombus (Provost, Soudant et.al, 2019). In most developing countries, CT imaging or MRI facilities are not readily available and affordable.

2.1.3 Risk factors of CVA

The risk factors of CVA is classified into modifiable and non-modifiable (Chowdhury, Nayeem, & Jahan, 2015)

Modifiable risk factors are

- High blood pressure: Blood pressure of 140/90 or higher can damage blood vessels (arteries) that supply blood to the brain.

- Heart disease: Heart disease is the second most important risk factor for stroke, and the major cause of death among survivors of stroke. Heart disease and stroke have many of the same risk factors.
- Diabetes: People with diabetes are at greater risk for a stroke than someone without diabetes.
- Smoking: Smoking almost doubles your risk for an ischemic stroke.
- Birth control pills (oral contraceptives)
- History of TIAs (transient ischemic attacks): TIAs are often called mini-strokes. They have the same symptoms as stroke, but the symptoms don't last. If you have had one or more TIAs, you are almost 10 times more likely to have a stroke than someone of the same age and sex who has not had a TIA.
- High red blood cell count: A significant increase in the number of red blood cells thickens the blood and makes clots more likely. This raises the risk for stroke.
- High blood cholesterol and lipids: High cholesterol levels can contribute to thickening or hardening of the arteries (atherosclerosis) caused by a buildup of plaque. Plaque is deposits of fatty substances, cholesterol, and calcium. Plaque buildup on the inside of the artery walls can decrease the amount of blood flow to the brain. A stroke occurs if the blood supply is cut off to the brain.
- Excessive alcohol use: More than 2 drinks per day raises your blood pressure. Binge drinking can lead to stroke.
- Illegal drugs: IV (intravenous) drug abuse carries a high risk of stroke from blood clots (cerebral embolisms). Cocaine and other drugs have been closely linked to strokes, heart attacks, and many other cardiovascular problems.

- Abnormal heart rhythm: Some types of heart disease can increase the risk for stroke. Having an irregular heartbeat (atrial fibrillation) is the most powerful and treatable heart risk factor of stroke.
- Cardiac structural abnormalities: Damaged heart valves (valvular heart disease) can cause long-term (chronic) heart damage.
- Lack of exercise
- Obesity

Non- modifiable risk factors include

- Older age: For each decade of life after age 55, your chance of having a stroke more than doubles.
- Race: African Americans have a much higher risk for death and disability from a stroke than whites. This is partly because the African-American population has a greater incidence of high blood pressure.
- Gender: Stroke occurs more often in men, but more women than men die from stroke.
- History of prior stroke: You are at higher risk for having a second stroke after you have already had a stroke.
- Heredity or genetics: The chance of stroke is greater in people with a family history of stroke.

Other risk factors include:

- Region of dwelling: Strokes are more common among people living in the southeastern U.S. than in other areas. This may be because of regional differences in lifestyle, race, smoking habits, and diet.

- Temperature, season, and climate: Stroke deaths occur more often during extreme temperatures.
- Social and economic factors: There is some evidence that strokes are more common among low-income people.

2.1.4 Pathophysiology of CVA

Stroke is defined as an abrupt neurological outburst caused by impaired perfusion through the blood vessels to the brain (Kuriakose & Xiao, 2020). Blood flow to the brain is managed by two internal carotids anteriorly and two vertebral arteries posteriorly (the circle of Willis). Ischemic stroke is caused by deficient blood and oxygen supply to the brain; hemorrhagic stroke is caused by bleeding or leaky blood vessels.

Ischemic occlusions contribute to around 85% of casualties in stroke patients, with the remainder due to intracerebral bleeding. Ischemic occlusion generates thrombotic and embolic conditions in the brain. In thrombosis, the blood flow is affected by narrowing of vessels due to atherosclerosis. 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. 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 accounts for approximately 10–15% of all strokes and has a high mortality rate. In this condition, stress in the brain tissue and internal injury cause blood vessels to rupture. It produces toxic effects in the vascular system, resulting in infarction. It is classified into intracerebral and subarachnoid hemorrhage. In intracerebral, 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 (Kuriakose &Xiao, 2020).

2.1.5 Effect of stroke

The effects of stroke vary from person to person based on the type, severity, location, and number of strokes. The brain is very complex. Each area of the brain is responsible for a specific function or ability. When an area of the brain is damaged from a stroke, the loss of normal function of part of the body may occur. This may result in a disability.

The brain is divided into 3 main areas:

Cerebrum (right and left sides or hemispheres)

Cerebellum (top and front of the brain)

Brainstem (base of the brain)

Depending on which of these regions of the brain the stroke occurs, the effects may be very different.

In the cerebrum;

The cerebrum controls movement and sensation, speech, thinking, reasoning, memory, vision, and emotions. The cerebrum is divided into the right and left sides, or hemispheres. Depending on the area and side of the cerebrum affected by the stroke, any, or all, of these functions may be impaired:

- Movement and sensation
- Speech and language
- Eating and swallowing
- Vision
- Cognitive (thinking, reasoning, judgment, and memory) ability
- Perception and orientation to surroundings
- Self-care ability
- Bowel and bladder control
- Emotional control
- Sexual ability

In the cerebellum;

The cerebellum is located beneath and behind the cerebrum towards the back of the skull. It receives sensory information from the body through the spinal cord. It helps coordinate muscle action and control, fine movement, coordination, and balance. Although strokes are less common in the cerebellum area, the effects can be severe. Four common effects of strokes in the cerebellum include:

Inability to walk and problems with coordination and balance (ataxia)

- Dizziness
- Headache
- Nausea and vomiting

In the brainstem;

The brainstem is located at the base of the brain right above the spinal cord. Many of the body's vital "life-support" functions such as heartbeat, blood pressure, and breathing are controlled by the brainstem. It also helps control the main nerves involved with eye movement, hearing, speech, chewing, and swallowing. Some common effects of a stroke in the brainstem include problems with:

- Breathing and heart functions
- Body temperature control
- Balance and coordination
- Weakness or paralysis
- Chewing, swallowing, and speaking
- Vision
- Coma

2.1.6 Management of stroke

Medical Management

- Recombinant tissue plasminogen activator would be prescribed unless contraindicated, and there should be monitoring for bleeding.
- Increased ICP. Management of increased ICP includes osmotic diuretics, maintenance of PaCO2 at 30-35 mmHg, and positioning to avoid hypoxia through elevation of the head of the bed.
- Endotracheal Tube. There is a possibility of intubation to establish patent airway if necessary.
- Hemodynamic monitoring. Continuous hemodynamic monitoring should be implemented to avoid an increase in blood pressure.
- Neurologic assessment to determine if the stroke is evolving and if other acute complications are developing

Surgical Management

Surgical management includes prevention and relief from increased ICP.

- Carotid endarterectomy: This is the removal of atherosclerotic plaque or thrombus from the carotid artery to prevent stroke in patients with occlusive disease of the extracranial cerebral arteries.
- Hemicraniectomy: Hemicraniectomy may be performed for increased ICP from brain edema in severe cases of stroke.

Nursing interventions

Nursing care has a significant impact on the patient's recovery. Here are some nursing interventions for patients with stroke:

- Positioning. Position to prevent contractures, relieve pressure, attain good body alignment, and prevent compressive neuropathies.
- Prevent venous stasis. Exercise is helpful in preventing venous stasis, which may predispose the patient to thrombosis and pulmonary embolus.
- Regain balance. Teach patient to maintain balance in a sitting position, then to balance while standing and begin walking as soon as standing balance is achieved.
- Personal hygiene. Encourage personal hygiene activities as soon as the patient can sit up.
- Manage sensory difficulties. Approach patient with a decreased field of vision on the side where visual perception is intact.
- Voiding pattern. Analyze voiding pattern and offer urinal or bedpan on patient's voiding schedule.
- Skin assessment: Frequently assess skin for signs of breakdown, with emphasis on bony areas and dependent body parts.

Improving Mobility and Preventing Deformities

- Position to prevent contractures; use measures to relieve pressure, assist in maintaining good body alignment, and prevent compressive neuropathies.
- Apply a splint at night to prevent flexion of affected extremity.
- Prevent adduction of the affected shoulder with a pillow placed in the axilla.
- Elevate affected arm to prevent edema and fibrosis.

- Position fingers so that they are barely flexed; place hand in slight supination. If upper extremity spasticity is noted, do not use a hand roll; dorsal wrist splint may be used.
- Change position every 2 hours; place patient in a prone position for 15 to 30 minutes several times a day.

Establishing an Exercise Program

Provide full range of motion four or five times a day to maintain joint mobility, regain motor control, prevent contractures in the paralyzed extremity, prevent further deterioration of the neuromuscular system, and enhance circulation. If tightness occurs in any area, perform a range of motion exercises more frequently. Exercise is helpful in preventing venous stasis, which may predispose the patient to thrombosis and pulmonary embolus. Observe for signs of pulmonary embolus or excessive cardiac workload during exercise period (e.g., shortness of breath, chest pain, cyanosis, and increasing pulse rate). Supervise and support the patient during exercises; plan frequent short periods of exercise, no longer periods; encourage the patient to exercise unaffected side at intervals throughout the day.

Preparing for Ambulation

- Start an active rehabilitation program when consciousness returns (and all evidence of bleeding is gone, when indicated).
- Teach patient to maintain balance in a sitting position, then to balance while standing (use a tilt table if needed).
- Begin walking as soon as standing balance is achieved (use parallel bars and have a wheelchair available in anticipation of possible dizziness).
- Keep training periods for ambulation short and frequent.

- Preventing Shoulder Pain
- Never lift patient by the flaccid shoulder or pull on the affected arm or shoulder.
- Use proper patient movement and positioning (e.g., flaccid arm on a table or pillows when patient is seated, use of sling when ambulating).
- Range of motion exercises are beneficial, but avoid over strenuous arm movements

2.2 Concept of prevalence

In 2016, stroke was the second largest cause of death globally (5·5 million [95% UI 5·3–5·7] deaths) after ischaemic heart disease (Global burden for diseases ,2019). Fewer women died as a result of stroke (2·6 million [2·5–2·7] deaths) than did men (2·9 million [2·8–3·0] deaths). The number of global deaths due to ischaemic stroke (2·7 million [2·6–2·8]) was slightly lower than the number due to haemorrhagic stroke (2·8 million [2·7–2·9] deaths; appendix). Stroke was also the second most common cause of global DALYs (116·4 million [111·4 −121·4]). Women had fewer stroke DALYs (50·8 million [47·6–53·7]) than men (65·6 million [63·1–68·2]). The number of DALYs due to ischaemic stroke (51·9 million [47·9–55·6]) was lower than the number due to haemorrhagic stroke (64·5 million). There were 80·1 million (74·1–86·3) prevalent cases of stroke globally in 2016: 41·1 million (38·0–44·3) prevalent cases in women and 39·0 million (36·1–42·1) prevalent cases in men. Of the total number of prevalent strokes, 84·4% (82·1–86·4) were ischaemic. There were 13·7 million (12·7–14·7) new stroke cases in 2016 (Global burden for diseases ,2019).

In Nigeria the incidence of stroke was 26.0 (12.8-39.0) /100,000 person-years, with this higher among men at 34.1 (9.7-58.4) /100,000, compared to women at 21.2 (7.4-35.0) /100,000 (Davies, Asa, Adewole *et. al*, 2019). The pooled crude prevalence of stroke survivors in Nigeria

was 6.7 (5.8-7.7) /1000 population, with this also higher among men at 6.4 (5.1-7.6) /1000, compared to women at 4.4 (3.4-5.5) /1000. In the period 2000-2009, the incidence of stroke in Nigeria was 24.3 (95% CI: 11.9-36.8) per 100,000, with this increasing to 27.4 (95% CI: 2.2-52.7) per 100,000 from 2010 upwards. The prevalence of stroke survivors increased minimally from 6.0 (95% CI: 4.6-7.5) per 1000 to 7.5 (95% CI: 5.8-9.1) per 1000 over the same period. The prevalence of stroke survivors was highest in the South-south region at 13.4 (9.1-17.8) /100,000 and among rural dwellers at 10.8 (7.5-14.1) /100,000 (Davies, Asa, Adewole *et. al*, 2019).

2.3 Empirical review of related literatures

2.3.1 Prevalence of Stroke and risk factors

Yi, Luo and Li (2020) study is a multi-center, cross sectional survey to access the prevalence of stroke and stroke related risk factors in southwestern China from May 2015 to September 2015.The eight communities were selected at random, and 17,413 residents aged ≥40 years volunteered to participate in this survey. Data were collected through face-to-face survey using a structured questionnaire. Five hundred twenty-one participants with incomplete questionnaires on stroke history or risk factors records were excluded. A total of 16,892 people included in analysis. The overall prevalence of stroke was 3.1% (95% CI 2.6–3.9%), 17.1% of participants were the high risk stroke population. After full adjustments, hypertension, diabetes, dyslipidemia, overweight, lack of exercise and family history of stroke were significantly associated with overall stroke and ischemic stroke. The largest contributor was hypertension (population-attributable risk 23.6%), followed by dyslipidemia, physical inactivity, family history of stroke, diabetes, and overweight. However, only hypertension (OR = 3.66, 95% CI 1.82–8.23) was significantly associated with hemorrhagic stroke.

Habibi-koolaee, Shahmoradi, Kalhori *et. al* (2018) is a retrospective hospital-based study that assessed the prevalence of Stroke Risk Factors and their Distribution Based on Stroke Subtypes in Gorgan. Medical records of all patients who were admitted to the Sayad Shirazi Hospital, affiliated to GoUMS, between August 23, 2015, and August 22, 2016, were manually screened for a confirmed discharge diagnosis of stroke (International Classification of Diseases, Revision 10 (ICD 10) codes in the categories of I60, I61, I62, I63, and I64). In the study period, the medical records of 25,422 patients were surveyed for stroke diagnostic code based on ICD 10. Their screening protocol identified 415 stroke records, out of which 40 cases (9.6 %) were unspecified stroke. Of 375 specified stroke cases, 70.7% described an ischemic incidence and 29.3 % reported a hemorrhagic incidence. Analysis of demographic attributes over this dataset showed that 218 (58.1%) men and 157 (41.9%) women with mean ages (standard deviation) of 66.4 (14.2) and 64.6 (14.2), respectively, were admitted with stroke diagnosis, irrespective of stroke type. Further analysis indicated that both ischemic and hemorrhagic stroke subtypes had high prevalence in age >=70 years. The relationship between age group and stroke subtype was significant ($P<0.05$) but there was no significant association between ethnicity and stroke subtypes (P value =0.335). The majority of ethnicity was Fars.

Komolafe, Komolafe, Fatoye, *et al*. (2018) study is a prospective clinical study which assessed the profile of stroke in Nigerians at Ile-Ife. It studied one hundred and thirty-five consecutive patients presenting to the neurology unit of the Obafemi Awolowo University Teaching Hospitals Complex, Ile-Ife over a six-year period (2000- 2005). The socio-demographic and clinical data as well as the CT scan findings were collected. Clinical and Demographic information were recorded using a structured questionnaire. All patients with non-stroke pathology on CT scan were excluded. The 135 patients comprised 76 males and 59 females with a mean age of 62+ 12years. The major

predisposing factors noted were hypertension, diabetes mellitus and heart disease (atrial fibrillation) accounting for 73%,16%, and 2% respectively Over half of the hypertensive patients (53.6%) were non-compliant with their drugs prior to the episode while 7% were previously unaware of their hypertensive status. Cerebral infarction was the most common subtype of stroke seen. The case fatality rate was 15.6% and among the survivors the outcome was poor as only 3% made full recovery.

Odiase and Iyasere (2019) study was retrospective study which analyzed the frequency of stroke admissions, clinical presentations, risk factors, stroke types and outcomes over seven years, in a secondary level hospital in southern Nigeria. The hospital record of patients hospitalized between January 2006 and December 2012 at the Central Hospital, Benin-City with the diagnosis of stroke based on the World Health Organization (WHO)-clinical criteria, were studied. Four hundred and nineteen patients with stroke were hospitalized during the study period; this accounted for 3.1% of all the medical admissions. The mean age was 62.4 ± 13.6 years. There were 222 (53%) males and 197(47.0%) females. Ischaemic stroke occurred among 71% of cases; others included intra-cerebral haemorrhage (26%) and subarachnoid haemorrhage (3.1%). The main presenting features included hemiparesis (69%) and sudden loss of consciousness (27.2%). The risk factors included hypertension (84%) and diabetes mellitus (12.2%). The 7, 14 and 30 days case fatality rates were 21.2%, 25.5% and 30.8% respectively. A higher case fatality rate was recorded in haemorrhagic stroke compared to ischaemic stroke (68.8% vs 24%, $p = 0.0001$).

Li, Rui-Cen, Bao, *et al.,* (2019) is a retrospective study that estimates the risk of stroke and identify risk factors for people who underwent health examinations at the Health Examination Center at West China Hospital, Sichuan University from July 2014 to February 2018. A total of 31,464 people were recruited in this study and divided into 3 groups (low risk, moderate risk, and

high risk) according to risk of stroke. Data was collected by questionnaires, physical examination, and laboratory test. Among the participants, 17,959 were at low risk, 11,825 were at moderate risk, and 1680 were at high risk. Age, smoking, alcohol consumption, body mass index, uric acid, diastolic pressure, systolic pressure, triglycerides, low-density lipoprotein cholesterol, glucose, and brachial-ankle pulse wave velocity (baPWV) were independent significant risk factors for stroke, whereas high-density lipoprotein cholesterol was an independent protective factor for stroke. Interestingly, with increasing age, the percentage of people at moderate or high risk of stroke was increased. The percentages of people at moderate and high risk of stroke were also increased with respect to the stages of baPWV. This study showed that >40% of the participants were at moderate or high risk of stroke, especially the older participants. Several factors were related to the risk of stroke, especially baPWV. Some preventive action may be adopted early, and more attention can be paid to the health examination population.

Avan, Digaleh and Azarpazhooh (2019) is a retrospective study on Socioeconomic status and stroke incidence, prevalence, mortality, and worldwide burden: an ecological analysis from the Global Burden of Disease Study 2017. They extracted data from the Global Burden of Diseases, Injuries, and Risk Factors Study (GBD) 2017. They analyzed trends in global and SES-specific age-standardized stroke incidence, prevalence, mortality, and disability-adjusted life years (DALYs) lost from 1990 to 2017. They also estimated the age-standardized attributable risk of stroke mortality associated with common risk factors in low-, low-middle-, upper-middle-, and high-income countries. Further, they explored the effect of age and sex on associations of risk factors with stroke mortality from 1990 to 2017. Despite a growth in crude number of stroke events from 1990 to 2017, there has been an 11.3% decrease in age-standardised stroke incidence rate worldwide (150.5, 95% uncertainty interval [UI] 140.3–161.8 per 100,000 in 2017). This has

been accompanied by an overall 3.1% increase in age-standardised stroke prevalence rate (1300.6, UI 1229.0–1374.7 per 100,000 in 2017). The rising trends in age-standardised stroke prevalence have been observed only in middle-income countries, despite declining trends in age-standardised stroke incidence and mortality in all income categories since 2005.

Adoukonou and Houinato (2020) in a study on the Prevalence of stroke survivors in Parakou, Northern Benin. It is a cross-sectional study that used a door-to-door community survey. They did a two stages survey. In the first stage the World Health Organization (WHO) tool for the diagnosis of stroke in community was used. In the second phase all suspected cases underwent neurological exam and sometimes brain CT-scan. The WHO definition was used for the diagnosis of stroke. We recorded the socio-demographic data and the vascular risk factors. The prevalence was standardized on age according to the WHO type population. Multiple logistic regression was done to identify associated factors and estimate the adjusted prevalence ratio (aPR) and their 95% confidence interval (CI). The mean age of the subjects was 27.7 ± 12.9 years with a sex ratio of 0.97. After screening 161 were suspected and 54 confirmed cases, the overall prevalence of stroke in Titirou was 1.156 per 100,000 inhabitants [95% CI: 0.850 to 1.426]. The age-standardized prevalence of stroke was 3223 cases per 100,000 inhabitants. The associated factors were age (aPR 1.7 [1.5–1.9] for 10 years), history of hypertension (aPR: 64.8 [46.1–108.9]), diabetes mellitus (aPR: 4.5 [1.6–12.3]), low consumption of fruits and vegetables (aPR: 2.3 [1.2–4.4]), history of heart disease (aPR: 6.0 [2.6–13.7]), family history of stroke (PR: 4.6 [2.1–10.0]). Among the 54 subjects who had a stroke 10 were able to perform the brain CT-Scan: 40% were hemorrhagic and 60% ischemic stroke. Another strength of this study was the confirmation of stroke by a neurologist with experience in clinical diagnosis of stroke. We observed a prevalence of 1156 per 100,000 inhabitants. It is significantly higher than previously reported in a study in Cotonou. In

conclusion, the study showed a high prevalence of stroke in Titirou and suggested urgent action for prevention.

2.3.2 Prevalence of Stroke survival

Adeloye and Neurol, 2019 was a study to estimate the incidence of stroke and prevalence of stroke survivors in Nigeria. It is a systematic study, and it pooled nationwide and regional incidence and prevalence of stroke from the estimates reported in each study. Eleven studies met it's selection criteria. The pooled crude incidence of stroke in Nigeria was 26.0 (12.8-39.0) /100,000 person-years, with this higher among men at 34.1 (9.7-58.4) /100,000, compared to women at 21.2 (7.4-35.0) /100,000. The pooled crude prevalence of stroke survivors in Nigeria was 6.7 (5.8-7.7) /1000 population, with this also higher among men at 6.4 (5.1-7.6) /1000, compared to women at 4.4 (3.4-5.5) /1000. In the period 2000-2009, the incidence of stroke in Nigeria was 24.3 (95% CI: 11.9-36.8) per 100,000, with this increasing to 27.4 (95% CI: 2.2-52.7) per 100,000 from 2010 upwards. The prevalence of stroke survivors increased minimally from 6.0 (95% CI: 4.6-7.5) per 1000 to 7.5 (95% CI: 5.8-9.1) per 1000 over the same period. The prevalence of stroke survivors was highest in the South-south region at 13.4 (9.1-17.8) /100,000 and among rural dwellers at 10.8 (7.5-14.1) /100,000. Although the study period does not appear to contribute substantially to variations in stroke morbidity in Nigeria, an increasing number of new cases compared to survivors may be due in part to limited door-door surveys, or possibly reflects an increasing mortality from stroke in the country.

First-Stroke Patients′ 5-Year Survival Rates Study

Another study analyzed 836 patients who suffered their first stroke between 1997 and 1998 in Tuzla, Herzegovina, and Bosnia. After one month, 36 percent of the patients died. The majority of

these patients suffered from intracerebral hemorrhage. Of the surviving patients, 60 percent who suffered an ischemic stroke and 38 percent with intracerebral hemorrhage survived one year, compared to 31 percent and 24 percent, respectively, after five years. At the end of the study, 29 percent of the stroke patients were still alive. The study found that those 50 or younger had a higher survival rate than those 70 or older, at 57 percent and 9 percent, respectively. Additionally, the long-term survival rate (five years) is better in patients who suffered from intracerebral hemorrhage compared to those with ischemic stroke. However, those who suffered from intracerebral hemorrhage were more likely to pass away within the first 30 days of the stroke.

Stroke Survival Rates in Elderly Populations

A Canadian study was conducted on stroke survivors 61 years (on average) or older to determine the survival rates of the elderly population. Over a third (38 percent) of the patients were at least 80 years old, and this group also had the highest mortality rates during their hospital stays, at 24.2 percent. Those under 59 years old died at a rate of 5.7 percent; ages 60−69 reached 8.6 percent; and those 70−79 passed away at a rate of 13.4 percent. Those over 80 who survived suffered from so many impairments that they were unable to return to their homes and, instead, had longer hospital stays or were cared for in medical facilities.

Moscow 7-Year Survival Rates Study

A district in Moscow analyzed 1,538 stroke patients who suffered a stroke between January 1, 1972, and December 31, 1974. The purpose of this study was to gain a better understanding of stroke survival rates over a longer period of seven years. This study found that within three weeks of suffering a stroke, 37.3 percent of the patients had passed away. Over the next seven years, the study followed 941 of the remaining stroke survivors to record both recurring strokes and deaths,

while also finding links between recurring strokes and survival rates. In the first three months, not counting the first three weeks after stroke, most of the patients who did not survive suffered from pulmonary thromboembolism. After three years, 63.6 percent of the patients died. After five years, 72.1 percent passed, and at 7 years, 76.5 percent of survivors died. The study found that those who had multiple strokes had a higher mortality rate than those who suffered from other health issues, like cardiovascular disease. Interestingly, nearly half of all patients suffered from transient ischemic attacks.

Martinsixtus and Neuro (2017**)** study on Stroke survivors in Nigeria is A door-to-door prevalence survey in the Niger Delta region. This study aimed to provide a comparative estimate of the prevalence of stroke survivors in the rural Niger Delta region. It was a cross- sectional study. A three-phased door-to-door survey was conducted using WHO modified instruments. In the first-phase, 2028 adults (≥18years) participants randomly selected from two rural communities were screened by trained health research assistants for probable stroke. In the second phase, suspected cases were screened with stroke-specific tool. Positive cases were made to undergo complete neurological evaluation by two study neurologist in phase-three. Stroke diagnosis was based on clinical evaluation using WHO criteria. Overall, 27 (8 first-ever and 19 recurrent cases) stroke survivors with crude prevalence of 13.31/1000 (95% CI, 8.32-18.31) and a non-significant difference in prevalence between the two study communities were found, (P=0.393I). In addition, age-adjusted prevalence of stroke survivors was 14.6/1000 person, about 7-folds higher than previous estimates outside the Niger Delta region. The prevalence increases significantly with advancing in age, P<0·001. Among others, hypertension (92.59%) was the commonest risk factor and comorbidity found. In conclusion, improved stroke surveillance and care, as well as better

management of the underlying risk factors, primarily undetected or uncontrolled high blood pressure, remains a public health priority.

Ekenze, Adikaibe, Onodugo, *et al*. (2019) study on the Prevalence of Stroke Survivors in Urban Slums in Enugu was a cross sectional descriptive study carried out in two slums in Enugu, South East Nigeria. Participants were screened using a stroke specific questionnaire and further examined by two independent neurologists for evidence of focal neurological deficits. Analysis was done by SPSS version 22. Results: A total of 1440 participants were surveyed in the study; 769 (53.4) females and 671 (46.6%) males. About 22.3% (321) screened positive for various neurological diseases out of which 17 (5.3%) had evidence for stroke giving an overall prevalence of 1.2% (males 9 (1.3%) vs females 8 (1%) p = 0.6). The mean age of stroke survivors was 60.1 years, similar in males and females (p = 0.6). The odds ratio for stroke from 40 years showed progress increment doubling between 60 and 70 years and tripled between 40 and 70 years. Age, lower level of education, positive history of hypertension, sickle cell disease, leg swelling and use of snuff positively are correlated with clinical diagnosis of stroke. Conclusion: The prevalence of stroke in two urban slums in Enugu metropolis was 12/1000. Hypertension, diabetes, use of snuff, and low levels of education were significant risk factors for stroke. In conclusion, Public health educational measures, promoting prevention and early detection of diabetes should be encouraged.

2.3.3 Distribution of Stroke Mortality

Ekeh, Ogunniyi, Isamade, and Ekrikpo (2015) is a prospective study that examines mortality of stroke and its predictors in a Northern Nigerian teaching hospital. This study was carried out at Jos University Teaching Hospital in Nigeria. One hundred and twenty stroke patients admitted into the medical wards within one year were assessed. Method of data collection was history taking,

Neurological examination, and investigations such as fasting blood glucose. Data collected was recorded. Patients were examined and ancillary investigations were carried out. The deaths and predictors were recorded. There were one hundred and twenty participants. Forty two (35%), patients died. Most (76.2%) deaths occurred within the first week. Predictors of mortality on univariate analysis were age ≥ 60 years, male sex, loss of consciousness, high NIHSS score (≥16), the presence of co-morbid conditions and presence of complications. On multivariate analysis, the predictors of mortality were the presence of co-morbid conditions, GCS<10 and high NIHSS score. Stroke mortality was quite high in this study. Predictors of mortality were the indices of severity and the presence of co-morbid conditions.

Odiase and Iyasere (2019) study was retrospective study which analyzed the frequency of stroke admissions, clinical presentations, risk factors, stroke types and outcomes over seven years, in a secondary level hospital in southern Nigeria. The hospital record of patients hospitalized between January 2006 and December 2012 at the Central Hospital, Benin-City with the diagnosis of stroke based on the World Health Organization (WHO)-clinical criteria, were studied. Four hundred and nineteen patients with stroke were hospitalized during the study period; this accounted for 3.1% of all the medical admissions. The mean age was 62.4 ± 13.6 years. There were 222 (53%) males and 197(47.0%) females. The main presenting features included hemiparesis (69%) and sudden loss of consciousness (27.2%). The 7, 14 and 30 days case fatality rates were 21.2%, 25.5% and 30.8% respectively. A higher case fatality rate was recorded in hemorrhagic stroke compared to ischaemic stroke (68.8% vs 24%, p = 0.0001). In conclusion, stroke was a significant cause of mortality amongst medical admissions.

Muluneh, Daniel, and Assemie (2020) did a study on magnitude of risk factors and in-hospital mortality of stroke in Ethiopia. It is a systematic study and meta-analysis Data were pooled and a

random effect meta-analysis model was fitted to provide the overall magnitude of risk factors and in-hospital mortality rate of stroke. Also, the subgroup analyses were performed to examine how the in-hospital mortality rate varies across different groups of studies. In this study, the overall magnitude of hypertension, diabetes mellitus, and atrial fibrillation among stroke patients were 47% (95%CI: 40−54), 8% (95CI%:6−12), and 10% (95%CI: 5−19), respectively. The overall in-hospital mortality of stroke in Ethiopia was 18% (95%:14 − 22). The highest magnitude of in-hospital mortality of stroke was observed in SNNPR and the lowest was noted in Tigray region. In addition, the magnitude of the in-hospital mortality rate of stroke was 15.1% (95%CI: 11.3−19.4), and 19.6%(95%CI: 14.1 − 25.7), among studies published before and after 2016, respectively. In conclusions, our pooled result showed that nearly one-fifth of stroke patients have died during hospitalization. The most common risk factor of stroke among the included studies was hypertension followed by atrial fibrillation and diabetes mellitus. There is a need for a better understanding of the factors associated with high blood pressure, especially in countries with a high risk of stroke.

Abolfazl, Hadi and Mahmoud (2019) is a study on Socioeconomic status and stroke incidence, prevalence, mortality, and worldwide burden: an ecological analysis from the Global Burden of Disease Study 2017. Data was extracted from the global burden of diseases, injuries, and risk factor study (GBD 2017). They analysed trends in global and SES-specific age-standardized stroke incidence, prevalence, mortality, and disability-adjusted life years (DALYs) lost from 1990 to 2017. They also estimated the age-standardised attributable risk of stroke mortality associated with common risk factors in low-, low-middle-, upper-middle-, and high-income countries. Furthermore, it explored the effect of age and sex on associations of risk factors with stroke mortality from 1990 to 2017.Despite a growth in crude number of stroke events from 1990 to 2017, there has been a

33.4% decrease in age-standardised stroke mortality rate (80.5, UI 78.9−82.6 per 100,000 in 2017) over the same time period. The rising trends in age-standardised stroke prevalence have been observed only in middle-income countries, despite declining trends in age-standardised stroke incidence and mortality in all income categories since 2005. Further, there has been almost a 34% reduction in stroke death rate (67.8, UI 64.1−71.1 per 100,000 in 2017) attributable to modifiable risk factors, more prominently in wealthier countries. According to this study, almost half of stroke-related deaths are attributable to poor management of modifiable risk factors, and thus potentially preventable, hence we should appreciate societal barriers in lower-SES groups to design tailored preventive strategies. stroke risk is crucial.

Dabilgou (2020) carried out a study on Frequency and Mortality Risk Factors of Acute Ischemic Stroke in Emergency Department in Burkina Faso. This was a retrospective study with an analytical and descriptive focus over a period of three years from January 1, 2015, to December 31, 2017. During the study period, 302 acute ischemic stroke patients with a mean age of 62:2 ± 14:26 years were included. 3030 Death was recorded in 118 (39.1%) patients. The mortality was, respectively, 31% within 7 days and 39.3% within 14 days. Out of which, 79.7% (n = 94) occurred in 7 days and the rest 20.3% (n = 24), in 7-14 days. The majority of dead patients was male (60.1%). The mortality rate was 37.6% in male and 41.6% in female. The mean age of dead patients was 63:6 ± 13:52 years. The mean age of men and women was, respectively, 64.4 and 62.3 years (p = 0:281). Hypertension was the most common vascular risk factors in 54.2% of death (n = 64). Sixty-two (52.5%) of the dead patients were admitted in the first 24 hours after the disease symptom. Forty-two (35.6%) of the dead patients had fever, and 74 (62.7%) of them had GCS <10. Brain CT was performed after 24 hours of admission in 74 (62.7%) of the dead patients. Biological assessment found that stress hyperglycemia and anemia were present, respectively, in 78 (66.1%)

and 17(14.4%) of the dead patients. Post stroke pneumonia, cutaneous infections, and urinary tract infections were seen, respectively, in 57 (48.3%), 23 (19.5%), and 15 (12.7%) of the dead patients in ED. After the bivariate analysis, the predictors of death were history of heart disease (p = 0:048), consciousness disturbance on admission (p ≤ 0:001), fever (p = 0:01), delayed completion of CT scan greater than 24 hours (p ≤ 0:001), hyperglycemia (p = 0:002), anemia (p = 0:038), post stroke pneumonia (p ≤ 0:001), and urinary tract infection (p ≤ 0:001). The length of stay was under 7 days in 92 (78%) of the dead patients (p = 0:384). Table 1 gives the characteristic of acute ischemic stroke patients admitted in ED. After multivariate logistic regression analysis, the predictor30of death were history of heart disease (p = 0:031), consciousness disorders (p = 0:031), hyperthermia (p = 0:004), hyperglycemia (0.008), post stroke pneumonia (p ≤ 0:001), and urinary tract infection (p = 0:007).

2.4 Theoretical review

Historical origins of Health Belief Model

This study was guided by the health belief Model (HBM) which was developed by a group of psychologist in 1950's amongst them is Rosen Stock up who declared that individuals will take health-related actions on their health based on some factors. The HBM derives from psychological and behavioral theory with the foundation that the two components of health- related behavior are;

- The desire to avoid illness, or conversely get well if already ill.
- The belief that a specific health action will prevent or cure illness.

The HBM according to Polit (2011) is a popular model applied in health care practice especially in issues focusing on patient care, compliance of health care givers and preventive health care practice. Marina, Leela, Smriti, Samikchya and Naresh (2017) stated that the HBM postulates that

health seeking behavior depends on the perception of these critical areas and it addresses the relationship between a person's belief and behavior. It provides a way to understand and predict how patients will be planned and complied with in order to achieve quality health care. The health belief Model is discussed thus:

Perceived severity: perceived severity refers to the subjective assessment of the severity of a health problem and it's potential consequences (Glanz & Bishop, 2010). The health belief Model proposes that individuals who perceive a given health problem from occurring (or reduce it's severity). Perceived seriousness encompasses beliefs about the disease itself (e.g., whether it is life-threatening or may cause disability or pain) as well as broader impacts of the disease on functioning in work and social roles (Siddiqui et Al., 2016)

Perceived susceptibility: it is the subjective assessment no risk developing a health problem. Individuals who perceive that they are susceptible to health problems will engage in behaviors to reduce risk of developing. Individuals with low perceived susceptibility may deny that they are at risk for contracting a particular illness (Christopher, 2010). Others may acknowledge the possibility that they could develop the illness, but believe it is unlikely individuals who believe they are at low risk of developing an illness are more likely to engage in behaviors to decrease their risk of developing the condition. The combination of perceived severity and perceived susceptibility is referred to as perceived threat (Glanz & Bishop, 2010). Perceived severity and perceived susceptibility to a given health condition depend on knowledge about the condition (Christopher, 2010). The health belief Model predicts that higher perceived threat bewd to higher likelihood of engagement in health- promoting behaviors.

Perceived benefits: this involves the individual s assessment of value of engaging in health promoting behavior to decrease risks of diseases (Siddiqui et al., 2016). If an individual believes

that a particular action will reduce susceptibility to a health problem or decrease it's seriousness, then he or she is likely to engage in that behavior regardless of objective facts regarding the effectiveness of the action (Christopher, 2010).

Perceived barriers: this involves individual assessment of the obstacles to behavioral change. The perceived benefits outweighs the perceived barriers, perceived barriers to taking action include the perceived inconvenience, expense, danger (e.g, side effects of medical procedure) and discomfort (e.g., pain, emotional upset) involved in engaging in the behavior and modifying variables individual characteristic, including demographic, psychological and structural variables, can affect perceptions (i.e., perceived seriousness, susceptibility, benefits, and barriers of health- related behaviors. Demographic variables include age, sex, race, psychosocial variables include personality, social class, and peer and reference group pressure, among others structural variables include knowledge about a given disease and prior contact with the disease among other factors. The health belief Model suggests that modifying variables affect health- related behaviors indirectly by affecting perceived severity, susceptibility, benefits, and barriers (Christopher, 2010)

Cues to action: This is the stimulus needed to trigger the decision-making process to accept a recommended health action. These cues can be internal (e.g, chest pains, wheezing, etc.) or external (e.g, advice from others, illness of family member, newspaper article, etc.). Examples of cues to action include a reminder message or email from a dentist, the illness of a friend or family member, and product health warning labels. The intensity of cues needed to prompt action varied between individuals by perceived susceptibility, seriousness, benefits, and barriers (Christopher, 2010).

Self-efficacy: self-efficacy refers to the level of a person's confidence in his or her ability to successfully perform a behavior. Self-efficacy was added to the health belief Model in an attempt

to explain individuals differences in health behaviors. Eventually, the health belief Model was Applied to more substantial, long-term term behavior change such as diet modification, excercise, and smoking. This involves an individual's perception of his/ her competence to successfully perform a behavior. It was added to HBM in 1988 (Glanz & Bishop).

Application of Health Belief Model (HBM) to this study

The health belief Model has been used to develop effective interventions to change Health - related behaviors by targeting various aspects of the model's key construct (Christopher, 2010).

Perceived severity: the context of perceived severity speaks of an individual's belief and opinion about the severity of a disease. This shows that action will not occur unless the individual perceived the severity of ineffective application of the action. Ones opinion of how serious a disease condition is and it's consequences, determines the patient's action towards CVA.

Perceived susceptibility: this is one of the most powerful perceptions in encouraging healthier behaviors/ opinions of patients towards their attitude. The greater they perceive risk, the greater the likelihood of engaging in behaviors that will decrease risk of complications resulting from the disease. It is logical that when people believe that they are at greater risk from poor compliance, they will take precautions to reduce risk. Precautions here include managing predisposing factors.

Perceived benefits: patients tend to adopt healthier behaviors and perception when they are conscious of the benefits of those practices for CVA patients. This shows that a patient who perceives these behaviours for CVA in a good way will have better adaptations.

Perceived barriers: since change is not something that comes easily to most people, this construct of health model addresses the issue of perceived barriers to change. This is the evaluation of obstacles and in that way/manner patients adopt new behaviors toward nursing care.

Self- efficacy: this construct is a type of psychological factor that deals with confidence in the patient's ability to take actions towards CVA management/ prevention practices

Cues to action: this represent previous experiences, which people have by virtue of constant practice, are exposed to area of practice.

Limitations of Health Belief Model

Although, HBM is suitable for this study, it is inexhaustible. This model is associated with some short comings like it's attempt to predict Health related behaviors by accounting for individual differences in beliefs and attitudes. Demographic factors such as age represents biological imperative that affects the quality of health care delivery. For instance, Potter (2010) stated that younger health care providers have more modern perception towards health care delivery than older ones. Furthermore, the HBM does not consider the effect of emotion on health- related behaviors but for the purpose of this study, the advantages outweigh the limitations. It is best suited in this study in the sense that it handles the knowledge, perceptions, opinions and compliance of nurses towards nursing care for patients with CVA in order to achieve quality Health care. The HBM is more descriptive than explanatory, and does not suggest a strategy for changing health- related actions. In preventive health behaviors, early studies showed that perceived susceptibility, benefits and barriers we're consistently associated with the desired health behavior; perceived severity was less often associated with the desired behavior. The individual constructs are useful, depending on the health outcome of interest, but for the most effective use of the model it should be integrated with other models that account for the environmental content and suggest strategies for change.

2.5 Summary of Related Literature

Concept of CVA by various authors and the concept of it's associated risk factors were also included in the conceptual literature review. Various studies on factors affecting the prevalence of management of CVA was also looked into including medical and nursing management. Lastly, empirical literature review showing previous related literature on the topic was explored including their method of data analysis, population study, results of their study and their recommendation. The health belief model (HBM) was the theoretical framework use for the study as it addresses and is beneficial in the assessment of health maintenance, promotion and disease prevention behavior. The six constructs of the model was explained in relation to this research.

CHAPTER THREE

RESEARCH METHODOLOGY

3. Research Design

This study adopted a non-experimental, retrospective, descriptive survey design method. This design is adopted because the researcher aims at determining the frequency of the different variable under the period of study and this involved description of events, situation and the number of times (frequency) of occurrence of a given phenomenon over a period of time.

3. Research Setting

This study was carried out in the University of Benin Teaching Hospital, Benin City, Edo State, University of Benin teaching hospital is a tertiary health care facility which came into being in 1973 following the enactment of an edict (12). It is located between the boundaries of Egor and Ovia North East Local Government Area. On a 150acres of land along Benin-Lagos express way in Egor Local Government Area of Edo State. It is the sixth of the first generation teaching hospital in Nigeria and was established to compliment her sister institution, university of Benin, and to provide secondary and tertiary care.

The University of Benin Teaching Hospital is a research, teaching, referral and health care center and it is a center that provides health services to its populace. It has the following units, Medical unit, Surgical unit, Obstetric and gynecological unit, Accident and Emergency complex, Theater complex, General outpatient department, Family Medicine, Pediatric department, Ophthalmic complex, Radiology department, Health information department, Catering, Engineering, Laundry and Central Sterile Supply Department etc. It also provide necessary facility for training of high and middle level manpower for the health industry and spear head research opportunity for lecturers in the university and other interested persons with local morbidity burden as research question. The hospital offers employment to permanent and pensionable workers as well as contract staff ranging from various cadres of medical, non-medical and paramedical personnel.

The objective of the institution is to teach, heal, and research into various areas of health problems. The hospital also has the following institutions directly, School of Ophthalmic Nursing, School of Pediatric Nursing, School of accident and emergency nursing, School of basic nursing, School of Midwifery, School of anesthetic technicians, School of community health officers, School of Health information management, Fellowship of Nigerian medical college (Residency program) and School of Health Technology. These schools are in accordance with the institution's objective has kept its primary function of providing tertiary health care training to students from all states of the federation, Thus, the name "Center for Education". The staff strength of the hospital is two thousand and seven hundred working in thirty-four departments. There are six hundred and twenty bed spaces and four hundred and sixty nurses-midwives working in these units of the hospital. It has an operating theater that functions 24 hours a day and access to a blood bank.

3.4 Target Population

The population of the study consist of all patients admitted into the neurological ward of the University of Benin Teaching Hospital from January, 2015 to December, 2020 irrespective of their age, gender, educational level and religion.

2015- 451 patients

2016- 403 patients

2017- 349 patients

2018- 329 patients

2019- 415 patients

2020- 426 patients

Hence, the total population admitted during the period of study is 2,373 patients. This population was gotten from the Admission records of patients admitted under the period of study.

3.5 Sample Size

The sample size is a total of all patients admitted into the neurology ward and diagnosed of Cerebrovascular accident between January 2015 - December 2020 at the university of Benin teaching hospital.

3.7 Sampling technique

Sampling technique used was purposive sampling technique. This is because the researcher selected a group of individuals among the large group that she believes are in position to supply her with the information she wants. The admission list and case notes were used as a sampling frame to select patients who met the inclusion criteria.

3.8 Instrument for Data Collection

The researcher made use of a checklist, which was formulated based on the objectives of the study, for manual collection of secondary data of patients that presented at the University of Benin Teaching Hospital within the interval of 2015 - 2020 through assessment of case notes and hospital records. The checklist is divided into two sections A and B. Section A is the demographic data consisting of age, gender, marital status, for all patients within the sample frame and section B is further divided into four sub-sections to meet with the four objectives of this study.

3.9 Validity of the instrument

Validity refers to the degree to which a research instrument measures what it intends to measure (Polit & Beck, 2008). Face validity was done by an expert in the field of Neurology, an expert in

measurement and evaluation, and the project supervisor. Remarks and feedback, comments and observations from the experts was put into consideration for further correction to show validity of the instrument.

3.10 Reliability of the instrument.

The instrument and methodology used were reliable as the researcher did not manipulate any information but used the checklist to obtain data from the hospital medical records which were validated by experts.

3.11 Method of Data Collection

A review of hospital record books and patients case notes at the Medical records of all patients who were admitted to the Neurological ward of University of Benin Teaching Hospital from January, 2015 to December, 2020 was manually screened. A letter requesting access to Medical records was submitted to the head of medical records which was signed and approved. The researcher was then allowed to collect data from the medical record library where patients' Case notes are kept. The total number of patients who visited the clinic within the study was obtained as well as those diagnosed with cerebrovascular accident. The researcher used a valid and reliable data collection form to capture data contained at the Neurological Medical Records. Data was collected daily using a checklist to meet the objectives of this study, for a week. The personal information on the patient's medical record was not collected to ensure confidentiality of the patients' whose medical record was reviewed.

3.12 Method of Data Analysis

The data was analyzed with the statistical package for social science (SPSS). It was analysed using descriptive statistics such as mean and inferential statistics such as chi square, multivariate logistic

regression to test hypothesis 5% level of significance. The results of the analysis was displayed using tables, graph, frequencies and percentages.

3.13 Ethical Consideration

The researcher obtained a letter of identification from the Department of Nursing Science of the University of Benin, Benin City. Permission to carry out the study was obtained from the Health Research and Ethics Committee (HREC), University of Benin Teaching Hospital. The purpose and benefits of the study was explained. Confidentiality and anonymity was ensured throughout the execution of the study.

CHAPTER FOUR

RESULTS

4.0 Introduction

This chapter presents the data analysis, testing of hypothesis and answering of the research questions based on secondary data collected from University of Benin Teaching Hospital (UBTH). The data was collected from 2015-2020 from the case files of the patients. Frequencies, percentages were used to analyze the data. Chi-square was used to test the stated hypothesis of the study.

Table 4.1: Total number of patients

Years	Number of patients
2015	451
2016	403
2017	349
2018	329
2019	415
2020	426
Total	2373

Table 4.1 shows the total number of patients admitted into the Neurology ward from 2015 to 2020. The majority of the patients were admitted in year 2015 and the least number of patients was admitted in the year 2018.

4.1 Demographic characteristics of patients

Table 4.2: Demographic characteristics of patients with stroke

	Frequency	**Percentage%**
Sex		

Male	739	52.9
Female	658	47.1
Age group (Years)		
<30	22	1.6
30 – 49	241	17.3
50 – 69	259	18.5
70 – 89	665	47.6
90 and above	210	15.0
Marital Status		
Married	1389	99.4
Single	8	0.6
Educational status		
Primary school	245	17.5
Secondary school	260	18.6
Tertiary	883	63.2
Religion		
Christian	640	45.8
Muslim	125	8.9
Others	632	45.2
Ethnicity		
Bini	767	54.9
Esan	345	24.7
Esanko	200	14.31
Others	85	6.0

Table 4.2 shows the demographic distribution of patients admitted during the study period ad diagnosed of Cerebrovascular accident. It shows that majority are in the age cohort 70 – 89years, Population is predominantly males with frequency of 739. It also shows that the frequency of females admitted during the period of study and diagnosed of CVA is 658. The greater number of the sample was married with percentage of 99.4%. It also shows that majority had tertiary education 883(63.2%)., majority are Christian 640(45.8%) and majority are the Bini's with 767(54.9%)

Figure 4.1 Answer to Research Question

Research Question One: What is the prevalence of cerebrovascular accident among patients admitted into the neurological ward of UBTH from 2015 to 2020?

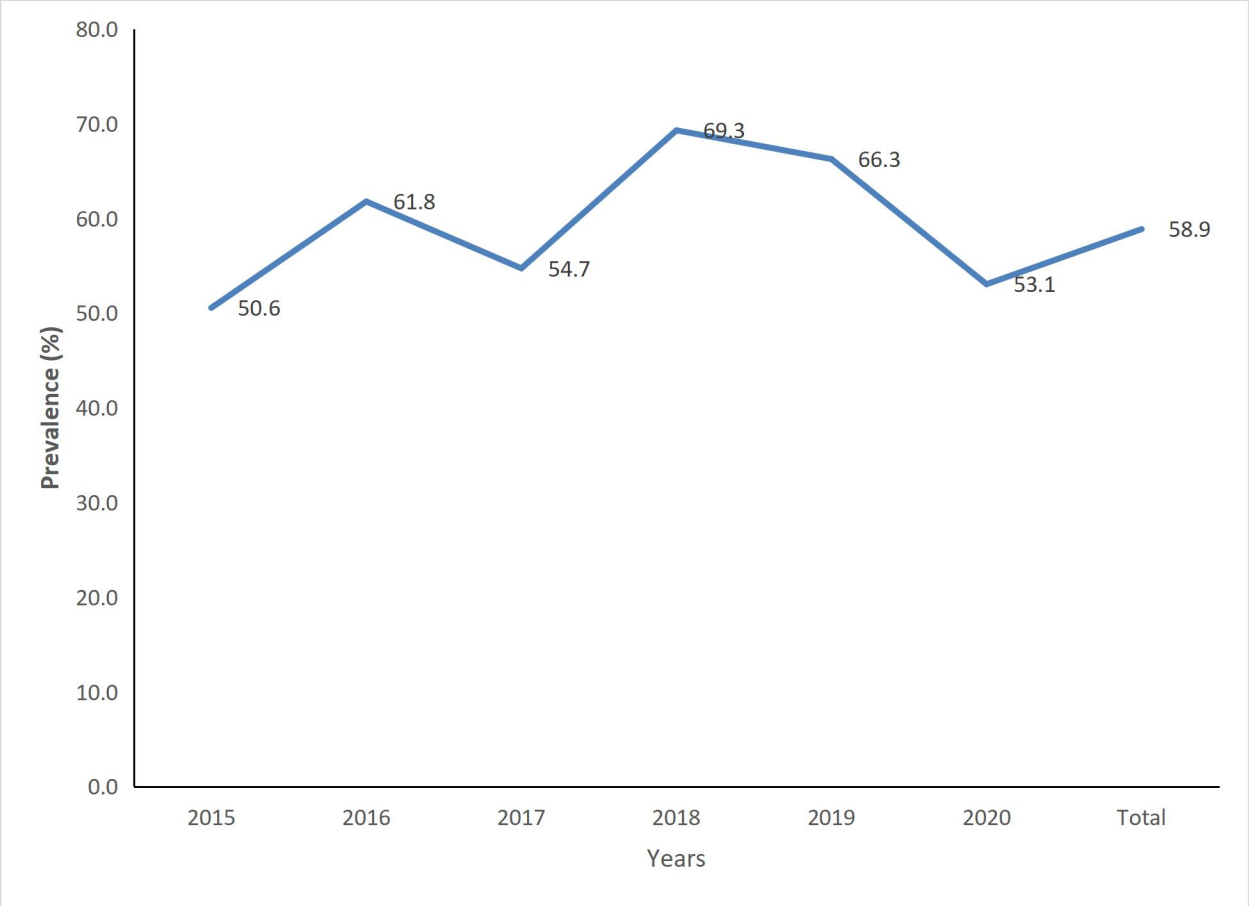

Figure 4.1: Prevalence Of CVA among patients admitted to the neurological ward of UBTH from 2015 to 2020

Figure 4.1 shows the prevalence Of CVA among patients admitted to the neurological ward of UBTH from 2015 to 2020 which is 58.9%. It shows that the highest prevalence (69.3%) was recorded in 2018, while the lowest prevalence of 50.6% was recorded in 2015.

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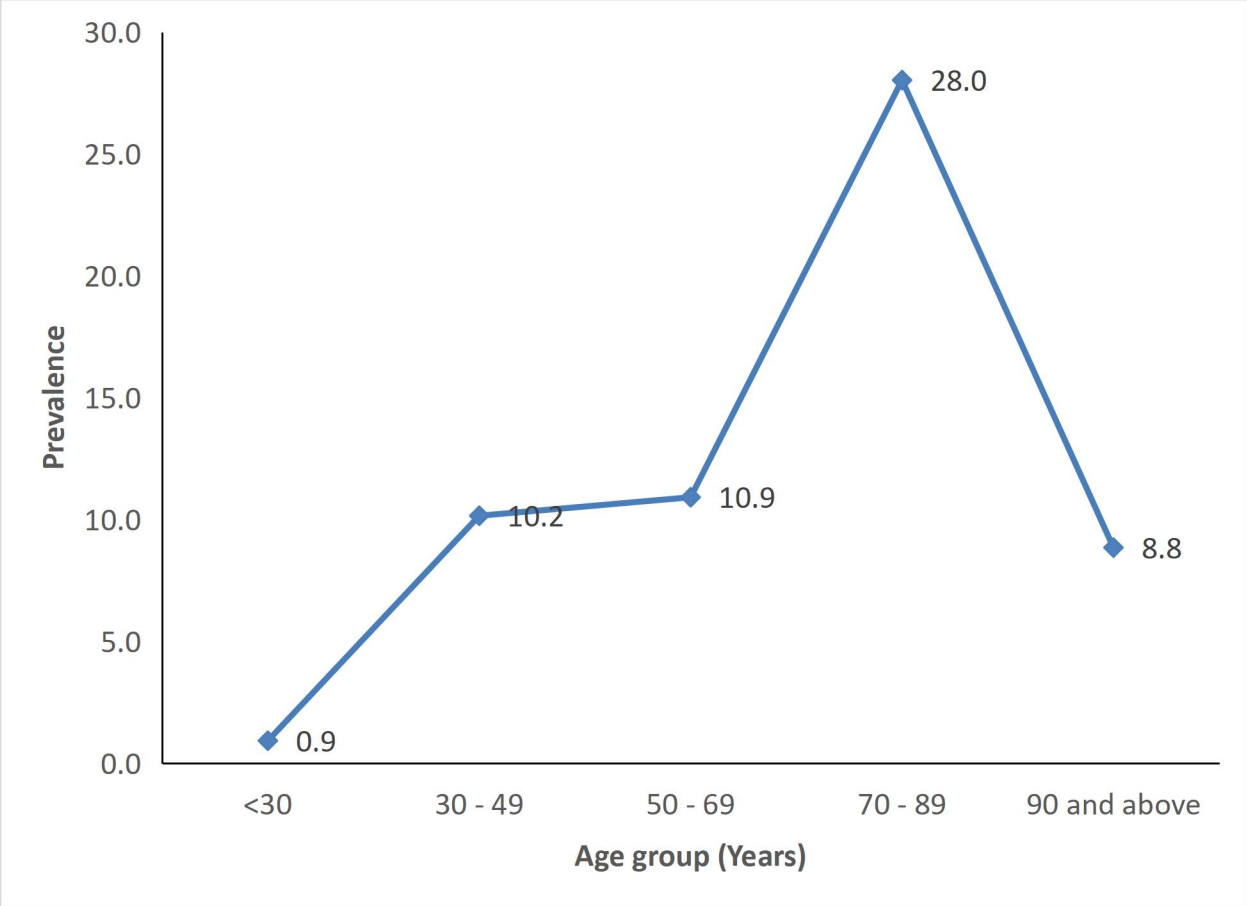

Figure 4.2: Age specific Prevalence of CVA among patients admitted to the neurological ward of UBTH from 2015 to 2020

Figure 4.2 shows the prevalence Of CVA among patients admitted to the neurological ward of UBTH from 2015 to 2020. It shows that the highest prevalence (28.0%) was recorded in 70-89years, while the lowest prevalence of 0.9% was recorded in those less than 30years.

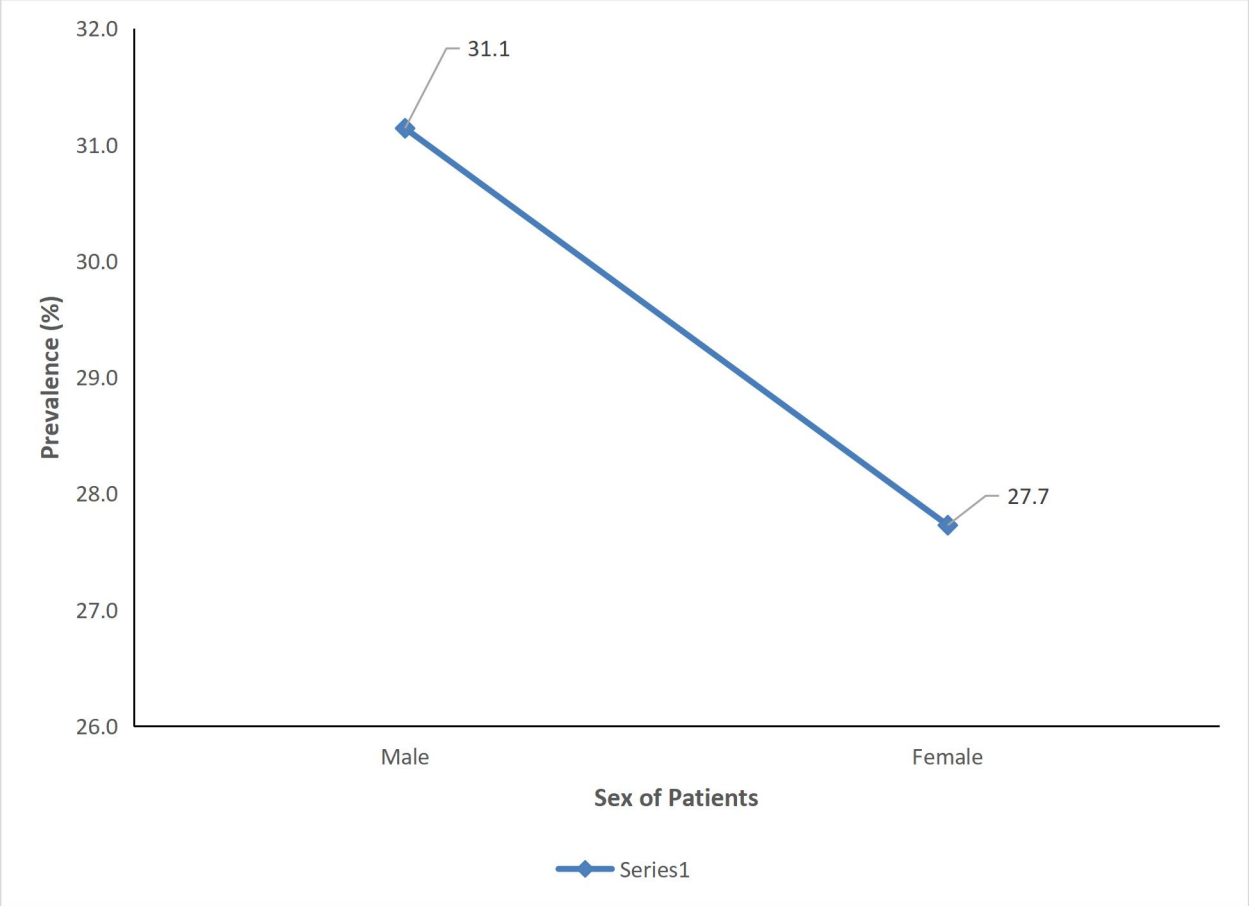

Figure 4.3: Sex specific Prevalence of CVA among patients admitted to the neurological ward of UBTH from 2015 to 2020

Figure 4.3 shows the prevalence Of CVA among patients admitted to the neurological ward of UBTH from 2015 to 2020. It shows that the highest prevalence (31.1%) was recorded among males, while the lowest prevalence of27.7% was recorded in females.

Research Questions Two: What are the associated risk factors of CVA among patients admitted under the period of review? Table 4.3: Risk factors of CVA among stroke patients?

Table 4.3

	Frequency	Percentage
Hypertension	606	43.4
DM	517	37.0
Previous History of CVA	61	4.4
Physical inactivity	12	0.9
Family History	65	4.7
Overweight	25	1.8
Alcohol	28	2.0
Seizure	19	1.4
Smoking	25	1.8
CKD	25	1.8
Cerebral palsy	7	0.5
CVA/CVD	81	5.8
High lipid profile	14	1.0
Trauma	16	1.1
Others	144	10.3

Table 4.3 shows the risk factors of CVA. The major risk factor of CVA is hypertension 606(43.4%), next is Diabetes mellitus 517(37.0%), the least is cerebral palsy.

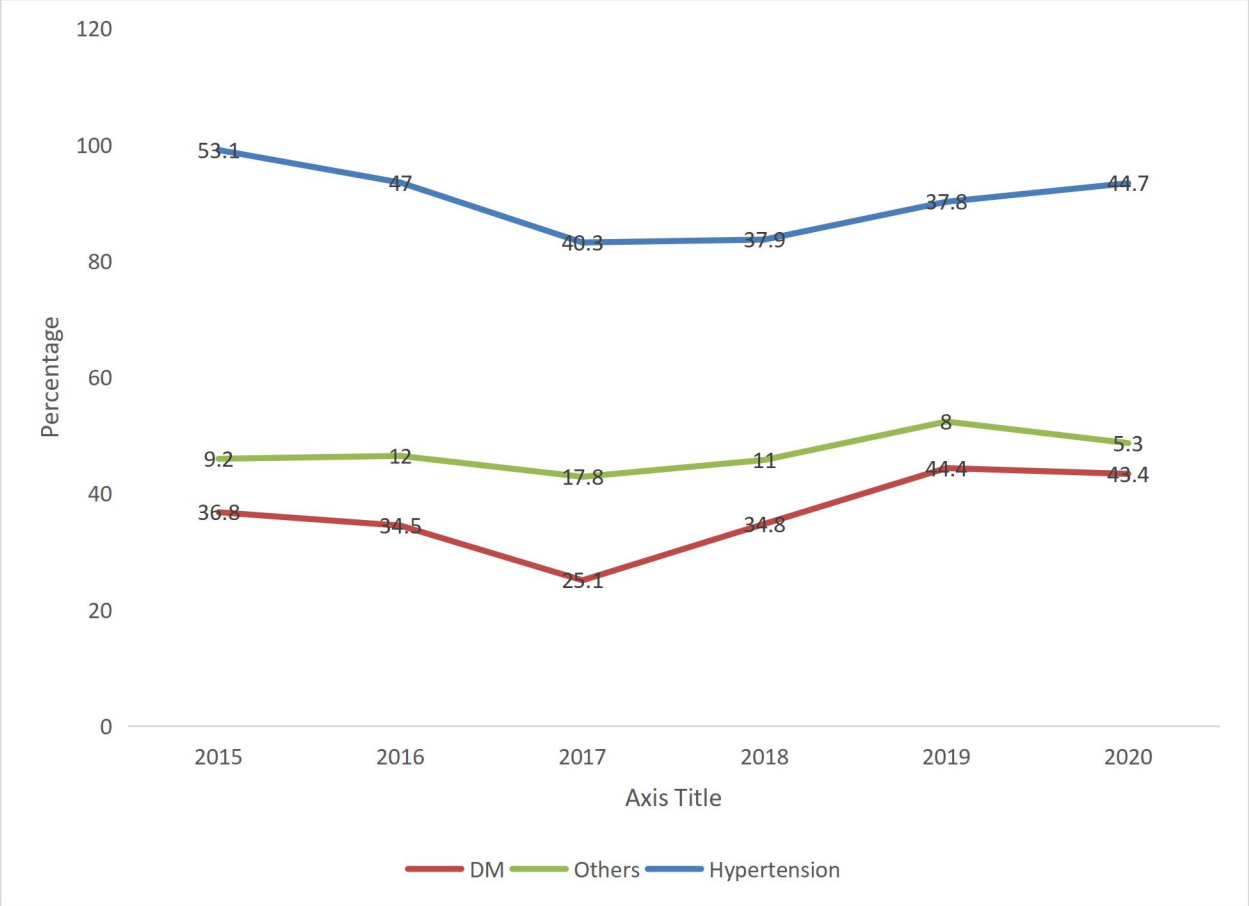

Figure 4.4: Annual Prevalence of CVA by risk factors

Figure 4.4 shows the annual prevalence of CVA for the period under review from 2015- 2020. The associated risk factors are hypertension, Diabetes Mellitus and others. In 2015, 2016, 2017, 2018, 2020, the highest comorbidity was hypertension with a prevalence of 53.1%, 47%, 40.3%, 37.9% and 44.8% respectively. In 2019, the highest comorbidity was Diabetes Mellitus with a prevalence of 44.4%.

Outcome of CVA

Table 4.4: Outcome of CVA

	Frequency	Percentage
Dead	377	27.0
Survival	970	69.4
DAMA	50	3.6
Total	1397	100.0

Table 4.4 shows the outcome of CVA. It shows that majority 970(69.4%) were discharged, 377(27.0%) died, while 50(3.6%) were discharged against medical advice.

Research Question three: What is the percentage of stroke survivors among the patients admitted during the period under review?

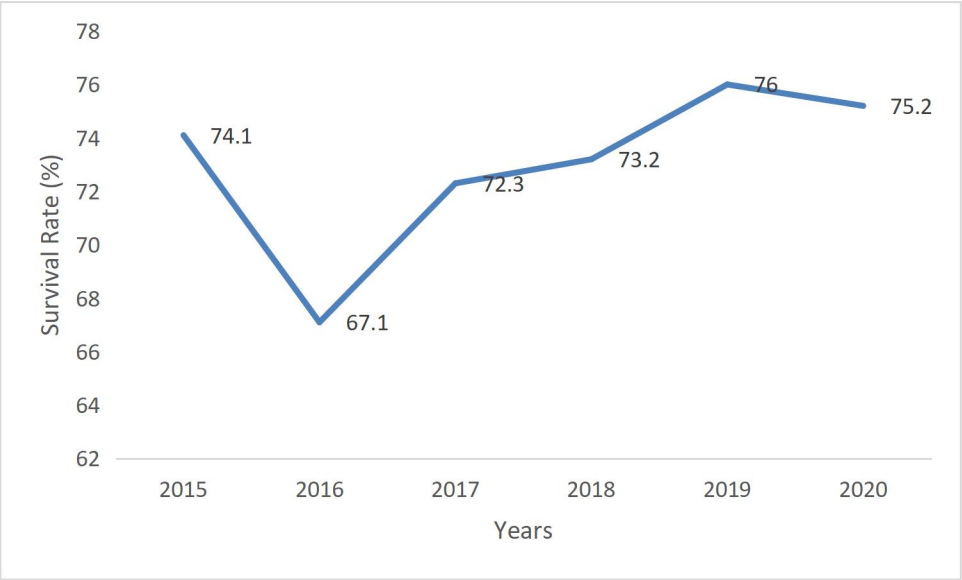

Figure 4.5: Annual Survival rate of CVA

Figure 4.5 shows the annual survival rate of CVA from 2015 to 2020. Year 2019 recorded the highest rate of survival at 76%, and year 2016 recorded the lowest rate of survival at 67.1%.

Research Question four: What is the distribution of the mortality rate among patients admitted during the period of study?

Table 4.5: Distribution of Mortality Rate.

Distribution	Total	Death rate
Sex		
Male	739	210(28.4)
Female	658	167(25.4)
Age group		
<30	22	5(22.7)
30 – 49	241	63(26.1)
50 – 69	259	71(27.4)
70 – 89	665	177(26.6)
90 and above	210	61(29.0)
Marital Status		
Married	1389	375(27.0)
Single	8	2(25.0)
Educational status		
Primary school	245	50(20)
Secondary school	260	10(3.8)
Tertiary	892	20(2.3)
Religion		
Christian	640	60(9.3)
Muslim	125	20(16)
Others	632	10(1.5)
Ethnicity		
Bini	767	210(27.3)
Esan	345	23(6.7)
Esanko	200	10(5)
Others	85	5(6.25)

Table 4.5 shows the Distribution of Mortality Rate during the period of study based on sex, age group, and marital status. The highest mortality rate all of CVA all through the years was distributed among the males, age cohort 50-69, and married patients. Primary educational level, Christians and Bini's .

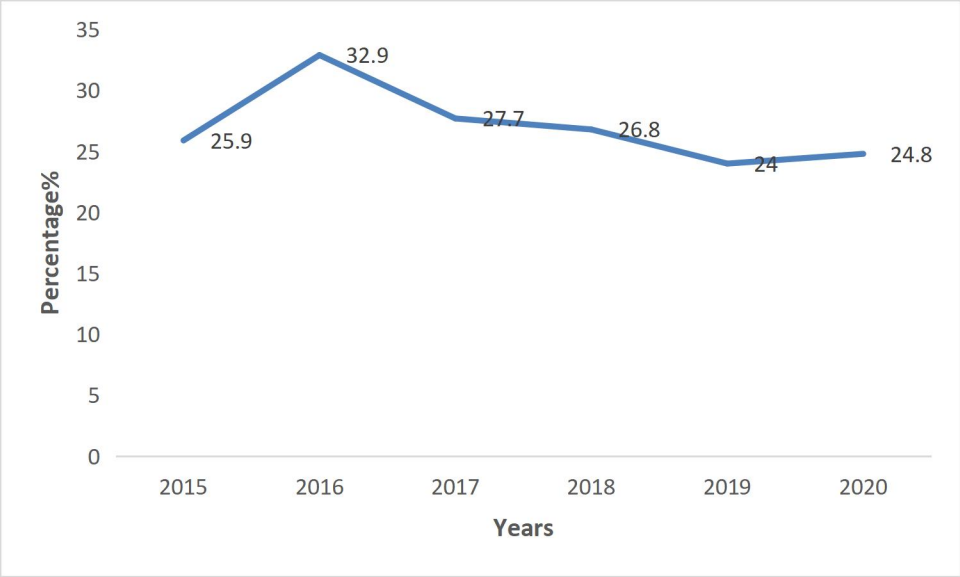

Figure 4.6: Annual Mortality rate

Figure 4.6 shows the annual Mortality rate throughout the period of study. The highest mortality was reported in the year 2016 at 32.9% and the lowest mortality at 24% in the year 2019.

Hypothesis one: There is no significant difference between stroke survival and social demographical characteristics.

Table 4.6: Multivariate logistic regression of association between Correlation between stroke survival and social demographical characteristics. There is no significant difference between stroke survival and social demographical characteristics.

	P	OR	95% Cl for Or
Sex			
Male		1.00	
Female	0.749	1.86	0.343-2.159
Age			
<30	0.001	0.06	0.000-0.114
30-49	0.476	0.553	0.108-2.822
50-69	0.191	0.423	0.117-1.535
70-89	0.237	2.466	0.132-1.651
>90		1.00	
Marital status			
Single	0.004	2.89	2.702-49.673
Married	0.034	5.34	1.135 -25.135
Level of education			
Primary	0.000	1.03	2.664-49.673
Secondary	0.000	4.94	3.330-46.882
Tertiary	0.000	8.00	24.401-1168.674
Occupation			
Farming	0.854	1.31	0.304-4.209
Trading	0.376	7.89	0.494-6.484
Others		1.00	
Tribe			
Bini	0.326	0.31	0.031-3.177
Esan	0.851	7.96	0.074-8.599
Esanko		3.92	12.392-12.392
Others		1.00	0(0.0)

OR: Odds ratio. CI: Confidence interval.

Table 4.7 shows the multivariate logistic regression associating with socio-demographic characteristics and stroke survival. The result shows that females are two times (odds ratio [OR] = 1.86, confidence interval [CI] = 0.343-2.159) more likely to survive than males. Respondents between 30 years are twice more likely to survive stroke than others. Respondents that are single are five times more likely to survive stroke than those married. Those with secondary school

education are eight times more likely to survive stroke than others. Respondents who are Esan are seven times more likely to survive stroke than other Ethnic groups. Level of Education, age and marital status show a significance difference ($p<0.05$).

Hypothesis Two: There is no significant difference between the rates of survival among the male and female patient within the period of study

Table 4.7: Prevalence of hypertension in male and female respondents

	BP Status				
	Dead	**Discharge**	**DAMA**	χ^2	**P**
Male	210(28.4)	499(67.5)	30(4.1)	3.026	0.220
Female	167(25.4)	471(71.6)	20(3.0)		

Table 4.7 shows that the survival rate among males is 499(67.5%), while among females is 471(71.6%). There is no significant difference in the prevalence. We therefore accept the null hypothesis.

This indicate that the rate of survival is not based on gender

Hypothesis three: There is no significant relationship between Outcome of CVA and its associated risk factors

Table 4.8: showing the Relationship between stroke survival rate and its associated risk factors of CVA

	Practice				
	Hypertension	**DM**	**Others**	χ^2	**P**
Outcome of CVA					
Dead	377(27.0)	22(26.5)	144(10.3)	37.228	0.006
Survival	970(69.4)	3(2.0)	61(4.4)		
DAMA	50(3.6)	6(7.4)	65(4.7)		

Table 4.8 shows that there is a significant relationship between Outcome of CVA and its associated risk factors .We therefore reject the null hypothesis

This indicates that that survival rate is based on associated risk factors.

CHAPTER FIVE

DISCUSSION OF FINDINGS

5.1 Introduction

This chapter provides the discussion of findings in accordance to the stated objectives and hypothesis, implications for nursing, summary, conclusion, recommendation and suggestion for further studies.

5.2 Discussion of findings

This research work was carried out with the aim of determining the prevalence of cerebrovascular accident and it's associated risk factors among patients admitted into University of Benin Teaching hospital from 2015-2020. The record of a total of 1397 patients admitted into the neurological ward and diagnosed of cerebrovascular accident that received treatment in University of Benin Teaching Hospital from 2015-2020 was analysed.

Objective one: Prevalence of cerebrovascular accident among patients admitted into UBTH from 2015 - 2020

The persistence of cerebrovascular accident and it's associated risk factors has been demonstrated in the various studies in the past. In this study, the medical records of 2373 patients were surveyed for stroke diagnosis and the screening protocol identified 1397 stroke cases which accounted for an aggregate prevalence of 58.9% of the total population. Findings from this study reported the highest prevalence of cerebrovascular accident in 2018 at 69.3% and the least prevalence was recorded in 2015 at 50.6%. In this study however, there has been an increase in the prevalence of stroke from 50.6% in 2015 to 53.1% in 2020. This value is in contrast to the reported prevalence

by Odiase and Iyasere, (2019) who reported a prevalence of CVA as 3.1% of all it's admissions. This contrast in value is may be due to the fact that Odiase and Iyasere study was carried out in a Secondary Hosptital in Edo state, hence the admissions of CVA was being referred to UBTH. Also, Habibi- Koolaee, Shahmoradi et al (2018) reported the prevalence of CVA in Gorgan to be 1.79% of the total population of its study which is in contrast to the prevalence of CVA in this study. The reason for this contrast may be due to Race as CVA is predominant amongst blacks.

Further analysis from this study indicated that prevalence of cerebrovascular accident had it's highest prevalence in age cohort 70-90 years which is 47.6% of the total population. This finding from this study supports the finding of Habibi-koolaee, Shahmoradi, Kalhori, Ghannadan, and Younesi (2018) who reported that the prevalence of CVA was higher in age group >=70 years. Also findings from this study shows that the prevalence of CVA among males in this study is higher than that of females. This finding supports the finding of Odiase and Iyasere (2019) and Komolafe, Fatoye et al (2018) who reported that the prevalence of CVA among males was higher as compared to females as in 53%, 47% and 56%, 43.7%. This also shows that the gender specific prevalence (Males 52.9%; Females 47.1%) in our study is however lower than theirs. According to this study 99.4% are married patients.

Objective two: risk factors of CVA

After full adjustments, hypertension, diabetes mellitus, hereditary, previous history of CVA, alcohol consumption, hyperlipidemia, overweight, smoking, seizure, chronic kidney disease, cerebral palsy, physical inactivity and others were significantly associated with stroke from the findings of this study. The largest comorbidity of CVA reported in this study was hypertension with a prevalence of 43.4%, followed by diabetes mellitus with a prevalence of 37.0%. The least comorbidity was cerebral palsy with a prevalence of 0.5%. This study is similar to Odiase and

Iyasere, (2018) whose associated risk factors were hypertension and diabetes mellitus at a prevalence of 84% and 12.2% respectively. Yi Luo, 2020 in China reported the risk factors from his study as thus; Hypertension, dyslipidemia, physical Inactivity, Family History. Komolafe, Fatoye et al (2018) at Ile-Ife reported the associated risk factors from its study as Hypertension, Diabetes mellitus and atrial fibrillation at prevalence of 73%,16%and 2% respectively, which is due to their non-compliance to drug as it was recorded that there was 53.6% non-compliance to hypertensive drugs and 7% was unaware of their hypertensive status.

Hypertension increases peripheral vascular resistance Hypertensive disorders promote stroke through increased shear stress, endothelial dysfunction, and large artery stiffness that transmits pulsatile flow to the cerebral microcirculation. Hypertension also promotes cerebral small vessel disease through several mechanisms, including hypoperfusion, diminished autoregulatory capacity and localized increase in blood-brain barrier permeability (Marilyn J Cipolla et al. 2018). Another risk factor again prominently reported in this study is diabetes mellitus which was reported among 37.0%. This is because having too much sugar in the blood damages the blood vessels. It can make the blood vessels become stiffened, and can also cause a build-up of fatty deposits. These changes can lead to a blood clot, which can travel to the brain and cause a stroke. Hence, adequate management and control of hypertension and diabetes mellitus is a panacea to avert CVD that will further deteriorate the patient health condition.

Objective three: CVA survival

Findings from this study shows that the aggregate percentage of stroke survivors of this study is 69.4%. A total of nine hundred and seventy patients survived the outcome of stroke. The percentage of stroke survivors was it's highest in 2019 at 76% and least in 2016 at 67.1%, this implies that the percentage of stroke survivors among patients admitted into the neurology ward,

UBTH is high. It increased minimally from 2016(67.1%) to 2019(76%). However, there was a severe decrease from 2015(74.1%) to 2016(67.1%).

Adeloye and Neurol, 2019 study in Nigeria reported a crude prevalence of stroke survivors of 6.7(5.8-7.7) / 100,000 which is in sharp contrast to the findings from this study.The pooled crude prevalence of stroke survivors in Nigeria was 6.7 (5.8-7.7) /1000 population, with this also higher among men at 6.4 (5.1-7.6) /1000, compared to women at 4.4 (3.4-5.5) /1000. In the period 2000-2009, the incidence of stroke in Nigeria was 24.3 (95% CI: 11.9-36.8) per 100,000, with this increasing to 27.4 (95% CI: 2.2-52.7) per 100,000 from 2010 upwards. The prevalence of stroke survivors increased minimally from 6.0 (95% CI: 4.6-7.5) per 1000 to 7.5 (95% CI: 5.8-9.1) per 1000 over the same period. The prevalence of stroke survivors was highest in the South-south region at 13.4 (9.1-17.8) /100,000 and among rural dwellers at 10.8 (7.5-14.1) /100,000.

First-Stroke Patients' 5-Year Survival Rates Study analyzed 836 patients who suffered their first stroke between 1997 and 1998 in Tuzla, Herzegovina, and Bosnia. Of the surviving patients, 60 percent who suffered an ischemic stroke and 38 percent with intracerebral hemorrhage survived one year, compared to 31 percent and 24 percent, respectively, after five years. At the end of the study, 29 percent of the stroke patients were still alive. The study found that those 50 or younger had a higher survival rate than those 70 or older, at 57 percent and 9 percent, respectively. Additionally, the long-term survival rate (five years) is better in patients who suffered from intracerebral hemorrhage compared to those with ischemic stroke. These results are in sharp contrast to findings from this study as it has a lower survival percentage due to the age group affected.

Stroke Survival Rates in Elderly Populations, a Canadian study conducted on stroke survivors 61 years (on average) or older to determine the survival rates of the elderly population. Over a third (38 percent) of the patients were at least 80 years old. Those over 80 who survived suffered from so many impairments that they were unable to return to their homes and, instead, had longer hospital stays or were cared for in medical facilities. Findings from this study is low as over a third of the population was over 80 years old.

Objective four: Distribution of mortality rate

Findings from this study shows that the aggregate mortality rate was 27.0%. Three hundred and seventy-seven of the patients admitted during the period of study died. Predictors of mortality was hypertension, age >50 years and diabetes mellitus. In this study the mortality rate was highest in the year 2016 at a rate of 32.9% and it was least in the year 2019 at a rate of 24%. Most of the deaths were attributed to poor management of modifiable risk factors, and this is potentially preventable. In this study a total of 739 males and 658 females were diagnosed of CVA, of which 210 males (28.4%) and 167 females (25.4%) died. In the various age group of this study, the number diagnosed of CVA were 22, 241, 259, 665 and 210 in age groups <30, 30-49, 50-69, 70-89, >90 age groups respectively and the distribution of mortality in this study was 22.7%, 26.1%, 27.4%, 26.6%, 29.0% in age groups <30, 30-49, 50-69, 70-89, >90 respectively. Also 1389 patients were married and 8 were single and the distribution of mortality in marital status was 375(27.0%) and 2(25.0%) in the married and unmarried groups respectively. According to level of education, 245, 260, 892 attained primary, secondary and tertiary level of education respectively; the distribution of mortality was 50(20%), 10(3.8%), 20(2.3%) in the primary, secondary and tertiary levels respectively. According to religion, 640, 125 were Christians and Muslim respectively, and the distribution of mortality was 60(9.3%) amongst Christians and 20(16%)

amongst Muslims, other religions were 632 and its distribution is 10(1.5%). According to Ethnicty, 767, 345, 200 of stroke patients in this study was Bini, Esan, Etsako respectively and the distribution of mortality was 54.9%, 24.7%, and 14.31% respectively, other ethnic group account 6% of the mortality. Hence, the distribution of mortality from this study was higher amongst males, age group (50-69), the married group, tertiary, Christians, and Bini.

These findings deviate from the findings of Ekeh, Ogunniyi, Isamade, and Ekrikpo (2015) carried out in Jos University Teaching Hospital, Nigeria with a mortality rate of 76.2% which is quite high and the predictors of mortality from this study were age ≥60 years, male gender, loss of consciousness, high NIHSS score (≥ 16), the presence of co-morbid conditions and presence of complications. Odiase and Iyasere (2019) study in Central Hospital, Benin City also had a contrast mortality rate of 68.8% among patients diagnosed of stroke during the period of study, it also reported that stroke was a significant cause of mortality among medical admissions. However, Munuleh, Daniel and Assemie, (2020) study in Ethiopia reported a mortality of rate of 18% which is lower than the findings from this study and the major contribution to the mortality from its study was hypertension, and it recommended that a better understanding of the factors associated with high blood pressure. Dabilgou (2020) study in Burkina Faso reported mortality rates of 31% and 39.3% in a 7 day and 14 day study respectively, mortality was higher in males at 60.1% and the predictors of mortality were history of heart disease (p= 0.038), post stroke pneumonia (p ≤0.001, and urinary tract infections (p ≤ 0. 001). Hence we should tailor our strength towards preventive strategies.

Hypthesis one: There is no significant difference between stroke survival and social demographical characteristics.Multivariate logistic regression of association between Correlation between stroke survival and social demographical characteristics was used to test this hypothesis.

Table 4.7 showed the multivariate logistic regression associating with socio-demographic characteristics and stroke survival. The result shows that females are two times (odds ratio [OR] = 1.86, confidence interval [CI] = 0.343-2.159) more likely to survive than males. Respondents between 30 years are twice more likely to survive stroke than others. Respondents that are single are five times more likely to survive stroke than those married. Those with secondary school education are eight times more likely to survive stroke than others. Respondents who are Esan are seven times more likely to survive stroke than other Ethnic groups. Level of Education, age and marital status show a significance difference ($p<0.05$).

Hypthesis two: There is no significant difference between the rates of survival among male and female patient within the period of study. The Chi-square was used to test this hypothesis. Table 4.7 showed that the survival rate among males is 499(67.5%), while among females is 471(71.6%) and that there is no significant difference in the prevalence. Therefore, the null hypothesis was accepted.This indicate that the rate of survival is not based on gender

Hypthesis three: There is no significant relationship between outcome of CVA and its associated risk factors. The Chi-square was used to test this hypothesis. Table 4.8 showed that there is a significant relationship between Outcome of CVA and its associated risk factors . Therefore the null hypothesis was rejected. This indicates that that survival rate is based on associated risk factors.

5.2 Summary of the study

This work was carried out to determine the prevalence of cerebrovascular accident among patients admitted into University of Benin Teaching Hospital from 2015-2020. The study was outlined into

five chapters. Chapter one of this study dealt with the introduction of the topic, statement of problem, objectives of the study, research questions, hypotheses and scope of study, the significance of the study and operational definition of terms. Relevant literatures were reviewed in chapter two on the subject under discourse, theoretical framework and empirical review of related studies were also discussed in this chapter. Chapter three dealt with research methodology which adopted a retrospective study design and four thousand six hundred and ninety-six hypertensive patients were reviewed from their case notes and admission record. A well-structured checklist was used as instruments of data collection based on the research objectives.

Analysis and interpretation of data were discussed in chapter four, tables with percentage; while test of hypotheses was done using chi-square test of association. Major findings of the study showed that CVA was highly prevalent in the year 2018, and the major comorbidities were hypertension and diabetes, with those patients above 70 and less than 80 years having the highest prevalence.

5.3 Implications to Nursing

- The nurse administrator should encourage the peoples to actively participate in conducting health programmes regarding life style modifications in cerebrovascular accident.
- The nurse administrator can help in getting funds from higher authorities for conducting seminars, workshop, and conferences regarding the importance of hypertension and diabetes awareness.
- The nurse administrator can act as a change agent in utilizing the research findings.
- Nurse administrator should promote the acceptance of changes.

5.4 Limitations to this study

The limitation to this study was delay and difficulty in getting assess to the medical records of patients. Another limitation to this study is insufficient social demographic data collection of the medical records of patients.

5.6 Conclusion

This study assessed prevalence of cerebrovascular accident among patients admitted into the University of Benin Teaching Hospital from 2015-2020. The result shows that the highest prevalence of CVA was reported in 2018 and the highest prevalence was reported among those in the age cohort above 70years and hypertension was the most associated risk factor.

5.7 Recommendations

Based on the findings from this study, the following recommendations were made:

- The local governments should ensure community mobilization and education on the importance of maintaining appropriate body weight and mobilize individuals to adopt nutritional practices and other life style modifications that will promote their health.
- Health worker should make anthropometric measurement a routine service for all patients attending health facility in order to identify those that are overweight and obese and give them health education and counselling.
- Routine blood pressure and anthropometric measurements should be done at the community level by the local health authority in order ensure early detection and prompt treatment of hypertension in the affected individuals.
- Routine blood sugar tests should be done at the community level by the local health authority in order ensure early detection and prompt treatment hyperglycemia in the affected individuals.

5.8 Suggestions for further studies

- The study may be replicated with randomization in selection of a larger sample size.
- A study can be conducted by including more number of variables.
- More studies are needed to assess treatment of cerebrovascular accident in a repeated measures design with diagnostic interview as well as self-report during the follow-up.
- There is the need to further accurately assess the association between cerebrovascular accident and the risk of other cardiovascular diseases.
- Finally, more interventional studies are needed to explore the underlying mechanisms and to determine the cause and effect relationships that comorbidity and CVA.

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APENDIX A

CHECKLIST FOR A PAST MEDICAL RECORD OF CEREBROVASCULAR PATIENTS

This is a checklist to get data from the past medical record of CVA patients that visited University of Benin Teaching Hospital (UBTH) in the Neurological ward from 2015 – 2020.

Demographic data

AGE RANGE	January	February	March	April	May	June	July	August	Sept.	Oct.	Nov.	Dec.
0-29	2015 2016 2017 2018 2019 2020											
30-59	2015 2016 2017 2018											

	2019 2020											
60+	2015 2016 2017 2018 2019 2020											

MARITAL STATUS	January	February	March	April	May	June	July	August	Sept.	Oct.	Nov.	Dec.
Single	2015 2016 2017 2018 2019 2020											
Married	2015											

	2016 2017 2018 2019 2020											

SEX	January	February	March	April	May	June	July	August	Sept.	Oct.	Nov.	Dec.
Male	2015 2016 2017 2018 2019 2020											
Female	2015 2016 2017 2018 2019											

	2020											

MEDICAL DATA

2015

OBJECTIVES	January	February	March	April	May	June	July	August	Sept.	Oct.	Nov.	Dec.
Number of patients admitted/ CVA diagnosed												
Risk factors												
Number of deaths												
Number of patients discharged												

2016

OBJECTIVES	January	February	March	April	May	June	July	August	Sept.	Oct.	Nov.	Dec.
Number of patients admitted/ CVA diagnosed												
Risk factors												
Number of deaths												

Number of patients discharged												

2017

OBJECTIVES	January	February	March	April	May	June	July	August	Sept.	Oct.	Nov.	Dec.
Number of patients admitted/ CVA diagnosed												
Risk factors												
Number of deaths												
Number of patients discharged												

2018

OBJECTIVES	January	February	March	April	May	June	July	August	Sept.	Oct.	Nov.	Dec.
Number of patients admitted/ CVA diagnosed												
Risk factors												
Number of deaths												

Number of patients discharged												

2019

OBJECTIVES	January	February	March	April	May	June	July	August	Sept.	Oct.	Nov.	Dec.
Number of patients admitted/ CVA diagnosed												
Risk factors												
Number of deaths												
Number of patients discharged												

2020

OBJECTIVES	January	February	March	April	May	June	July	August	Sept.	Oct.	Nov.	Dec.
Number of patients admitted/ CVA diagnosed												
Risk factors												
Number of deaths												

Number of patients discharged												