

# A Prospective and Observational Study on the Impact of Patient Counselling on Medication Adherence and Quality of Life in Stroke Patients

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## ABSTRACT

**PURPOSE:** The study goals are to improve medication adherence and high-quality lifestyles in stroke patients through effective patient counselling.

**BACKGROUND:** Stroke is one of the most common neurological disorders and the second most common cause of death worldwide. Stroke is likewise called cerebral infarction or cerebrovascular accident. It occurs when blood flow to the brain is reduced due to permanent or temporary blockage of an artery that carries blood to the brain, or rupture of an artery in the brain because of high blood pressure. The primary danger elements of Stroke encountered are high blood pressure, age, diabetes mellitus, obesity, smoking, and alcohol. The burden of stroke is gigantic and recurrence of stroke is a first-rate risk issue for growing the weight of stroke. Medications play an crucial position in stopping stroke recurrence. Adherence can be summarized as ‘The extent to which someone’s behaviour taking medicinal drug, following a diet, and/or executing life-style modifications – corresponds with agreed tips from a health care provider’. Current estimates are that only one-sixth of all sufferers come close to perfect adherence to their medicine regimen. The issue is gaining importance because of an increase in the prevalence of chronic diseases and an ageing population. Common reasons of medicine nonadherence include complicated remedy regimens and patients’ lack of belief within the treatment. Healthcare specialists play an crucial position in remedy adherence amongst stroke survivors. They should deal with the boundaries and facilitate remedy adherence behaviours.

**METHODOLOGY:** It is a prospective observational study conducted in Lalitha Super specialities Hospital, Guntur over 6 months duration study in the neurology department, a total of 200 patients of age groups between 25-85 of both genders with comorbidities like hypertension, diabetes, and affected with stroke were enrolled in the study.

**RESULTS & DISCUSSIONS:** The outcomes were obtained after 6 months duration observe within the neurology branch of tertiary care hospital a total of 200 patients enrolled in the study. The study of the effect of patient counselling on medication adherence and quality of life in stroke patients is a prospective observational take a look at in which facts is amassed in Lalitha super speciality hospital with a random representative sampling method explaining the qualitative & quantitative evaluation. We accrued 200 instances of these tormented by ischemic, hemorrhagic, and transient ischemic stroke, and affected person counselling was given and followed up after discharge. Out of 2 hundred samples, 67% of patients are suffering from ischemic stroke, 22.5% from hemorrhagic & 10.5% from TIA. Males (60.5%) are greater stricken by stroke than females (39.5%) and the age group between 46-55 is more affected by stroke

(32%). The patients who are with both hypertension and diabetes were extra affected by stroke (45.5%) than the ones having single co-morbidities, high blood pressure (28%) and DM (13.5%). In the collected samples males are more affected by hypertension (33.88%) and females with diabetes (15.18%) and both high blood pressure & diabetes (49.36%). Medication adherence in stroke patients is the primary goal of the observe, figure no 5 indicates that out of 200 sufferers, 129 (sixty four.5%) have highly adhered to medicine, 61 patients (30.5%) are mild, and, 10 patients (5.0%) low adherence to remedy after counselling to the patients. Quality of lifestyles is the main objective of this study. Figure no 6 suggests the quality of life of 200 stroke patients earlier than and after patient counselling. The exceptional of lifestyles had been measured using a modified ranking SCALE (mRS). After the 6-month observe up the quality of life had improved in patients. A quantitative analysis was done using the chi-square test the end result of  $\chi^2$  value is 35.1 with Df 6 at a significance level of 0.05, and the P value is  $<0.05$ .

**CONCLUSION:** The main aim of this study is to provide better patient counselling to improve medication adherence and the quality of life in stroke patients was achieved successfully. In this study 200 stroke patients were enrolled and patient counseling was provided and followed up through face-to-face interviews and phone calls. Among 200 patients, 129 patients (64.5%) were highly adherence to the medication and 61 patients (30.50%) were moderately. 10 patients (5%) were low adherence to medication. The quality of life of stroke patients increased after the counselling compared to before counselling. The medication adherence and quality of life were measured using MMAS-8 QUESTIONS and a modified ranking scale (mRS) respectively. It is also evident from the study that pharmacist intervention is effective in improving medication adherence and its associated effect on the management of patients receiving stroke therapy.

**KEYWORDS:** Stroke, Patient Counselling, Medication Adherence, Quality Of Life, mRS scale.

## INTRODUCTION

The brain is arguably the maximum complex of all the organs in your body. These three pounds of tissue compose the important nerve centre of the body, which coordinates all of our bodily functions, along with behaviour, idea, and feelings. Because the brain is a tough-operating organ, it requires consistent supplies of oxygen and vitamins from the blood to feature efficaciously. The heart pumps blood throughout the cerebral arteries ("cerebral" way "related to the brain"), turning in blood to the brain. Any massive interruption to this delivery of vitamins and oxygen will begin killing brain cells. Damage to brain cells takes place almost immediately upon cessation or even widespread limit of blood glide to the brain. Minor harm to any part of the brain can seriously affect the rest of the body. Widespread harm to the brain may even result in demise. That is referred to as a stroke. (1)

## STROKE:

Stroke is also called cerebral infarction or cerebrovascular accident. It occurs when blood flow to the brain is reduced due to permanent or temporary blockage of an artery that carries blood to the brain, or rupture of an artery in the brain due to high blood pressure.

This reduces oxygen and nutrient levels in the brain, causing brain cells to die within minutes. This can lead to brain damage, long-term disability, and even death.

Blood to the brain primarily forms the internal carotid artery, which supplies the anterior circulation of the brain (the cerebrum), and the basilar artery. It is carried by the left and right vertebral arteries and

supplies the brain's posterior circulation (the cerebrum's underside). The cerebrum, brainstem, and cerebellum. Blockage of the above arteries causes a stroke. A stroke is a medical emergency.

Prompt treatment can save someone's life and increase the chances of a successful recovery. (1)

**EPIDEMIOLOGY: -**

**Every 3.5 minutes, someone dies of a stroke.**

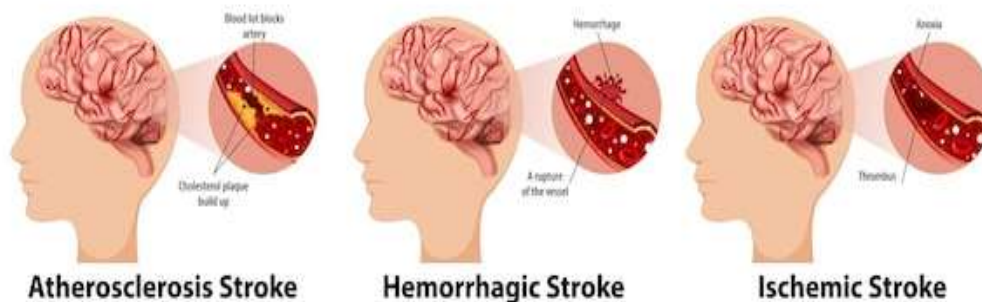
Every year, more than 795,000 people in the United States have a stroke. From 1990 to 2019, the absolute number of incident strokes increased by 70.0% prevalent strokes increased by 85.0%, deaths from stroke increased by 43.0%, and Ischemic stroke constituted 62.4% of all incident strokes in 2019 (7.63 million, while intracerebral haemorrhage constituted 27.9% (3.41 million and subarachnoid haemorrhage constituted 9.7% (1.18 million)The lifetime risk of stroke is higher for women than men, with a 1 in 4 risks of stroke for women after the age of 25. It is the leading cause of death for Americans, but the risk of having a first stroke is nearly double for blacks than for whites and blacks have the highest rate of death due to stroke. (2)

**CLASSIFICATION: -**

Stroke is further classified into the

- Ischemic stroke,
- Hemorrhagic stroke and
- Transient ischemic attack

# Three Types of Stroke



**Figure 1: Types of stroke.**

based on the formation of infarcts /lesions, rupture, or leakage of blood in brain blood vessels.

**ISCHEMIC STROKES** arise when a blood clot (called a "thrombi") or a fatty plaque (composed of fat deposits, cholesterol, and waste products) blocks blood flow to an area of the brain, causing the death of the related neurons (brain cells). Fatty plaques frequently line the interior artery walls of people with a cardiovascular ailment known as arteriosclerosis ("hardening of the arteries"). these plaques narrow the arterial space and serve as points around which blood begins to clot. The resulting thrombi start to block the artery, which reduces the amount of blood able to pass through, and therefore the amount of oxygen getting to the cells is decreased. The clots also can detach and float downstream (they are then referred to

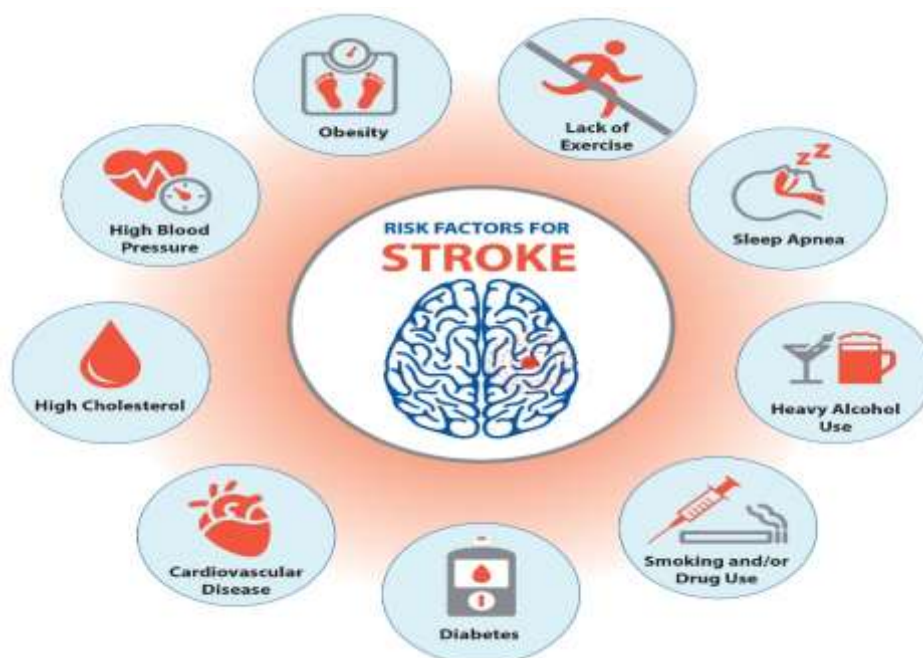
as emboli), block blood flow to brain regions, and cause next brain damage. about 88% of strokes are ischemic events. (1)

**HEMORRHAGIC STROKE:** this is caused due to rupture or leakage of blood vessels that supply blood to the brain due to hypertension this leads to leakage of blood to surrounding tissues of the brain and form hematomas which releases toxins and affects the brain tissue and cause stroke. (3)

**TRANSIENT ISCHEMIC ATTACK (TIA):** Also known as a mini-stroke. A brief stroke-like attack that, despite resolving within minutes to hours, still requires immediate medical attention to distinguish from an actual stroke. The transient ischemic attack is a warning sign for a future stroke. TIA is caused by a temporary decrease or blockage of blood flow to the brain cells usually not more than 5 minutes. (4)

**CAUSES AND RISK FACTORS: -  
MODIFIABLE:**

- **Hypertension** is the most important modifiable risk factor for stroke, with a strong, direct, linear, and continuous relationship between blood pressure and stroke risk. 66, 67 In INTERSTROKE, hypertension was by far the most important stroke risk factor: using a definition of hypertension that included a history of hypertension and a blood pressure measurement of 160/90 mm Hg, the population attributable risk. (4)
- Too much **alcohol consumption**. Shows increased risk of ischemic and hemorrhagic stroke. Heavy consumption is linked to hypertension as well as poor bp control.
- **Diabetes** is an independent risk factor for stroke with a 2-fold increased risk of stroke for diabetic patients, and stroke accounts for approximately 20% of deaths in diabetics. Pre-diabetics are also at increased risk of stroke. Diabetes increases the chance of having a stroke, which can damage brain tissue and cause disability or even death.
- **High cholesterol** increases plaque buildup in the arteries and blocks blood flow to your brain, causing a stroke. When plaque accumulates in the arteries of the brain, there is a significant risk of clotting, which can cause a stroke.



**Figure 2: Risk factors for stroke.**

- **Smoking** increases blood pressure and reduces oxygen in the blood. High blood pressure is a major risk factor. We found that smokers had a thinner cerebral cortex than non-smokers – in other words, smoking was destroying the grey matter in smokers. This is important because the cerebral cortex is a part of the brain that is crucial for thinking skills including memory and learning, so thicker is better.
- **Obesity.** increase in body mass index (BMI) increases the risk of stroke by 5 per cent. But too much weight on the body also can harm the brain. Research shows obesity impacts brain health from childhood well into adulthood, affecting everything from executive function skills – the complex ability to initiate, plan and carry out tasks – to substantially raising dementia risk.
- **obstructive sleep apnea:** leads to overproduction of reactive oxygen species, further oxygen desaturation, and hypoxia causing ischemia in the brain and leading to TIA and stroke.
- **Use of illegal drugs:** The most commonly abused drugs, including cocaine, amphetamines, and heroin, have been associated with an increased risk of stroke. Drugs
- can cause a stroke by damaging blood vessels in the brain or increasing the risk of a blood clot. (4)

#### UNMODIFIABLE

- **Age:** 55 or older has a higher risk for stroke.
- **Gender:** men have a higher risk of affecting with stroke than women.
- **Race:** black Americans have a higher prevalence of stroke and the highest death rate from stroke than any other racial group.
- **Family history/genetics:** people with a family history of stroke are likely to share common environments that increase their risk. (4)

#### RISK FACTORS

Risk factors for stroke that can't be changed:

- **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.** A stroke occurs more often in men, but more women than men die from strokes.
- **History of prior stroke.** You are at higher risk for a second stroke after you already have a stroke.
- **Heredity or genetics.** The chance of stroke is greater in people with a family history of stroke. (8)

#### Other risk factors include:

**Where you live.** 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. (9)

#### PATHOPHYSIOLOGY: -

#### ISCHEMIC STROKE: -

The common pathway of ischemic stroke is a lack of sufficient blood flow to perfuse cerebral tissue, due to narrowed or blocked arteries leading to or within the brain.

1. Without adequate blood supply and thus lack of oxygen, brain cells lose their ability to produce energy - particularly adenosine triphosphate (ATP).

2. Cells in the affected area switch to anaerobic metabolism, which leads to lesser production of ATP but releases a by-product called lactic acid.
3. Lactic acid is an irritant that can potentially destroy cells by disrupting the normal acid-base balance in the brain.
4. ATP-reliant ion transport pumps fail, causing the cell membrane to become depolarized; leading to a large influx of ions, including calcium ( $\text{Ca}^{++}$ ), and an efflux of potassium.
5. Intracellular calcium levels become too high and trigger the release of the excitatory amino acid neurotransmitter glutamate.
6. Glutamate stimulates AMPA receptors and  $\text{Ca}^{++}$ -permeable NMDA receptors, which leads to even more calcium influx into cells.

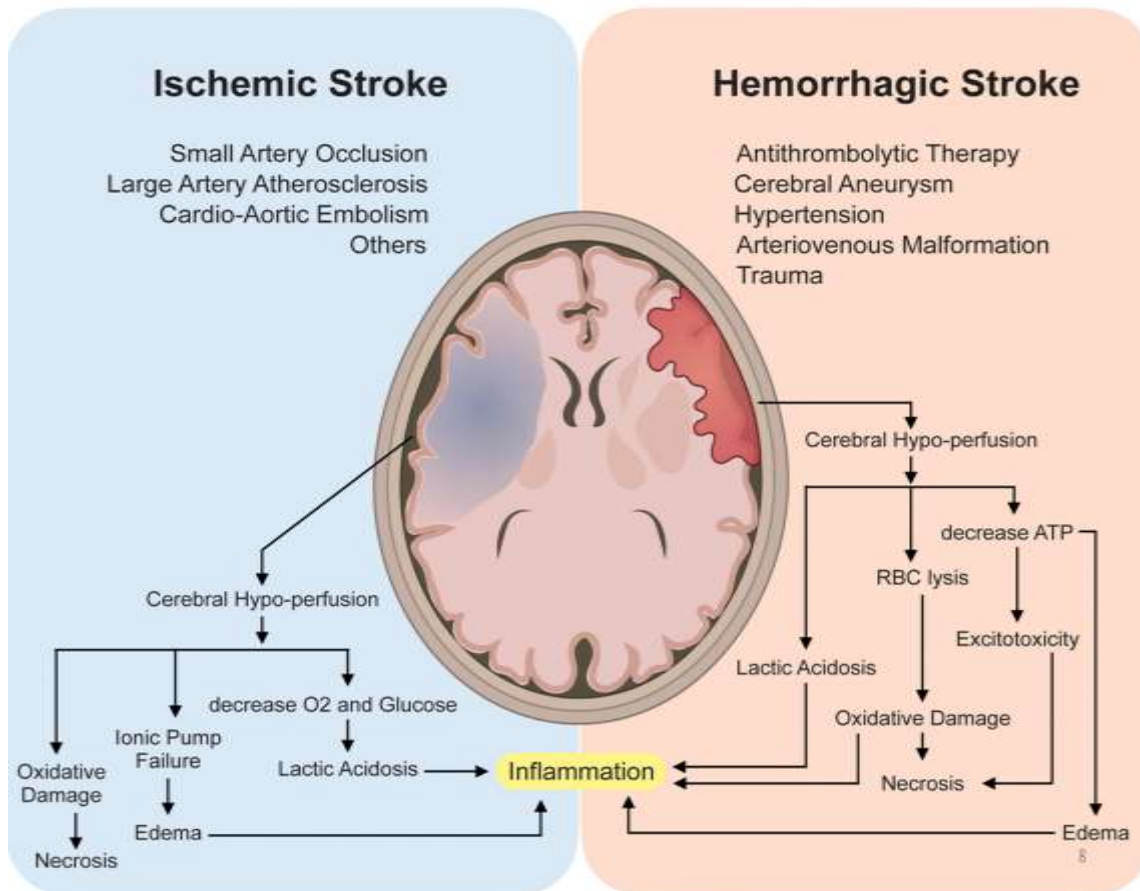


Figure 3: Pathophysiology of stroke.

7. Excess calcium entry overexcites cells and activates proteases (enzymes that digest cell proteins), lipases (enzymes that digest cell membranes), and free radicals formed as a result of the ischemic cascade in a process called excitotoxicity.
8. As the cell's membrane is broken down by phospholipases, it becomes more permeable, and more ions and harmful chemicals enter the cell.
9. Mitochondria break down, releasing toxins and apoptotic factors into the cell. Cells experience apoptosis.
10. If the cell dies through necrosis, it releases glutamate and toxic chemicals into the environment around it. Toxins poison nearby neurons, and glutamate can overexcite them.

11. The loss of vascular structural integrity results in a breakdown of the protective blood-brain barrier and contributes to cerebral oedema, which can cause secondary progression of brain injury. (5)

**HEMORRHAGIC STROKE: -**

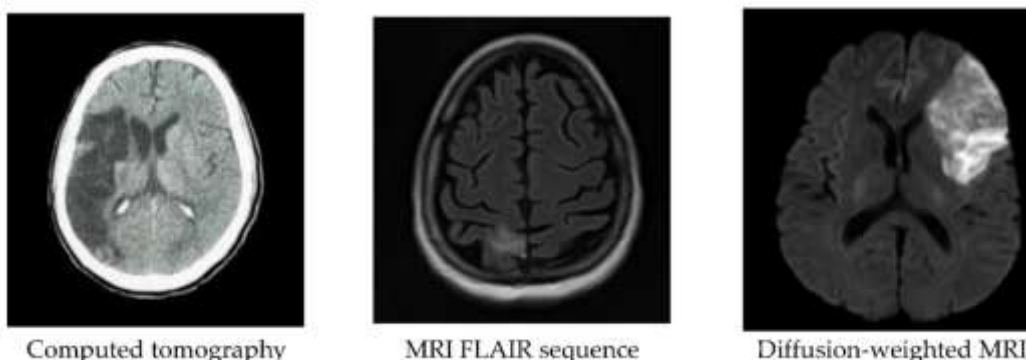
Hemorrhagic strokes are due to the rupture of blood vessels leading to compression of brain tissue from an expanding hematoma. This can distort and injure tissue. In addition, the pressure may lead to a loss of blood supply to affected tissue with resulting infarction, and the blood released by brain haemorrhage appears to have direct toxic effects on brain tissue and vasculature. (5)

- **Intracerebral haemorrhage** – caused by rupture of a blood vessel and accumulation of blood within the brain.
- This is commonly the result of blood vessel damage from chronic hypertension, vascular malformations, or the use of medications associated with increased bleeding rates, such as anticoagulants, thrombolytics, and antiplatelet agents. (5)
- **Subarachnoid haemorrhage** is the gradual collection of blood in the subarachnoid space of the brain dura, typically caused by trauma to the head or rupture of a cerebral aneurysm. (5)

**Signs and symptoms of stroke include: -**

- Trouble **speaking**, confusion, slur words, or difficulty in understanding speech.
  - **Paralysis** or numbness of the face, arm, or leg. The patient may develop sudden numbness, weakness, or paralysis in the face, arm, or leg. This often affects just one side of the body and also one side mouth drops while smiling.
  - Problems seeing in one or both eyes. sudden blurred or blackened **vision** in one or both eyes, or may see double.
  - **Headache**. A sudden, severe headache, which may be accompanied by vomiting, dizziness, or altered consciousness, may indicate symptoms of a stroke.
  - Trouble walking. stumble or **lose balance**. sudden dizziness or a loss of coordination
  - Seek immediate medical attention if noticed any signs or symptoms of a stroke, even (8)  
If they seem to come and go or disappear completely. Think "**FAST**" and do the following:
  - Face. Ask the person to smile. Does one side of the face droop?
  - Arms. Ask the person to raise both arms. Does one arm drift downward? Or is one arm unable to rise?
  - Speech. Ask the person to repeat a simple phrase. Is his or her speech slurred or strange?
- Time. If any of the below signs are observed call 911 or emergency medical help immediately. (8)

**DIAGNOSIS: -**



**Figure 4: MRI scan of brain**

- **A physical exam.** listening to the heart, checking the blood pressure, and having a neurological examination to see how a potential stroke affects the nervous system.
- **Blood tests.** several blood tests, including tests to check how fast the blood clots, and whether the blood sugar is too high or low, to identify any infection. (11)
- **Computerized tomography (CT) scan.** A CT scan uses a series of X-rays to create a detailed image of your brain. A CT scan can show bleeding in the brain, an ischemic stroke, a tumour, or other conditions. Doctors may inject a dye into the bloodstream to view the blood vessels in the neck and brain in greater detail (computerized tomography angiography). (11)
- **Magnetic resonance imaging (MRI).** An MRI uses powerful radio waves and a magnetic field to create a detailed view of the brain. An MRI can detect brain tissue damaged by an ischemic stroke and brain haemorrhages Doctor may inject a dye into a blood vessel to view the arteries and veins and highlight blood flow (magnetic resonance angiography or magnetic resonance venography).
- **Carotid ultrasound.** In this test sound, waves create detailed images of the inside of the carotid arteries in the neck. This test shows a buildup of fatty deposits and blood flow in the arteries. (11)
- **Cerebral angiogram.** In this uncommonly used test, the doctor inserts a thin, flexible tube (catheter) through a small incision, usually in the groin, and guides it through the major arteries and into the carotid or vertebral artery. Then the doctor injects a dye into the blood vessels to make them visible under X-ray imaging. This procedure gives a detailed view of arteries in the brain and neck. (11)
- **Echocardiogram.** An echocardiogram uses sound waves to create detailed images of the heart. An echocardiogram can find a source of clots in the heart that may have travelled from the heart to the brain and caused a stroke. (11)

#### MANAGEMENT: -

The specific treatments recommended depend on whether a stroke is caused by

- bleeding in or around the brain (Hemorrhagic stroke)
- a blood clot blocking the flow of blood to the brain (Ischemic stroke) (12)

#### TREATMENT FOR ISCHEMIC STROKE: -

In ischaemic stroke, the combination of medications is to treat the problem and prevent it from happening again.

While some of these medications must be taken right once and for a brief time, others may not be started until the stroke has been treated and may require long-term use.

- **Thrombolysis: -**

Thrombolysis Injections of the drug **alteplase**, which breaks blood clots and improves blood flow to the brain, are frequently used to treat ischemic strokes.

Using drugs to "burst clots" in this way is referred to as thrombolysis

Start taking alteplase as soon as possible after a stroke occurs, ideally within 4.5 hours, for best results. (12)

It's not typically advised if more than 4.5 hours have passed because it's unclear whether using it after this point is still effective.

It's crucial to perform a brain scan to confirm the diagnosis of an ischemic stroke before alteplase is administered.



This is because the medication could worsen hemorrhagic stroke-related bleeding.

• **Aspirin and other antiplatelets:** -

Most patients receive aspirin right away after suffering an ischemic stroke. Aspirin is a pain reliever as well as an antiplatelet, which lowers the possibility of another clot forming. Other antiplatelet medications may be used later, such as clopidogrel and dipyridamole. (12)

• **Anticoagulants:** -

Some people may be prescribed an anticoagulant to help lower their chances of developing new blood clots in the future.

Anticoagulants work by altering the chemical composition of the blood in such a way that clots do not form.

Warfarin, apixaban, dabigatran, edoxaban, and rivaroxaban are some long-term anticoagulants.

There are also several anticoagulants known as heparins, which are only administered by injection and are only used for a short period. (12)

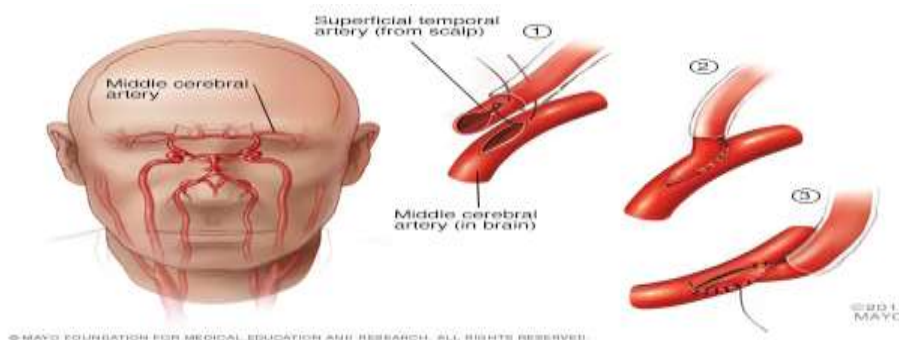
➤ **B.P medicines:**

If the blood pressure was persistently greater than 150/80 mmHg then n this antihypertensive medication was prescribed. Commonly used medications include:

- diuretics containing thiazide
- ACE inhibitors
- ARB's, containing telmisartan, losartan.
- Calcium channel inhibitors like amlodipine
- beta blockers example metoprolol
- alpha-blockers. (12)

**SURGICAL MANAGEMENT:** -

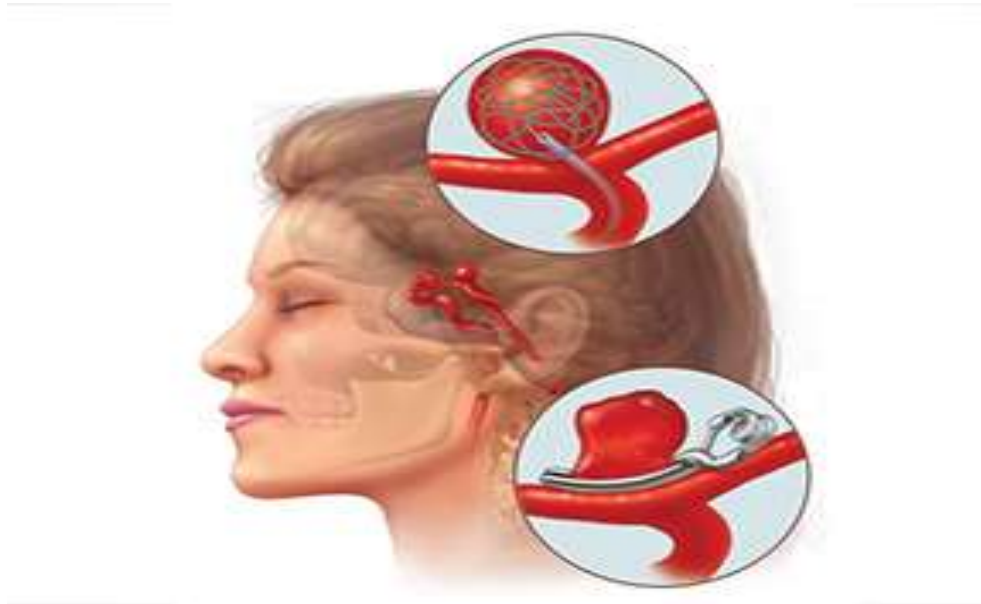
- Carotid endarterectomy is an open surgical operation performed to clear the carotid artery of a blockage. A tiny incision is made in the neck, and the obstruction is safely eliminated after the surgeon delicately opens the carotid artery and rebuilds the arterial walls to guarantee smooth blood flow. (13)



**Figure 5: Carotid endarterectomy**

- Cerebral revascularization or vascular bypass surgery can help avoid strokes and transient ischemic attacks (TIAs) by providing a new blood supply. A neurosurgeon transfers blood to the oxygen-starved brain from a "donor" artery in the scalp or adjacent muscles. The brain is then able to produce new blood vessels from the graft, a process known as angiogenesis, to take advantage of the new source of blood supply.

- Endovascular neurosurgery is a subspecialty of Interventional Neuroradiology (INR). These cutting-edge techniques are now being used. (13)



**Figure 6: Cerebral revascularization**

#### **COMPLICATIONS:**

- Paralysis or loss of muscle movement
- Difficulty in talking or swallowing
- Memory loss or thinking difficulties
- Emotional problems
- Pain
- Changes in behaviour and self-care (14)

#### **PREVENTIONS:**

1. Choose healthy foods and drinks
2. Keep a healthy weight
3. Get regular physical activity
4. Stop smoking
5. Avoid drinking too much alcohol
6. Control your medical conditions
7. Control blood pressure
8. Control diabetes
9. Adhere to medicines prescribed (15)

#### **MEDICATION ADHERENCE:**

Adherence to therapies is a primary determinant of treatment success. Failure to adhere is a serious problem that not only affects the patient but also the health care system. Medication nonadherence in patients leads to substantial worsening of disease, death, and increased health care costs. A variety of factors are likely to affect adherence. Barriers to adherence could be addressed as patient, provider and health system factors, with interactions among them. Identifying specific barriers for each patient and

adopting suitable techniques to overcome them will be necessary to improve medication adherence. Healthcare professionals such as physicians, pharmacists, and nurses have a significant role in their daily practice to improve patient medication adherence.

Current estimates are that only one-sixth of all patients come close to perfect adherence to their medication regimen. The issue is gaining importance due to an increase in the prevalence of chronic diseases and an ageing population. Common causes of medication nonadherence include complex treatment regimens and patients' lack of belief in the treatment. (16)

It is evident that medication adherence, defined as "the extent to which the patient's action matches the agreed recommendations" is sub-optimal in stroke survivors despite the efficacy of medications for risk factor control of cardiovascular conditions such as hypertension and hyperlipidemia with about a third of stroke survivors considered non-adherent. (16)

The burden of stroke is immense and recurrence of stroke is a major risk factor for increasing the burden of stroke. Medications play an important role in preventing stroke recurrence. The drug treatment for secondary prevention of stroke includes anti-platelets, high-dose statins, and drugs to control vascular risk factors such as hypertension, diabetes, and dyslipidemia. Adherence to the medical regimen is defined as the extent to which a person acts by the prescribed interval and dose of the medication regime. Adherence to drug treatment in patients who have suffered from stroke is not optimal. In a study, factors identified as significant for drug compliance among stroke survivors after ischemic stroke were. The mental state of the patient, perception of medication necessity, and doctor-patient communication men were less compliant with drugs and had more concern about medications when compared to women. Patient-level barriers identified were their ability to self-care, the importance people attach to a stroke event, and their knowledge of stroke medication level barriers identified were beliefs about medication and how it works, medication routines, changing medications, and regimen complexity and burden of treatment. Studies also show that individual-based post-discharge stroke nurse counselling and use of information packages have shown an increased drug adherence of 87–100% at 6 weeks and 6 months following discharge among ischemic stroke patients. Studies on adherence to secondary prevention drugs and their associated factors among post-stroke patients are limited in India. Healthcare professionals play an important role in medication adherence among stroke survivors. They should address the barriers and facilitate medication adherence behaviours. Multi-disciplinary discharge planning is needed to address these barriers, including shaping their beliefs and encouraging them to take the medications. (15)

### **QUALITY OF LIFE IN STROKE PATIENTS:**

Quality of life (QOL) is another important outcome after a stroke. Recreational and social activities are reduced for most stroke survivors after they return home, whether or not they have made a complete functional recovery. QOL instruments have begun to be developed and applied to the evaluation of prognosis after stroke. Standard multidimensional health-related QOL survey tools involve some measurement of physical status, mental and psychological status, social activity status, and functional status.320 Numerous instruments have been developed, including the Stroke Impact Scale (SIS), modified ranking scale. ( 21)

In recent times, there has been a greater promotion of quality of life (more precisely: health-related quality of life). It has become an essential criterion for the seriousness of patient health. There are many definitions of quality of life. However, they have one thing in common: it is mainly subjective wellness that includes physical, psychological, social, and mental dimensions. Nursing care puts the spotlight on subjectively

perceived quality of life. Nurses play an important role as care providers and as mediators of personal recovery and multidisciplinary care, and can support stroke patients’ return to an independent life. Chronic diseases, such as stroke, are associated with QoL (Quality of life) impairment. In clinical practice, stronger emphasis should be placed on monitoring the quality of life of post-stroke patients.

Stroke is undoubtedly a disease whose consequences have a considerable impact on the quality of the patient’s life. Every year, in a population of one million, approximately 2,400 people will suffer a stroke. Of these, fewer than 50% return to an independent life Even those patients who regained their functional independence continue to suffer considerable deficits, limitations, and changes in cognitive functions and behavior. Stroke is a widespread disease that has a disabling impact on life and, in addition to physical changes, brings about many psychological and cognitive processes. Stroke is one of the main causes of disability, and doubles the risk of dementia.

**The Modified Rankin Scale (MRS)**

It is a single-item, global outcomes rating scale for patients post-stroke. It is used to categorize the level of functional independence regarding pre-stroke activities rather than to the observed performance of a specific task.

The original Rankin Scale was developed in Scotland in 1957 and was used to assess disability in patients with acute stroke (Rankin, 1957). It consisted of a single item, with five grades representing no, slight, moderate, moderately severe, and severe disability. The Rankin Scale was modified in 1988 as part of a study of aspirin in stroke prevention (UK-TIA Study Group, 1988) and renamed the MRS. This modification was not reported in the aspirin study but was described subsequently by van Swieten, Koudstaal, Visser, Schouten, and van Gijn (1988). An additional grade was included (grade 0 = no symptoms at all) because of reported concerns about a lack of grading comprehensiveness. The wording of the definitions for grades 1 and 2 was also altered because of concerns of ambiguity (Bamford, Sandercock, Warlow, & Slattery, 1989). The changes were reportedly also made to accommodate language disorders and cognitive defects, to allow comparison between patients with different kinds of neurological deficits and to add a further dimension by referring to previous activities. (24)

Rankin Grade	Description
0	No symptoms
1	No significant disability despite symptoms; able to carry out all usual duties and <u>activities</u>
2	Slight disability: unable to carry out all previous <u>activities</u> but able to look after own affairs without assistance
3	Moderate disability: requiring some help, but *able to walk without assistance
4	Moderately severe disability: unable to walk without assistance, and unable to attend to own bodily needs without assistance
5	Severe disability: bedridden, incontinent, and requiring constant nursing care and attention

## LITERATURE REVIEW

1. **Abel Demerew Hailu, Solomon Ahmed Mohammed**, et. al-(2020) published a research study entitled “Health-related quality of life of stroke patients before and after intervention” World Health Organization defined stroke as “rapidly developing clinical signs of focal (or global) disturbance of cerebral function, lasting quite 24 hours or resulting in death with no apparent cause other than that of vascular origin” [1]. In every 6 people will have a stroke in life; 15 million people suffer a stroke per year, and from these 6 million people die [2]. In developed countries, stroke is a cause of death after cancer and heart conditions.
2. **Alwin Puthenpurakal and Jane Crussell**, et. al- (2017) published a research study entitled “definition, burden, risk factors & diagnosis”. left untreated, stroke is a debilitating disease that can lead to death. Current statistics reflect the negative impact of unhealthy lifestyles and genetic and environmental predispositions, and the consequent burden on healthcare systems. Refining the definitions of the different types of stroke has helped us better understand the disease, improve its diagnosis and tailor its treatment. For all the advances in brain imaging techniques, thorough bedside clinical assessment is key to reaching an accurate diagnosis, which then allows appropriate treatment.
3. **Archana. Nair, P. N. Sylaja, L. Suja Raj**, et. al, (2021) published a research study entitled “adherence to drug treatment after stroke and its association with patients, beliefs about medicines among stroke survivors”. Medications for secondary stroke prevention are important in reducing recurrence in patients who have already experienced a stroke or transient ischemic attack. This study aimed to assess adherence to drug treatment after stroke and examine the association between drug adherence and patients’ beliefs about medicine and illness perception among stroke survivors.
4. **Abeer Surihan Alharbi1, Muneera Saeed Alhayan, Shahad Khalid Alnami, Reem Saeed Traad**, et. al – (2019) published a research study entitled “Epidemiology and Risk Factors of Stroke”. The second leading cause of mortality worldwide is stroke and it represents the third leading cause of morbidity globally. The stroke risk factors are divided into non-modifiable and modifiable factors. The common non-modifiable factors which cannot be changed or controlled are transient ischemic attack and family history. Furthermore, the most prevalent modifiable risk factors are uncontrolled hypertension followed by uncontrolled diabetes. Moreover, physical inactivity, cigarette smoking, excessive alcohol intake, and obesity are considered as stroke modifiable risk factors.
5. **Ayeesha Kamran Kamal1, Quratulain Nauman Shaikh, Omrana Pasha**. et. al – (2015) published a research study entitled “Improving medication adherence in stroke patients through Short Text Messages”. Stroke is a major cause of morbidity and mortality, especially in low and middle-income countries. Medical management is the mainstay of therapy to prevent the recurrence of stroke. Using SMS (Short Messaging Service) as reminders to take medicines has been used previously for diseases such as diabetes and HIV with moderate success. We aim to explore the effectiveness and acceptability of SMS in increasing adherence to medications in patients with stroke.
6. **Beatrice Chapman, Vanessa Bogle**, et.al-(2014) published a research study entitled “Adherence to medication and self-management in stroke patients”. Stroke is the third most common cause of mortality and one of the leading causes of adult physical disability in England. Medical treatment is imperative for the management of stroke and the risk reduction of recurrent stroke. The success of medical treatment is determined largely by adherence. However, research has shown that adherence to medication in patients who have had a stroke is often suboptimal. Self-management interventions

have been shown to improve adherence in long-term conditions. The impact of self-management interventions specifically on adherence to stroke medication is unknown

7. **Bruce C. V. Campbell, Deidre A. De Silva** et. al- (2019), published a research study entitled “ischaemic stroke” Stroke is the second highest cause of death globally and a leading cause of disability, with an increasing incidence in developing countries. Ischaemic stroke caused by arterial occlusion is responsible for the majority of strokes. Management focuses on rapid reperfusion with intravenous thrombolysis and endovascular thrombectomy, which both reduce disability but are time-critical. Accordingly, improving the system of care to reduce treatment delays is key to maximizing the benefits of reperfusion therapies. Intravenous thrombolysis reduces disability when administered within 4.5h of the onset of stroke.
8. **Brenda Johnsona Diane Handlerb Victor Urrutiaa Anne W. Alexandrovc**, et al – (2018) published a research study entitled “Retention of Stroke Education Provided during Hospitalization: Does Provision of Required Education Increase Stroke Knowledge”: While stroke education is required during hospitalization, its ability to produce retention may be poor. We propose the study of test-enhanced learning methods through Targeted Education in Stroke Trials (TEST) to examine the effect of novel teaching methods on patient/caregiver knowledge retention.
9. **Crayton** et. al- (2018) published a research study entitled “improving medication adherence in stroke survivors”. Medications targeting stroke risk factors have shown good efficacy, yet adherence is suboptimal. A lack of underlying theory may contribute to the ineffectiveness of eliciting or sustaining behavior change in many existing interventions targeting medication adherence in stroke. Intervention effectiveness and implementation could be enhanced by consideration of evidence base and theory to drive development. This study aims to identify appropriate components for a theory-driven and evidence-based medication adherence intervention for stroke survivors.
10. **Chandril Chugh** et. al- (2019) published a research study entitled “Acute Ischemic Stroke: Management Approach”. Stroke is defined by the World Health Organization as a clinical syndrome consisting of rapidly developing clinical signs of focal (or global in case of coma) disturbance of cerebral function lasting more than 24 hours or leading to death with no apparent cause other than a vascular origin.<sup>1</sup> Stroke is classified broadly into three categories; ischemic, hemorrhagic, and subarachnoid hemorrhage. Ischemic stroke occurs due to blockage of blood vessels which limits the blood supply to the brain whereas hemorrhagic stroke occurs due to the rupture of a blood vessel leading to spillage of blood in the intracranial cavity.
11. **DrKathleenStrong**, et. al- (2007) published a research study entitled “Preventing stroke: saving lives around the world”. Stroke caused an estimated 5.7 million deaths in 2005, and 87% of these deaths were in low-income and middle-income countries. Without intervention, the number of global deaths is projected to rise to 6.5 million in 2015 and to 7.8 million in 2030. The rising burden of stroke, especially in low-income and middle-income countries, leads us to propose a worldwide goal for stroke: a 2% reduction each year over and above that which may result from better case management and treatment.
12. **Emmanouela Cheiloudaki and Evangelos C. Alexopoulos** . et al- (2019) published a research study entitled “Adherence to Treatment in Stroke Patients”. Compliance with medication in patients who have suffered a stroke is usually not-optimal. This study aims to measure the level of compliance with the treatment and to identify socio-demographic, clinical, and subjective factors related to the long-term compliance of stroke patients with their treatment.

13. **Gye-Gyoung Kim, Sung-Hee Yoo**, et al-(2022) published a research study entitled "Man-Seok Park, "Factors Related to Beliefs about Medication in Ischemic Stroke Patients" Medication beliefs are known as predictors of medication adherence. However, an understanding of the relevance of these beliefs is lacking. Therefore, this study aimed to identify medication beliefs, and their influencing factors, in stroke survivors. Methods: This was a secondary analysis, using baseline data from a longitudinal study conducted to predict long-term medication adherence in Korean stroke survivors, and included 471 patients. Medication beliefs were investigated using the Belief about Medicine questionnaire (bmq), and the belief score and attitudes were derived from the "necessity" and "concern" scores, which are subscales of the BMQ.
14. **Jia Zhang, Yanhong Gong**, et.al-(2019) published a research study entitled "Post-stroke medication adherence and persistence rates: a meta-analysis of observational studies" Medication adherence and persistence rates are low in patients after suffering a stroke. Patient medication adherence or persistence and their influencing factors should be considered for the treatment of stroke patients. More detailed disease prevention and management strategies need to be developed for stroke patients with different comorbidities.
15. **Lujain Alrabghi1, Raghad Alnemari, Rawan Aloteebi, Hamad Alshammari**, et. al – (2018) published a research study entitled "stroke types and management". Strokes are a leading cause of morbidity and mortality across the world, in fact, the third leading cause after heart disease and cancer. Additionally, among the survivors of stroke, one-third suffer from permanent disabilities. Strokes can be classified broadly as ischemic and hemorrhagic, which account for 80% and 20% of the total respectively. The following search terms were used: stroke, cerebrovascular accidents, ischemic stroke, hemorrhagic stroke, stroke types, management of stroke, rehabilitation, and CVA prevention.
16. **Lachlan L. Dalli, Joosup Kim**, et.al-(2021) published a research study entitled "Greater Adherence to Secondary Prevention Medications Improves Survival After Stroke or Transient Ischemic Attack" Although a target of 80% medication adherence is commonly cited, it is unclear whether greater adherence improves survival after stroke or transient ischemic attack (TIA). We investigated associations between medication adherence during the first year post-discharge, and mortality up to 3 years, to provide evidence-based targets for medication adherence.
17. **Liljehult** et al. (2020) published a research study entitled "Lifestyle counseling as secondary prevention in patients with minor stroke and transient ischemic attack: study protocol for a randomized controlled pilot study": Most patients with minor stroke or transient ischemic attack (TIA) are discharged with little or no specialized follow-up. Nonetheless, these patients have a high prevalence of cognitive impairments and a considerable risk of recurrent stroke. Smoking cessation, physical activity, and adherence to antihypertensive and antithrombotic medication are highly recommended in patients with minor stroke and TIA.
18. **Saleh Saad T Alotaibil, Abdullah Khaled J Alzahrani, Lama Zaki Al Nasserullah, Bassam Al Abo Nasser**. et. al – (2020) published a research study entitled "An overview of Stroke Diagnosis & Management Approach". Stroke is a condition that is described as a clinical syndrome where a rapid focal or general neurological deficit appears as abnormal signs and symptoms and lasts for more than 24 hours. It can be classified as ischemic or hemorrhagic depending on the cause. It will lead to severe complications and may progress into coma and death. Overall, stroke is the third cause of mortality and, in some demographics, is considered the second most common cause of death. Diagnosing this

disease is of vital importance because it will impact the start of the treatment and the overall outcome of the patients.

19. **Strandgaard S.; O.B Paulson**, et. al- (1990) published a “path physiology of stroke” research study. Therapeutic intervention in acute ischemic stroke must be directed at salvaging damaged, but viable, tissue. Ideally, treatment should start in the initial phase when the ischemic tissue still retains a potential for recovery. Furthermore, ischemic stroke may be associated with “chronic threatening ischemia,” in which it is ischemic but viable, tissue with collateral circulation distal to a stenosed or occluded artery. In chronic threatening ischemia, therapeutic manipulation may improve the clinical situation.
20. **Suebsarn Ruksakulpiwat**, et. al- (2020) published a research study entitled “Intervention Enhancing Medication Adherence in Stroke Patients”. Stroke is a leading cause of mortality and disability globally.<sup>1</sup> In 2016, there were 5.5 million deaths and 116.4 million Disability-Adjusted Life Years (DALYs) lost due to stroke. Although age-standardized mortality rates have significantly fallen from 1990 to 2016, the stroke burden remains high.<sup>2</sup> Patients with a history of stroke have a risk of recurrence, ranging from 1.8% within one month to 43% within 5 years.<sup>1</sup> The mortality rate in the beginning stage of recurrent stroke is 56.2%, which is higher than for the first stroke.
21. **Tapas Kumar banerjee Shyamal Kumar DAS**. et. al –(2006) published a research study entitled “Epidemiology of stroke in India”. Several population-based surveys on stroke were conducted in different parts of India. During the last decade, the age-adjusted prevalence rate of stroke was between 250-350/per 100,000. Recent studies showed that the age-adjusted annual incidence rate was 105/100,000 in the urban community of Kolkata and 262/100,000 in the rural community of Bengal. The ratio of cerebral infarct to hemorrhage was 2.21. Hypertension was the most important risk factor. Stroke represented 1.2% of total deaths in India.
22. **Weijing Sui, li-hong Wan**, et. al (2021) published a research study entitled “Association Between Patient Activation and Medication Adherence in Patients with Stroke: A Cross-Sectional Study”. Medication adherence is key to secondary prevention in patients with stroke. Poor medication adherence can lead to recurrence, disability, or even death in stroke survivors. Patient activation is associated with increased healthy behaviors and improved clinical outcomes in many chronic diseases. However, the association between patient activation and medication adherence in patients with stroke remains unclear.

## AIM AND OBJECTIVES

### AIM AND OBJECTIVES OF THE STUDY

#### AIM: -

To study and find out the impact of patient counselling on medication adherence and quality of life in stroke patients.

#### OBJECTIVES: -

1. To provide effective patient counselling on medications and diet.
2. To improve medication adherence in stroke patients.
3. To improve the quality of life in stroke patients.



**METHODOLOGY:****MATERIALS AND METHODS:**

**SOURCE OF DATA:** Data will be collected from:

1. Case records of the patient's in the hospital.
2. By evaluating the patient questionnaire collected from patients who presented with stroke.

**STUDY DESIGN: -**

The current study is a prospective and observational study conducted over a period of 6 months from October 2022 to March 2023 at Lalitha Specialty Hospital in the in-patient neurology department about the impact of patient counseling on medication adherence and quality of life in stroke patients. The patients are included according to their interests and willingness to carry out the study.

**STUDY SITE:**

Lalitha Super Specialty Hospital, Guntur.

**STUDY DURATION:**

The study will be carried out for a period of 6 months.

**STUDY POPULATION:**

All patients of age 35-85 years.

**SAMPLE SIZE: -** The sample size consists of 200 patients who are admitted to the Lalitha super specialty hospital.

**STUDY CRITERIA: -** The study will be carried out by considering the following criteria.

**INCLUSION CRITERIA: -**

1. Patients with age groups of 35-85 years
2. History of stroke(s) confirmed by neuroimaging at the time of the episode
3. Both gender (male and female).
4. Patients with comorbid conditions like hypertension & diabetes.
5. Possession of a personal cell phone that the patient has access to at all times. In the case of patients to do not own or are unable to use mobile phones they must have a caregiver available at all times to possess a cell phone.

**EXCLUSION CRITERIA: -**

1. Patients with bacterial and viral infections.
2. Neonates, infants & children.
3. Pregnant and lactating women.

**STUDY METHOD:**

The study will be conducted at Lalitha Super Specialty Hospital after obtaining ethical clearance from the Institutional Ethical Committee. All the patients who come under inclusion criteria will be monitored and

data will be collected during the respective study period

**STUDY PROCEDURE: -**

The study will be conducted at Lalitha Super Specialty Hospital after obtaining ethical clearance from the Institutional Ethical Committee.

**STEP-1:** A prospective and observational study was carried out in the hospital with prior permission from the inpatient department.

**STEP-2:** The patients visiting the department were enrolled in the study considering the study criteria after taking their consent to participate in the study.

**STEP-3:** From the enrolled patients, the data was collected from the case sheets, face-to-face interviews, phone calls & sms, and other relevant resources in a suitably designed data collection form.

**STEP-4:** we conducted various educational programs for all patients and their attendees in the neurology department regarding medication adherence & reducing the progression of stroke.

**DESIGN OF DATA COLLECTION FORM: -**

Data collection was carried out through face-to-face interviews with patients, phone calls & SMS. The information collected includes demographic data, past medical history of the patient's hypertension, diabetes, and symptoms like arm or leg weakness, and slurred speech at the time of admission of the patient in the hospital after discharge, the patient was followed through the SMS & phone call about their medication adherence & quality of life. The data collection was pretested through a pilot study of 10 patients who were not included in the final analysis to check for the understandability and language clarity of questions, and all valid comments were taken into consideration by the principal researchers in the main survey.

**STATISTICAL TOOL:**

A Chi-square test was used to determine the association between patient counselling and quality of life, and medication adherence. The statistical significance was set at  $p > 0.05$ .

**RESULTS****TABLE NO:1 TYPES OF STROKE DISTRIBUTION**

The results were obtained after 6 months duration study in the neurology department of tertiary care hospital a total of 200 patients enrolled in the study.

Sl no	TYPES OF STROKE	No of cases n=200	Percentage (%)
1	ISCHEMIC STROKE	134	67.0%
2	HEMORRHAGIC STROKE	45	22.5%
3	TRANSIENT ISCHEMIC ATTACK	21	10.5%

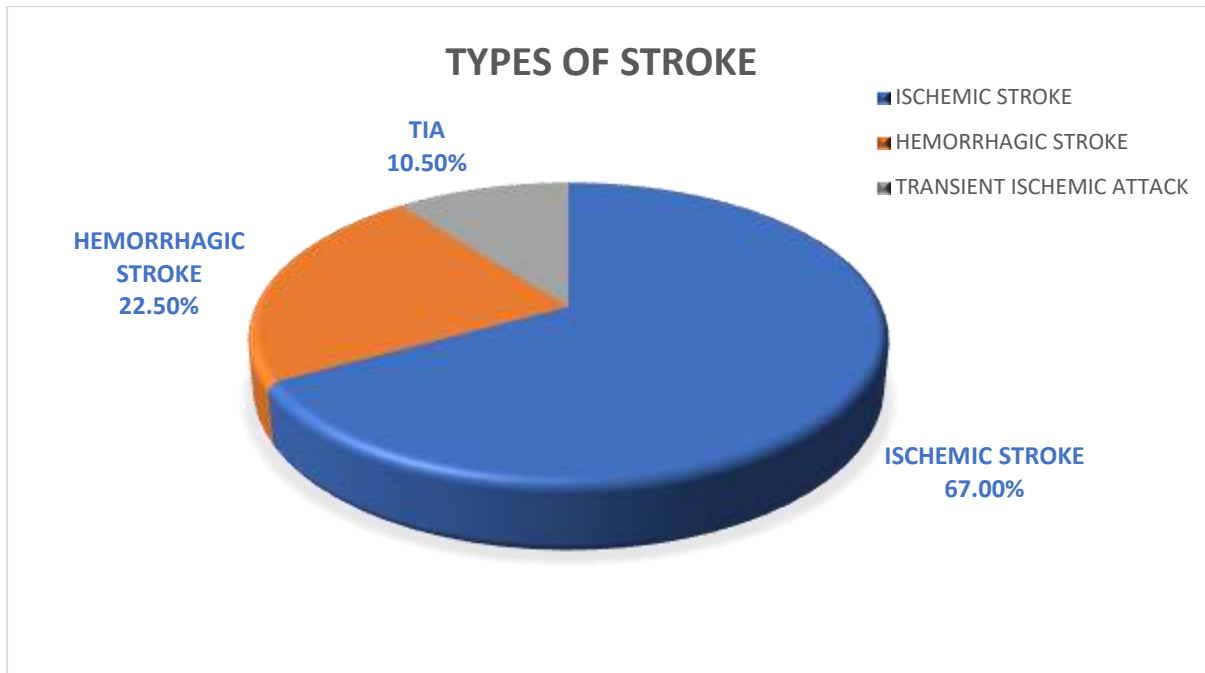
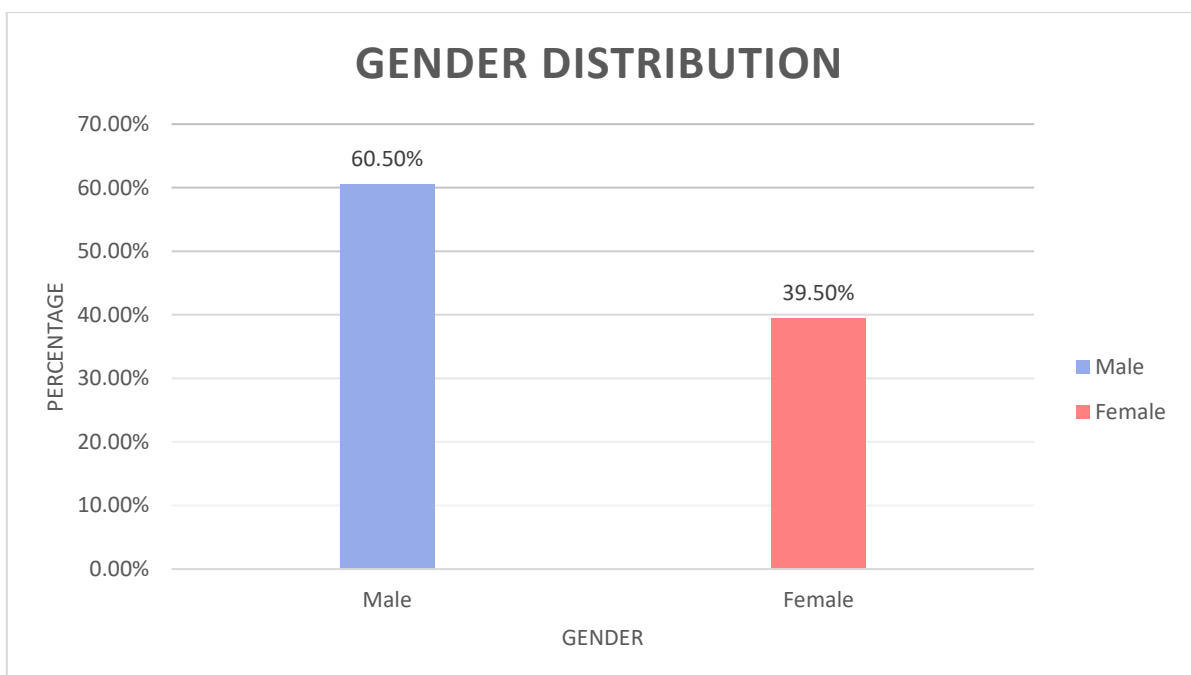


Figure no: 7: TPES OF STROKE

Out of 200 patients 134 patients had an ischemic stroke i.e. 67.0%, 45 patients had a hemorrhagic stroke i.e. 22.5% and 21 patients had a transient ischemic stroke i.e. 10.5%.

TABLE:2 GENDER DISTRIBUTION

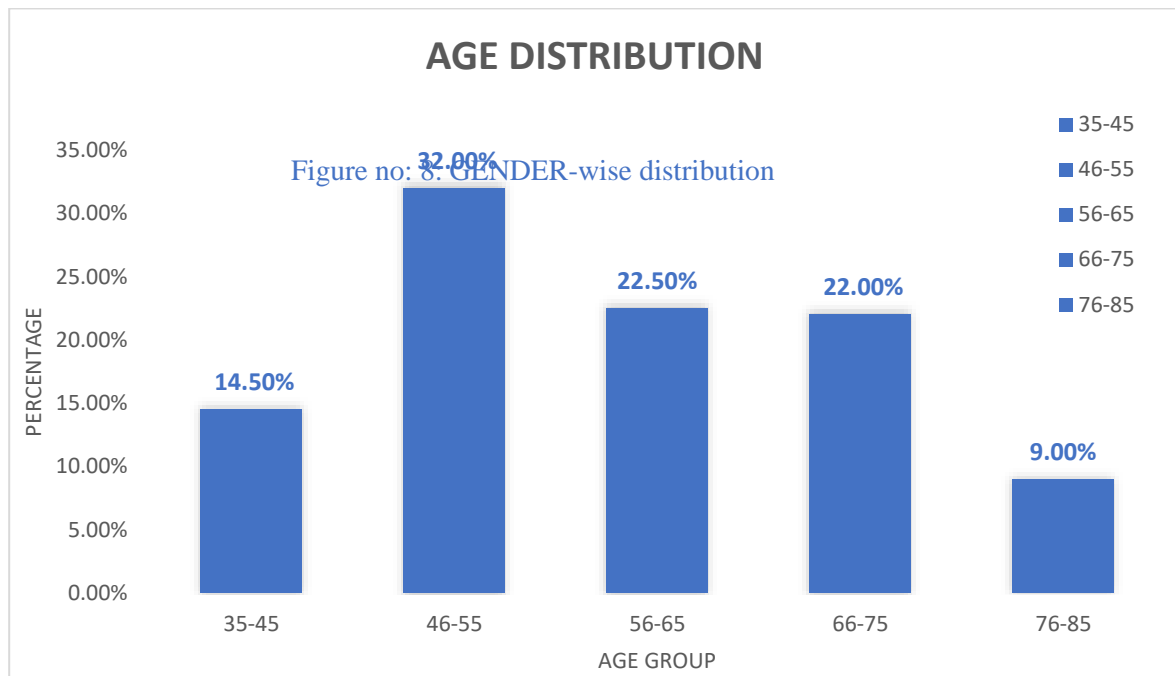
S.NO	Gender	No. of Cases n=200	Percentage (%)
1	Male	121	60.5%
2	Female	79	39.5%



Out of 200 patients, the gender-wise distribution of the study was 121 patients i.e. 60.5% were males and the remaining 79 patients 39.5% were females.

**TABLE:3 AGE DISTRIBUTION**

S.NO	Age Group	No. of Cases n=200	Percentage (%)
1	35-45	29	14.5%
2	46-55	64	32.0%
3	56-65	45	22.5%
4	66-75	44	22.0%
5	76-85	18	9.0%

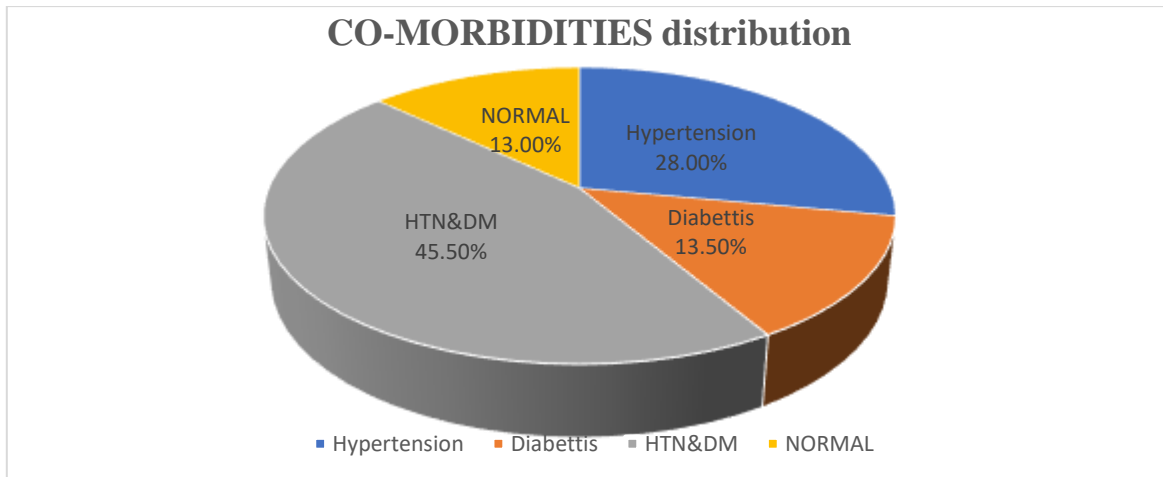


**Figure no: 9: AGE-wise distribution**

Out of 200 patients, the age-wise distribution of the study was 29 of age between 25-45 i.e 14.5%, 64 of age between 46-55 i.e 32%, 45 of age between 56-65 i.e 22.5%, 44 of age between 66-75 i.e 22.0% 18 of age between 76-85 i.e 9%.

**TABLE :4A CO-MORBIDITIES DISTRIBUTION**

S.NO	Type of co-morbidities	No. of Cases n=200	Percentage(%)
1	Hypertension	56	28.0%
2	Diabetes	27	13.5%
3	Both	91	45.5%
4	NORMAL	26	13.0%

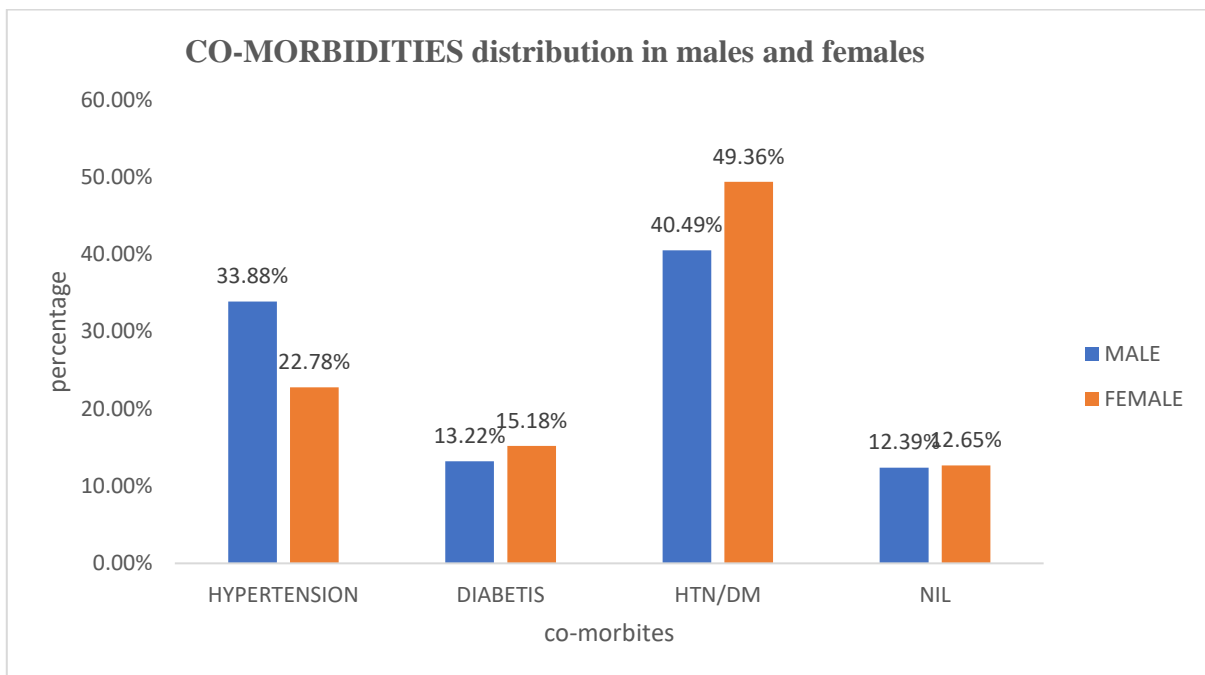


**Figure no: 10: CO-MORBIDITIES wise distribution**

The pie chart indicates that stroke was associated with co-morbidities .out of 200 patients, 45.50% with both hypertension & diabetes, 28.0%, and 13.50% are with only hypertension and diabetes respectively, 13.0% of them with no co-morbidities.

**TABLE NO:4B CO-MORBIDITIES DISTRIBUTION in males and females**

GENDER	HYPERTENSION	DIABETES	DM/HTN	NILL
MALE	41	16	49	15
PERCENTAGE	33.88%	13.22%	40.49%	12.39%
FEMALE	18	12	39	10
PERCENTAGE	22.78%	15.18%	49.36%	12.65%

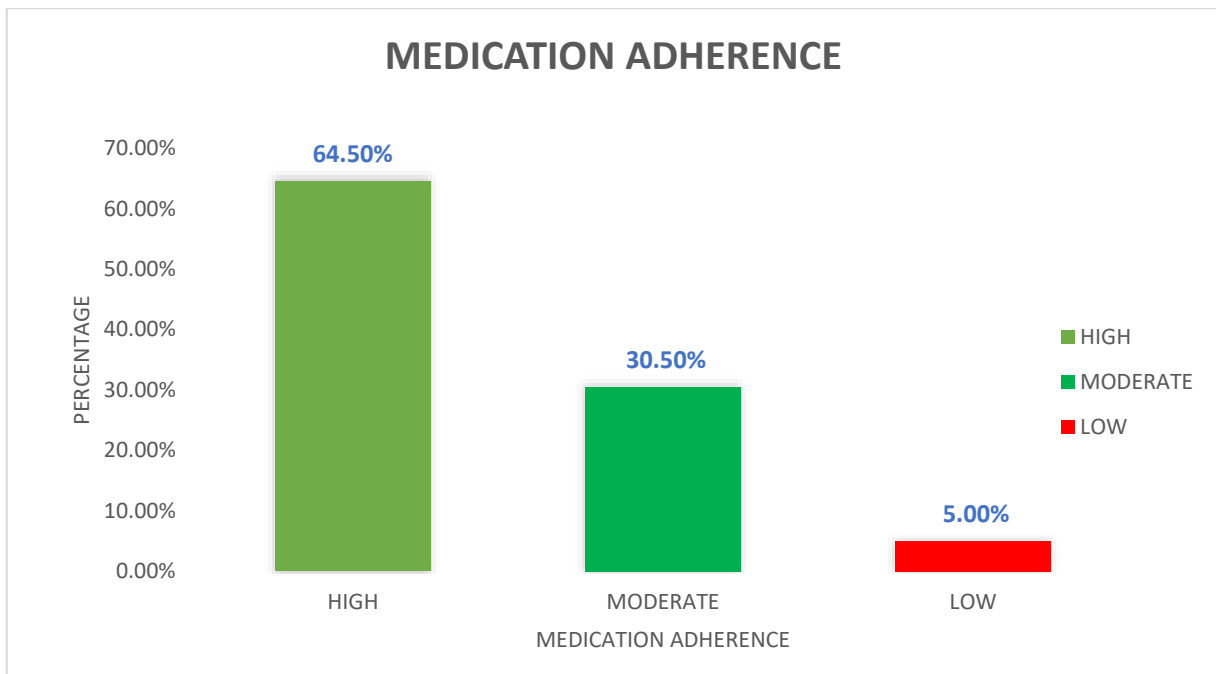


**Figure no: 11: CO-MORBIDITIES wise distribution in males and females**

Figure no 4B indicates the distribution and comparison of the percentage of co-morbidities affecting both males and females of 200 stroke patients collected data.

**TABLE NO: 5 MEDICATION ADHERENCE DISTRIBUTION**

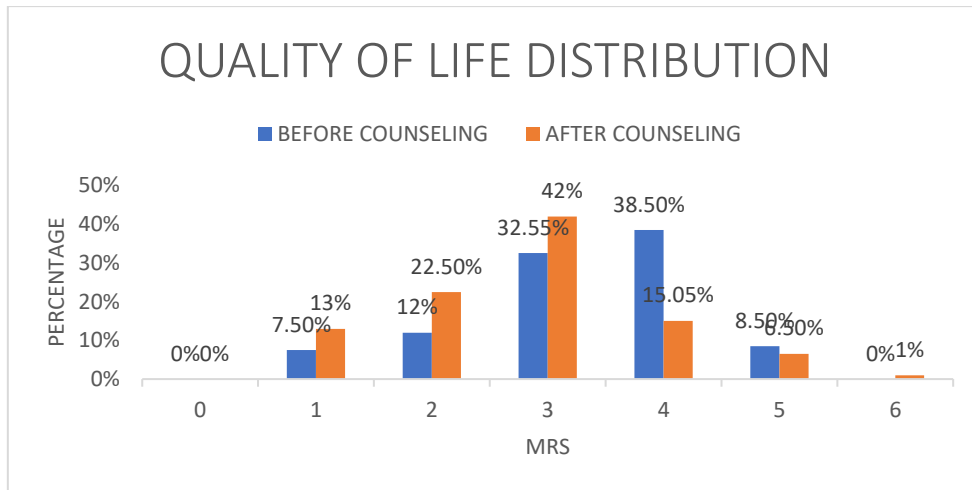
SL NO	MEDICATION ADHERENCE	NO OF CASES n=200	PERCENTAGE (%)
1	HIGH	129	64.5%
2	MODERATE	61	30.5%
3	LOW	10	5.0%



Medication adherence in stroke patients was the main objective of the study, figure no 5 shows that out of 200 patients, 129 i.e 64.5% had highly adhered to medication, 61 patients i.e 30.5% moderate, and, 10 patients i.e 5.0% low to adherence of medication after counseling to the patients.

**TABLE NO:6 QUALITY OF LIFE DISTRIBUTION**

INTERVENTION	BEFORE COUNSELING MRS SCORE OF THE PATIENT	PERCENTAGE (%)	AFTER COUNSELING MRS SCORE OF THE PATIENT	PERCENTAGE (%)
0	0	0%	0	0%
1	15	7.5%	26	13.0%
2	24	12.0%	45	22.5%
3	65	32.55%	84	42.0%
4	77	38.5%	30	15.05
5	19	8.5%	13	6.5%
6	0	0%	2	1.0%



**Figure no: 13: QUALITY OF LIFE DISTRIBUTION**

Quality of life is the main objective of this study. figure no 6 shows the quality of life of 200 stroke patients before and after patient counseling. The quality of life had been measured using a MODIFIED RANKING SCALE (mRS).

**STATISTICAL TEST:**

To strengthen the association between quality of life and patient counselling in stroke patients chi-square is performed.

**TABLE NO: 7**

mRS	0	1	2	3	4	5	6	TOATAL
<b>Before counselling</b>	0	15	24	65	77	19	0	200
<b>After counselling</b>	0	26	45	84	30	13	2	200
<b>TOTAL</b>	0	41	69	149	107	30	2	400

**Null hypothesis:**

There is no association between the quality of life and patient counseling.

**Alternate hypothesis:**

There is a significant association between these two variables

$$(\%)^2 = \sum \frac{(\text{Observed} - \text{Expected value})^2}{\text{Expected value}}$$

**TABLE NO:8 CHI-SQUARE TEST**

O	E	O-E	$(O - E)^2$	<i>slashes</i> $(O - E)^2 / E$
0	0	0	0	0
15	20.39	-5.39	29.05	1.42
24	34.32	-10.32	106.50	3.10
65	74.12	-9.12	83.17	1.12
77	53.23	23.77	565.01	10.61
19	14.92	2.08	4.32	0.28
0	0.99	-0.99	0.981	0.99
0	0	0	0	0
26	20.60	5.4	29.16	1.41
45	34.67	10.53	110.88	3.19
84	74.87	9.13	83.35	1.11
30	53.76	23.76	564.53	10.50
13	15.07	2.07	4.28	0.284
2	1.00	1	1	1

$$X^2=0+1.42+3.10+1.12+10.61+0.28+0.99+0+1.41+3.19+1.11+10.50+0.284+1$$

$$X^2=35.01$$

Tabular significance level ( $\alpha$ )=0.05

(%)<sup>2</sup> tabulated value =12.592

*squared calculated*(%)<sup>2</sup> calculated value=35.01

$X^2$  Calculated value (35.1) >  $X^2$  Tabulated value (12.592) with (7-1) degree of freedom at 0.05 level of significance. Hence  $H_0$  (null) was rejected &  $H_1$  (alternative) hypothesis was accepted.

Therefore there is a significant association between patient counseling and quality of life.

**DISCUSSION:**

- The results were obtained after 6 months duration study in the neurology department of tertiary care hospital a total of 200 patients enrolled in the study.
- Study of the impact of patient counseling on medication adherence and quality of life in stroke patients is a prospective observational study where data is collected in Lalitha Super Specialty Hospital with a random representative sampling strategy explaining the qualitative & quantitative analysis.
- We collected 200 cases of those suffering from ischemic, hemorrhagic, and transient ischemic stroke, and patient counselling was given and followed up after discharge
- Out of 200 samples 67% of patients are suffering from ischemic stroke, 22.5% from hemorrhagic & 10.5% from TIA.
- Males (60.5%) are more affected by stroke than females (39.5%) and the age group between 46-55 is more affected by stroke (32%).



- The patients who are with both hypertension and diabetes were more affected by stroke (45.5%) than those having single co-morbidities, hypertension (28%) and DM (13.5%).
- In the collected samples males are more effected by hypertension (33.88%) and females with diabetes (15.18%) and both hypertension & diabetes (49.36%).
- Medication adherence in stroke patients is the main objective of the study, which shows that out of 200 patients, 129 (64.5%) have highly adhered to medication, 61 patients (30.5%) are moderate, and, 10 patients (5.0%) low adherence to medication after counselling to the patients.
- Quality of life is the main objective of this study. which is the quality of life of 200 stroke patients before and after patient counseling. The quality of life had been measured using a MODIFIED RANKING SCALE (mRS). After the 6-month follow up the quality of life had increased in patients.
- A quantitative analysis was done by using the chi-square test the result of  $\chi^2$  value is 35.1 with Df 6 at a level of significance 0.05, and the P value is  $> 0.05$ .

### CONCLUSION:

The main aim of this study is to provide better patient counseling to enhance medication adherence and the quality of life in stroke patients was achieved successfully. in this study 200 stroke patients have been enrolled and patient counseling become provided and followed up through face-to-face interviews and phone calls. among 200 patients 129 sufferers (64.5%) highly adhered to the drugs, 61 sufferers (30.50%) moderately adhered and low adhered are 10 patients (5%). The quality of life of stroke patients increased after the counseling as compared to before counseling. the medicine adherence and quality of life have been measured using MMAS-8 QUESTIONS and a modified ranking scale (mRS) respectively.

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