IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

A PROSPECTIVE OBSERVATIONAL STUDY ON PRESCRIBING PATTERNS OF DIRECT ORAL ANTI-COAGULANTS IN STROKE PATIENTS WITH ATRIAL FIBRILLATION AND EVALUATION OF EFFECT OF PATIENT COUNSELLING IN IMPROVING THE MEDICATION RECONCILIATION: A PILOT STUDY.

PRIYANKA ANILKUMAR[1], REENU THOMAS[1]

Soumya R.V[2] , Dr.Malini Gopinath[3] ,,Dr.Vismaya V.R[4], Shinju Somaraj[4],Dr.Nithin Manohar R[5] ,Dr.Prasobh G.R[6]

1. **Fifth Year Doctor of Pharmacy Student, Sree Krishna College of Pharmacy and Research Centre, Parassala, Thiruvananthapuram, Kerala, India.**

2.Associate Professor, Department of Pharmacy Practice, Sree Krishna College of Pharmacy and Research Centre, Parassala,Thiruvananthapuram, Kerala, India.

3.MD (Medicine),DM (Neurology) Senior Consultant,Department of Neurology,Cosmopolitan Hospital Post Graduate Institute of Health Science &Research,Trivandrum.

4.Lecturer,Department of Pharmacy Practice,Sree Krishna College of Pharmacy and Research Centre,Parassala,Thiruvananthapuram,Kerala,India.

5. Professor &HOD, Department of Pharmacy practice, Sree Krishna College of Pharmacy and Research Centre, Parassala, Thiruvananthapuram, Kerala, India.

6. Principal, Sree Krishna College of Pharmacy and Research Centre, Parassala, Thiruvananthapuram, Kerala, India.

ABSTRACT

Atrial fibrillation (AF) is a significant risk factor for stroke, and direct oral anticoagulants (DOACs) are used for stroke prevention in patients with Atrial Fibrillation**.** A stroke, also known as a cerebrovascular accident (CVA), is a medical condition that occurs when the blood supply to a part of the brain is interrupted or significantly reduced, depriving brain tissue of oxygen and nutrients.

This can lead to the rapid death of brain cells [1]. Stroke can be classified into two main types: ischemic and hemorrhagic. Ischemic strokes, the more common type, are caused by a blockage in a blood vessel supplying the brain, often due to a clot [2]. Hemorrhagic strokes occur when a blood vessel in the brain bursts, leading to bleeding within or around the brain tissue. The most prescribed drugs for stroke with atrial fibrillation include Apixaban, Rivaroxaban, Dabigatran . Stroke Specific Quality of Life Scale (SSQOL) is used to assess the health-related quality of life of patients with neurological conditions.

AIM : To evaluate and analyze the prescribing pattern and quality of life in stroke patients with atrial fibrillation.

OBJECTIVE:

- To assess the prescribing patterns of direct oral anti-coagulants in patients with CHA2DS2-VASc Score greater than 2.
- To examine the quality of life in stroke patients.
- To evaluate the patient's adherence to the medication using Medication Adherence Assessment Scale (MAAS).

MATERIALS AND METHODS:

The prospective observational study was carried out in 30 patients. Patients were assigned in 3 groups, Group A stroke patients, Group B atrial fibrillation patients and Group C stroke with atrial fibrillation patients. The prescribing pattern of the patient were analyzed and proper counselling was provided. The quality of life of the patients were assessed using the stroke specific quality of life scale (SSQOL). Patient's medication adherence will be assessed using the medication adherence assessment scale (MAAS).

RESULT:

The most prescribed drugs for stoke with atrial fibrillation were found to be Apixaban, Rivaroxaban and Dabigatran. Patient counselling significantly improved medication reconciliation rates in all three groups. Stroke with atrial fibrillation patients had higher rate of adherence and lower rates of stroke recurrence compared to other two groups.

CONCLUSION:

This prospective observational study demonstrated that Direct Oral Anticoagulants (DOACs) such as Apixaban, Rivaroxaban, and Dabigatran are the primary therapeutic options for stroke prevention in patients with atrial fibrillation (AF), showing effective stroke prevention and a favorable safety profile compared to traditional anticoagulants. Furthermore, structured patient counseling significantly enhanced medication adherence, as evidenced by improvements in the Stroke-Specific Quality of Life (SS-QOL) and Medication Adherence Assessment Scale (MAAS) scores. The findings highlight the critical role of patient education in improving adherence and optimizing therapeutic outcomes in stroke and Atrial Fibrillation patients, suggesting that integrating counseling programs in clinical practice may enhance medication reconciliation and overall quality of life.

KEYWORDS: Cerebrovascular accident, Transient ischemic attack ,Atrial Fibrillation, Direct Oral Anticoagulant, Stroke specific quality of life scale, Medication adherence assessment scale.

INTRODUCTION

A stroke, also known as cerebrovascular accident (CVA), is a medical condition that occurs when the blood supply to part of the brain is interrupted or significantly reduced, depriving brain tissue of oxygen and nutrients. This can lead to rapid death of brain cells [(1)]. Strokes can be classified into two main types: ischemic and hemorrhagic. Ischemic strokes, the more common type, are caused by a blockage in a blood vessel supplying the brain, often due to a clot [(2)]. Hemorrhagic strokes occur when a blood vessel in the brain bursts, leading to bleeding within or around the brain tissue [(3)].

The symptoms of a stroke can vary depending on the area of the brain affected but often include sudden weakness or numbness in the face, arm, or leg, particularly on one side of the body; confusion; trouble speaking or understanding speech; difficulty seeing in one or both eyes; difficulty walking; dizziness; and loss of balance or coordination [(4)]. Prompt recognition and treatment of stroke symptoms are crucial, as early intervention can significantly improve outcomes and reduce the risk of long-term disability [(5)].

Risk factors for stroke include high blood pressure, smoking, diabetes, high cholesterol, obesity, physical inactivity, unhealthy diet, and a family history of stroke [(6)]. Other conditions such as atrial fibrillation and heart disease also increase the risk [(7)]. Preventive measures focus on lifestyle modifications and medical management of underlying conditions to reduce the likelihood of stroke occurrence [(8)].

The impact of a stroke can be life-altering, leading to physical, cognitive, and emotional challenges (9). Rehabilitation and recovery vary depending on the severity and location of the stroke, with many patients requiring multidisciplinary care involving physical therapy, occupational therapy, speech therapy, and psychological support [(10)]. Advances in medical treatments, such as clot-dissolving

medications and surgical interventions, have improved the prognosis for stroke patients, emphasizing the importance of timely medical attention [(11)].

Atrial fibrillation (AF) is an important risk factor for stroke and accounts for approximately half of all ischemic strokes. Anticoagulation is the mainstay of therapy for stroke reduction in patients with AF. The vitamin K antagonist warfarin reduces the risk of embolic stroke associated with AF by almost two thirds and has been in use for many decade. Over the past decade, several direct oral anticoagulants (DOACs) have been developed that inhibit thrombin (dabigatran) or activated factor Xa (rivaroxaban, apixaban and edoxaban) and have been shown to be noninferior to warfarin in stroke reduction in patients with nonvalvular AF. A meta-analysis of the major DOAC trials showed a decreased incidence of ischemic stroke, intracranial hemorrhage (ICH), and mortality but increased risk of gastrointestinal (GI) bleed without an increase in overall major bleeding when compared to warfarin.

1. Fewer drug food interactions and lack of a need for frequent monitoring have made DOACs an attractive alternative to Warfarin.

The most prevalent kind of persistent cardiac arrhythmia is atrial fibrillation (AF), which is defined by the heart's atrial chambers beating quickly and irregularly. It is caused by disordered electrical activity in the atria, which results in irregular impulse conduction to the ventricles and inefficient atrial contraction (January et al., 2019). The sinoatrial (SA) node is where electrical signals in a healthy heart start and travel through the atria to synchronize their contraction. AF is characterized by chaotic atrial activity caused by a number of ectopic foci, especially close to the pulmonary veins, which trigger irregular electrical impulses that overcome the SA node[23].

Based on persistence and duration, AF is divided into various categories. These include persistent AF (lasting longer than seven days), long-standing persistent AF (lasting more than 12 months), paroxysmal AF (episodes that end on their own or with help within seven days), and permanent AF (where the decision has been made not to restore normal sinus rhythm) (January et al., 2019). Strategies for management and therapy are guided in part by this classification[23].

Numerous risk factors, including as aging, high blood pressure, diabetes, heart failure, coronary artery disease, obesity, and excessive alcohol use, are linked to the syndrome. Furthermore, valvular anomalies and structural heart disorders can make people more susceptible to AF (Hindricks et al., 2021). According to Colilla et al. (2013), the prevalence of AF rises with age, impacting over 10% of individuals over 80 and approximately 1% of the general population.

Clinically, AF can manifest as dizziness, exhaustion, shortness of breath, palpitations, or even soreness in the chest. Nonetheless, a large number of people have no symptoms, and the illness may be discovered by chance. A major consequence of atrial fibrillation is thromboembolism, especially ischemic stroke. Blood stasis in the left atrial appendage can result in clot development and eventual

embolism due to inefficient atrial contraction. Anticoagulation treatment is therefore essential to managing AF in order to lower the risk of stroke[24].

Three primary strategies are used to manage AF: stroke avoidance, rhythm control, and rate control. Rate management uses drugs like digoxin, beta-blockers, or calcium channel blockers to keep the ventricular rate within a reasonable range. The goal of rhythm control is to maintain and restore sinus rhythm by the use of antiarrhythmic medications or techniques such as electrical cardioversion or catheter ablation. Anticoagulants like warfarin or direct oral anticoagulants (DOACs) are used to prevent strokes; the choice is influenced by risk assessment instruments such as the CHA_2DS_2-VASc score[25].

Stroke

A stroke is a medical emergency that occurs when the blood supply to a part of the brain is interrupted or reduced, preventing brain tissue from getting oxygen and nutrients. This can cause brain cells to begin dying within minutes, leading to potential brain damage, disability, or even death if not treated promptly (18).

Types of Stroke

- Ischemic Stroke – Caused by a blockage (blood clot) in an artery supplying blood to the brain. It accounts for about 85% of all strokes (19).
- Hemorrhagic Stroke – Caused by bleeding in the brain due to a ruptured blood vessel 21.
- Transient Ischemic Attack (TIA) – Also called a "mini-stroke," this is a temporary blockage that resolves on its own but serves as a warning sign for future strokes (21).

Etiology

The etiology of stroke refers to the underlying causes and risk factors that contribute to its occurrence. Strokes are primarily classified into ischemic (caused by blockages) and hemorrhagic (caused by bleeding), each with distinct causes (1).

1. Etiology of Ischemic Stroke (Blockage of Blood Flow) – 85% of Strokes (1). Occurs due to obstruction in blood supply to the brain, leading to oxygen deprivation.

➢ Thrombosis (Blood Clot in Brain Artery)

- Atherosclerosis (fatty deposits in blood vessels) (1).
- High cholesterol levels (2).
- Diabetes

➢ Embolism (Blood Clot or Debris from Another Part of the Body)

- Atrial fibrillation (irregular heartbeat causing clots in the heart) (4).
- Heart valve diseases

- Carotid artery stenosis (narrowing of neck arteries)

➢ Reduced Systemic Blood Flow (Hypoperfusion)

- Severe dehydration
- Heart failure or shock
- Low blood pressure (hypotension)

2. **Etiology of Hemorrhagic Stroke (Brain Bleeding) – 15% of Strokes**

Occurs due to the rupture of a blood vessel, leading to internal bleeding in the brain.[5].

➢ Intracerebral Hemorrhage (Bleeding Inside the Brain Tissue)

- Hypertension (High Blood Pressure) – Most common cause
- Aneurysm Rupture – Weakened blood vessel walls
- Trauma or Head Injury

➢ Subarachnoid Hemorrhage (Bleeding Around the Brain)

- Ruptured aneurysm
- Arteriovenous malformation (AVM) – Abnormal blood vessel connections
- Blood clotting disorders (coagulopathy)

3. **Other Risk Factors Contributing to Stroke [6].**

➢ Non-Modifiable Risk Factors (Uncontrollable)

- Age (risk increases with age)
- Gender (men are more prone, but women have higher fatality rates)
- Family history of stroke
- Genetic disorders affecting blood vessels

➢ Modifiable Risk Factors (Controllable)

- Hypertension (Primary Risk Factor for All Strokes)
- Smoking & excessive alcohol consumption
- High cholesterol & obesity
- Diabetes & poor diet
- Physical inactivity
- Stress & chronic inflammation

Screening for Stroke*:*

Early detection of stroke risk factors and warning signs can help in timely prevention and treatment. Stroke screening involves a combination of clinical assessments, imaging techniques, and laboratory tests to identify potential risks. [17]

1. Clinical Screening (FAST Test for Early Signs)

The FAST method is a quick screening tool for stroke symptoms:

- F – Face drooping (Is one side of the face drooping or numb?)
- A – Arm weakness (Can the person lift both arms, or does one drift down?)
- S – Speech difficulty (Is speech slurred or hard to understand?)
- T – Time to call emergency services (If any symptom is present, seek immediate medical help)

2. Physical & Neurological Examination

Doctors assess stroke risk by checking:

- Blood pressure (high BP is a major risk factor)
- Pulse irregularities (detects atrial fibrillation)
- Neurological tests (reflexes, muscle strength, coordination)
- Carotid artery auscultation (listening for abnormal blood flow sounds)

3. Imaging Tests for Stroke Detection

- CT Scan (Computed Tomography) – Detects brain hemorrhages, clots, or swelling
- MRI (Magnetic Resonance Imaging) – Identifies early-stage ischemic strokes
- Carotid Ultrasound – Checks for blockages in neck arteries
- Cerebral Angiography – Visualizes blood flow in brain arteries

4. Laboratory Tests for Stroke Risk Factors

- Lipid Profile – Measures cholesterol levels (high LDL increases stroke risk)
- Blood Sugar (HbA1c Test) – Identifies diabetes, a stroke risk factor
- Complete Blood Count (CBC) – Checks for anemia or infections affecting circulation
- Coagulation Tests (PT/INR, D-dimer) – Evaluates blood clotting abnormalities
- Homocysteine & C-Reactive Protein (CRP) Tests – Detects inflammation-related stroke risks

5. Heart & Blood Vessel Screening

- Electrocardiogram (ECG/EKG) – Detects irregular heart rhythms like atrial fibrillation
- Echocardiography – Evaluates heart function and clot formation
- 24-hour Holter Monitoring – Monitors irregular heartbeat episodes

6. Genetic & Lifestyle Risk Assessments

- Family history screening for hereditary stroke risks
- Lifestyle evaluations – Smoking, alcohol use, diet, exercise habits

NON-PHARMACOLOGICAL TREATMENT OF STROKE

- Physical, psychological, and social therapies are examples of non-pharmacological stroke treatments. Pharmaceutical or thrombolytic therapy may be used in conjunction with these procedures. Physical interventions: Stroke patients may benefit from constraint-induced movement therapy (CIMT).
- Fitness training: A type of exercise beneficial to stroke victims Patients who have had a stroke may benefit from locomotor exercise, particularly if they begin it after the first 24 hours.

  Interventions in psychology Stroke patients may benefit from acceptance and commitment therapy (ACT), a psychological intervention.
- An effective psychological treatment for stroke patients is motivational interviewing.
- Interventions in society Peer support is a social intervention that stroke sufferers can benefit from. One social intervention that stroke sufferers can benefit from is family support.
- One social intervention that stroke sufferers can benefit from is social services.
- Additional non-pharmacological therapies Transcranial laser therapy, acupuncture, music therapy, light therapy, art therapy, and therapeutic hypothermia25.

PHARMACOLOGICAL TREATMENT FOR STROKE WITH ATRIAL FIBRILLATION
DIRECT ORAL ANTI-COAGULANTS

APIXABAN

Apixaban, a strong direct factor Xa inhibitor that is primarily removed hepatically, is the third approved NOAC. Apixaban has been evaluation in two significant clinical studies. A randomized, double-blind research called AVERROES (Apixaban Versus Acetylsalicylic Acid to Prevent Stroke in AF Patients Who Have Failed or Are Unsuitable for Vitamin K Antagonist Treatment) evaluated apixaban and aspirin in patients who were not candidates for VKA medication26. Patients who met two of the three following criteria—serum creatinine ≥ 133 μmol/l, age ≥ 80 years, and body weight ≤ 60 kg.

RIVAROXABAN

Rivaroxaban, a direct oral factor Xa inhibitor, inhibits factor Xa that is free, clot-bound, and inside the prothrombinase complex 27.

Being a direct Factor Xa inhibitor, rivaroxaban functions by preventing the action of Factor Xa, a protein that is essential to the process of blood coagulation.

Here's a detailed breakdown of how Rivaroxaban functions:

1. Blood clotting process: To stop excessive bleeding, the body naturally forms a blood clot when a blood artery is damaged.
2. Factor X Activation: A number of clotting factors, including Factor X, are activated throughout the blood clotting process.
3. Function of Factor Xa: A protein called Factor Xa is essential to the process of blood coagulation. It aids in the activation of more clotting factors, which eventually causes blood clots to develop.

4. Factor Xa Inhibition: Rivaroxaban inhibits Factor Xa by attaching itself to it and preventing its function. This stops additional clotting factors from activating, which in turn stops a blood clot from forming.

DABIGATRAN

Being a direct thrombin inhibitor, dabigatran functions by preventing the action of thrombin, a protein that is essential to the process of blood clotting.

Thrombin is in charge of Transforming fibrinogen into fibrin: Thrombin transforms the soluble protein fibrinogen into the insoluble protein fibrin, which is what creates the clot.

1. Platelet activation: Thrombin causes platelets to clump together to create a platelet clog. 3. Coagulation factor activation: Thrombin causes other coagulation factors, including Factor XI and Factor XIII, to become active.

Dabigatran lowers the risk of stroke and systemic embolism by blocking thrombin, which stops blood clots from forming.

VITAMIN K ANTAGONIST

For almost 50 years, vitamin K antagonists (VKAs) have been the cornerstone of anticoagulation treatment due to their potent anticoagulant properties. VKAs are primarily used as long-term anticoagulant medication, which includes treating venous thromboembolism (VTE) and preventing stroke in individuals with atrial fibrillation (AF)[29]. Despite the approval of four new agents in the last five years, including the direct thrombin inhibitor dabigatran and the direct factor Xa inhibitors apixaban, edoxaban, and rivaroxaban [collectively known as novel/non-VKA/direct OACs (DOACs)], warfarin is still the most commonly prescribed oral anticoagulant (OAC) for these indications[30].

Regular coagulation monitoring and dose adjustments are required due to the pharmacological properties of VKAs, including their limited therapeutic window and numerous drug–drug and drug–food interactions[30] . The percentage of time a patient spends within the desired therapeutic range—that is, an international normalized ratio (INR) of 2.0– 3.0—is a crucial metric for anticoagulation management with VKAs. According to several studies, patients generally spend around 40% of their time outside the advised INR range, and the INR management of VKA medication is unsatisfactory in everyday clinical practice.

An elevated risk of bleeding (INR >3.0) and stroke (INR <2.0) is linked to poor INR control[31].The treatment of stroke depends on its type (Ischemic or Hemorrhagic). Medications aim to dissolve clots, prevent recurrence, control symptoms, and manage complications[24].

1.Pharmacologic Therapy for Ischemic Stroke (Clot-Related Stroke)

Ischemic stroke occurs due to a blood clot blocking an artery supplying the brain. The goal of treatment is to restore blood flow and prevent future strokes.

➢ Acute Phase Treatment (Emergency Care)

- Thrombolytics (Clot-Busting Drugs)
- Alteplase (tPA - Tissue Plasminogen Activator)
- Tenecteplase (TNK-tPA) (Alternative to tPA in some cases)

o Dissolves blood clots and restores blood flow

o Given within 4.5 hours of stroke onset

➢ Not used if the patient has bleeding risk or very high BP

- Antiplatelet Agents (Prevent Clot Formation)
- Aspirin (First-line therapy within 24-48 hours)
- Clopidogrel (Plavix) (Alternative or combined with aspirin)
- Aspirin + Dipyridamole (Aggrenox) (Used for stroke prevention)

➢ Prevents platelets from sticking together

- Anticoagulants (Blood Thinners, Used for Atrial Fibrillation)
- Heparin (IV, Used in severe cases)
- Warfarin (Coumadin)
- Direct Oral Anticoagulants (DOACs): Apixaban, Rivaroxaban, Dabigatran

➢ Prevents clot formation in high-risk patients (e.g., atrial fibrillation, DVT)

Requires monitoring (Warfarin needs INR checks)

➢ Statins(Cholesterol-Lowering Drugs, Stroke Prevention),Atorvastatin (Lipitor),Rosuvastatin (Crestor)

➢ Reduces LDL (bad cholesterol) and prevents further stroke

2. Pharmacologic Therapy for Hemorrhagic Stroke (Bleeding Stroke)

Hemorrhagic stroke occurs due to bleeding in the brain from a ruptured blood vessel. Treatment focuses on controlling bleeding, reducing brain swelling, and managing blood pressure.

➢ Emergency Treatment

- Blood Pressure Control (Prevents Further Bleeding)
- Labetalol, Nicardipine, Clevidipine (IV antihypertensives)

➢ Lowers blood pressure to prevent worsening hemorrhage

❖ Reversal of Anticoagulants (For Patients on Blood Thinners)

- Vitamin K & Fresh Frozen Plasma (FFP) – Reverses Warfarin effects
- Protamine Sulfate – Reverses Heparin effects
- Idarucizumab – Reverses Dabigatran effects
- Andexanet Alfa – Reverses Apixaban & Rivaroxaban

➢ Used to stop bleeding in patients on blood thinners

❖ Anti-Seizure Medications (If Seizures Occur)

- Levetiracetam (Keppra)
- Phenytoin (Dilantin)

➢ Prevents post-stroke seizures

❖ Osmotic Agents (Reduce Brain Swelling/Pressure)

- Mannitol (IV) or Hypertonic Saline

➢ Reduces intracranial pressure (ICP) and brain edema

3. Supportive Medications for Both Types of Stroke

- Pain & Fever Control – Acetaminophen (Paracetamol) if fever is present
- DVT Prevention – Low-dose Heparin or Enoxaparin for immobile patients
- Neuroprotective Agents (Experimental) – Citicoline, Edaravone (not widely used)

4. Long-Term Stroke Prevention (Post-Stroke Medications)

- Antiplatelets or Anticoagulants – Prevent recurrent strokes
- Statins – Reduce cholesterol & plaque buildup
- Blood Pressure Medications – ACE inhibitors, Beta-blockers, Calcium channel blockers.

MATERIALS AND METHODS

Data source: All the relevant information regarding the study was collected from case Records and direct interview with patients and care givers. Data from case records and care Givers was collected by using suitably designed proforma. The study was approved by Research and Ethical Committee of Cosmopolitan hospital, Thiruvananthapuram.

Study population: Patients were taken from Neurologyy department of Cosmopolitan Hospital. Informed consent was obtained. The study was conducted for the period of 2 Months.

Assessment of quality of life: Details were collected from case records of stroke ,atrial fibrillation, stroke with atrial fibrillation and direct Interview with the patients and caregivers which is been recorded in Stroke Specific Scale Quality of Life(SSQOL).

Assessment of medication adherence: Details were collected by direct interviewing the patients and caregivers has been recorded in MAAS Scale.

Statistical Analysis: Comparison of QOL of first and second follow up was analyzed by paired t test and ANOVA according to the nature of the data.

OBSERVATION AND RESULTS

The proposed study entitled "**A PROSPECTIVE OBSERVATIONAL STUDY ON PRESCRIBING PATTERNS OF DIRECT ORAL ANTI-COAGULANTS IN STROKE PATIENTS WITH ATRIAL FIBRILLATION AND EVALUATION OF EFFECT OF PATIENT COUNSELLING IN IMPROVING THE MEDICATION RECONCILIATION"** was carried out in a tertiary care hospital. In this study, the data collected from 10 patients from each group and

prescription were analyzed. Most commonly prescribed were direct oral anti coagulants in stroke with atrial fibrillation patients and in stroke patients prescribed with aspirin and warfarin. This study aims to improve the QOL of the patients.

OBSERVATION AND RESULTS

GROUPA-STROKE WITH ATRIAL FIBRILLATION(10)

GROUP B-STROKE(10)

GROUP C-ATRIAL FIBRILLATION(10)

GROUP A-CEREBRO VASCULAR ACCIDENT WITH ATRIAL FIBRILIATION

DEMOGRAPHIC DETAILS OF STROKE WITH ATRIAL FIBRILLATION

Table 1: Age wise Distribution

Age wise distribution	Count	Percentage
51-60 years	3	10%
61-70 years	2	30%
71-80 years	5	50%

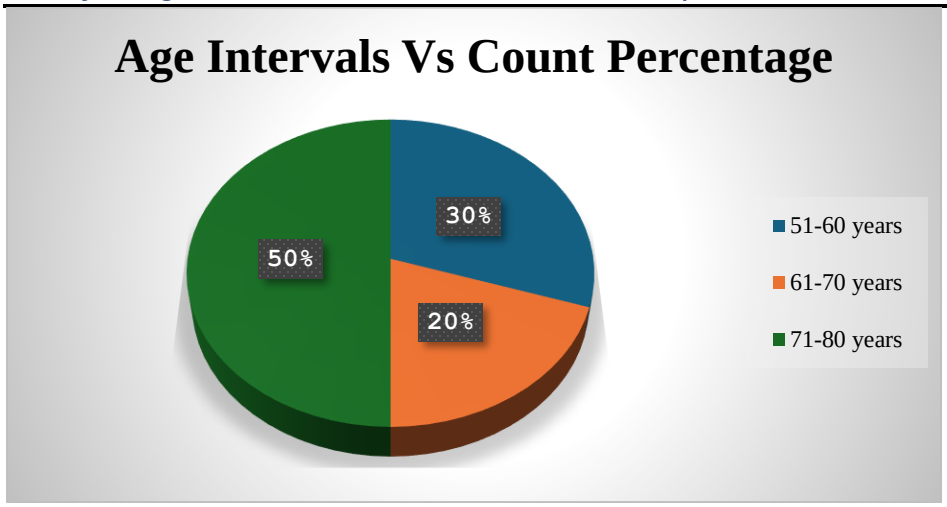


FIGURE 1: AGE INTERVALS Vs COUNT PERCENTAGE

As per the demographic data of the study, population stroke with atrial fibrillation patients were found to be more in the age group of 71-80 with a percentage of 50%. Followed by which the age group of 61-70 with a percentage of 20%, the age group of 51-60 with a percentage of 20%.

Table 2: Gender-wise Distribution

Gender	Gender	Percentage (%)
Female	7	70%
Male	3	30%

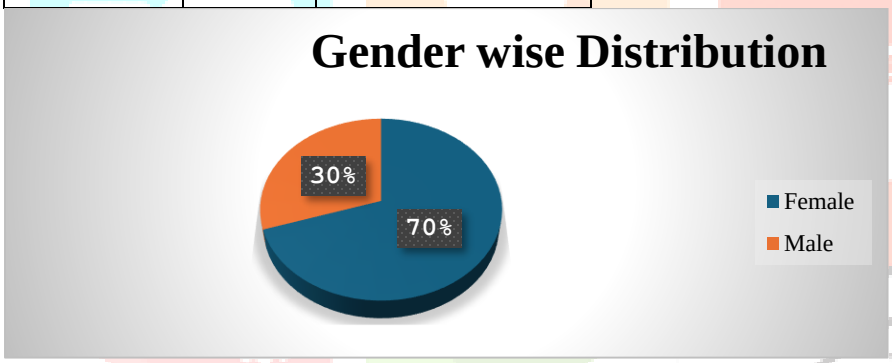


FIGURE 2 GENDER-WISE DISTRIBUTION

Among the total of 10 Patient included in this study a preponderance of female patients was observed. In this study 7 patients were female (70%) while 3 patients were male (30%).

PERCENTAGE DISTRIBUTION OF PATIENTS BASED ON SYMPTOMS

TABLE NO:3 Patients experiencing each Symptoms

Symptoms	Count	Percentage
Weakness	6	60%
Difficulty In Speaking	10	100%
Vision Changes	8	80%
Dizziness	7	70%
Numbness	1	10%
Severe Headache	5	50%
Confusion	8	80%

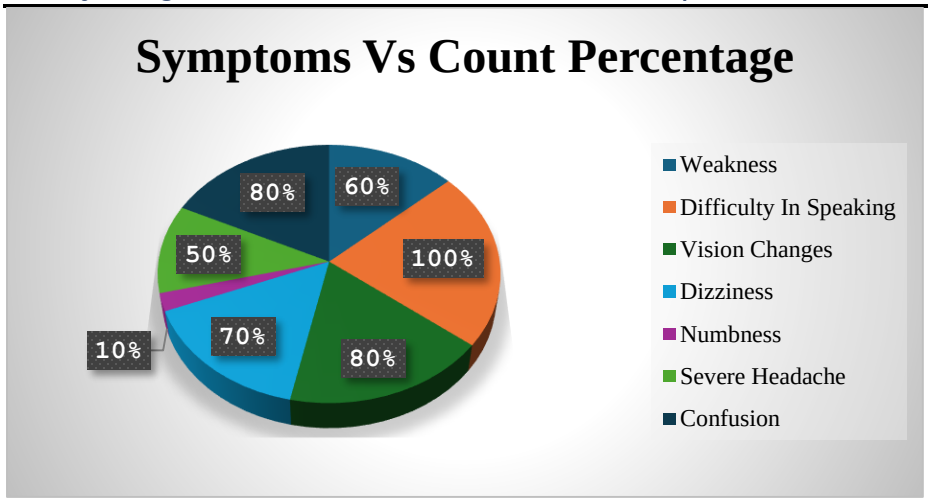


FIGURE 3: SYMPTOMS Vs PERCENTAGE

It was observed that 60% patients had weakness,100% patients had difficulty in speaking,80% patients had vision changes,70% patients had dizziness,10% patients had numbness,50% patients had severe headache and 80% patients had confusion.

TABLE 4: Showing the correlation between symptoms and age group

Age Group	Weakness	Difficulty In Speaking	Vision Changes	Dizziness	Numbness	Severe Headache	Confusion
51-60	2	3	3	2	0	2	3
61-70	1	2	2	1	0	0	1
71-80	3	5	3	4	1	3	4

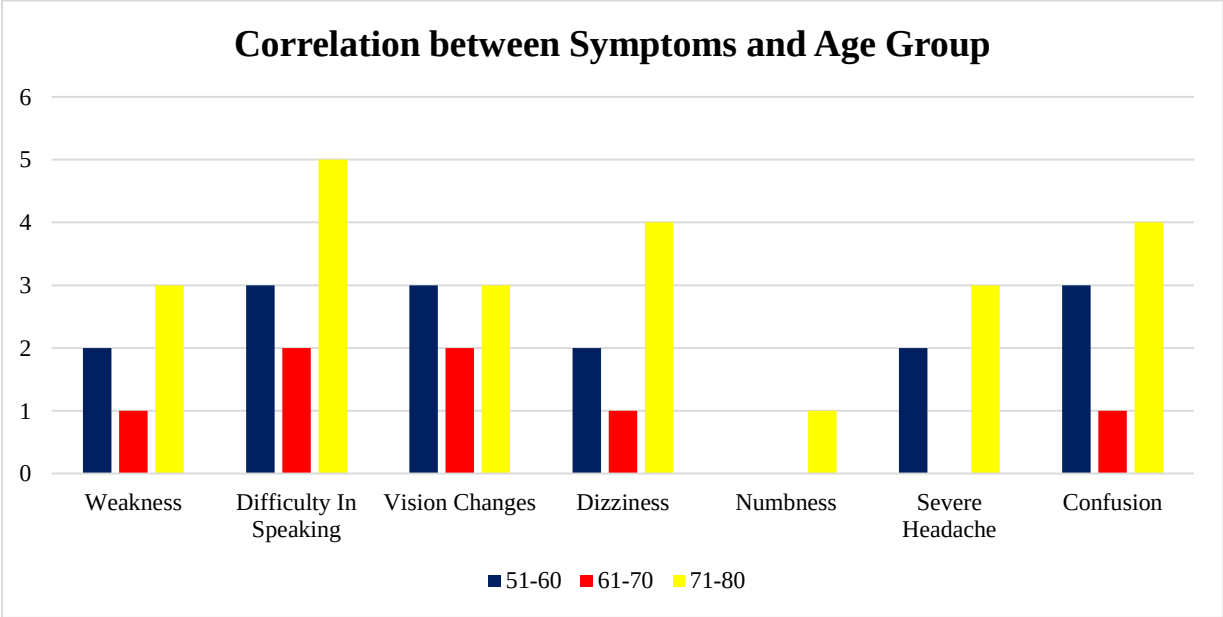


FIGURE 4: CORRELATION BETWEEN SYMPTOMS AND AGE GROUP

As per demographic data of the study, the population of stroke with atrial fibrillation patients were found to be 71-80 age with a percentage of 50%. Followed by the age group 51-60 with a percentage of 30% and 20% of patients were in the age group 61-70.

PRESCRIBING PATTERNS OF STROKE WITH ATRIAL FIBRILLATION BASED ON CHA2DS-VASc SCORE

The percentage distribution of drugs based on prescribing pattern is shown in the following table

Table:5

Drugs	N = Count	Mean±SD
Apixaban	6	6.67±1.37
Rivoraxaban	4	5±0.71

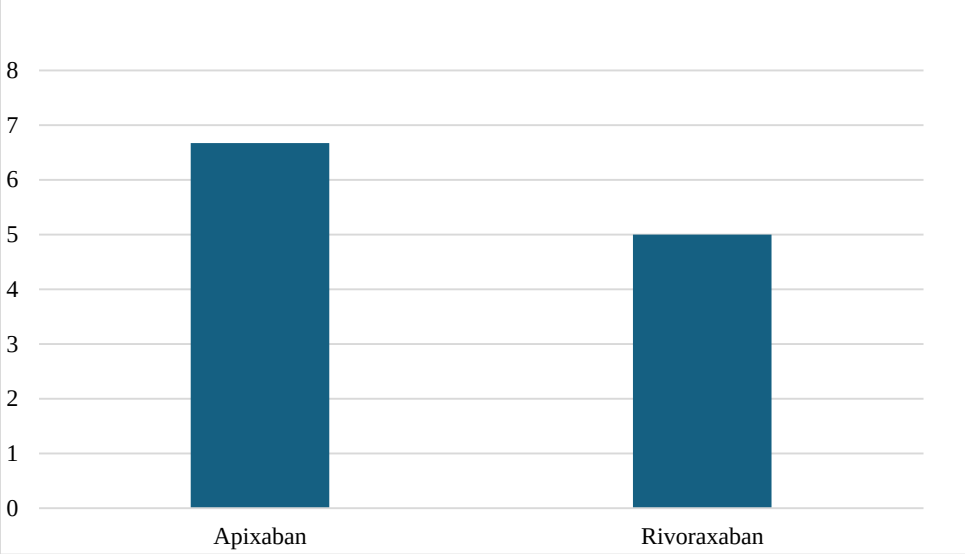


FIGURE 5:Prescribing pattern based on CHA_2DS_2-VASc Score

The table includes two commonly prescribed Direct Oral Anti-Coagulants-Apixaban and Rivaroxaban. Apixaban was prescribed to 6 patients with a mean standard deviation (SD) of 6.67±1.37, while Rivaroxaban was prescribed to 4 patients with a mean standard deviation of 5±0.71. The bar graph below the table visually represents the count of prescriptions for each drug, indicating a higher frequency of Apixaban prescriptions compared to Rivaroxaban.

Table 6: ASSESSMENT OF MEDICATION ADHERENCE BEFORE COUNSELLING

MAAS Score	Count	Percentage	Mean±SD
03-04	3	30%	3.5±0.5
05-06	3	40%	5.5±0.5
07-08	4	30%	7.5±0.5

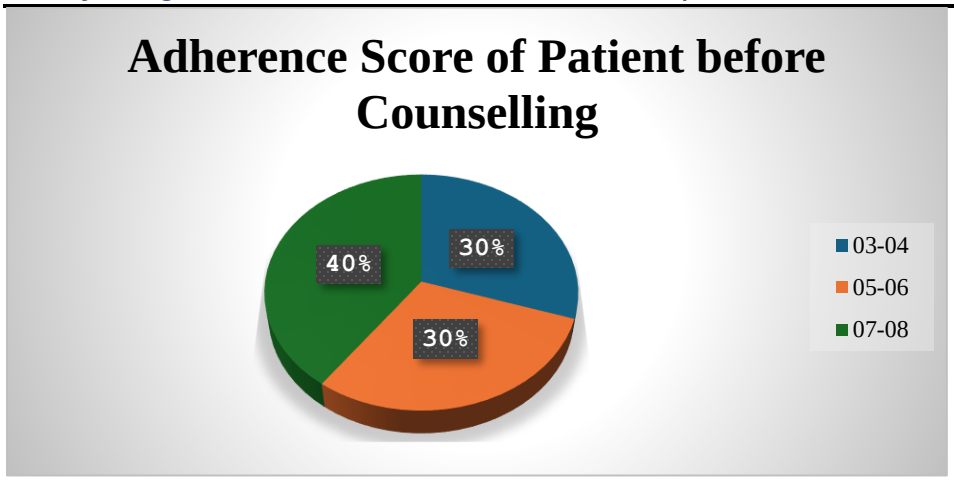


FIGURE 6

Among the patients assessed, 30% had a low adherence (3-4), 40% fell into the moderate adherence range (5-6),and another 30% demonstrated high adherence (7-8). These findings indicate that prior to counseling, a significant portion of patients exhibited suboptimal adherence, underscoring the need for targeted interventions such as patient counselling to improve medication reconciliation and therapeutic outcomes.

Table 7: ASSESSMENT OF MEDICATION ADHERENCE AFTER COUNSELLING

MAAS Score	Count	Percentage	Mean±SD
06-07	6	60%	6.5±0.5
08-09	4	40%	8.5±0.5

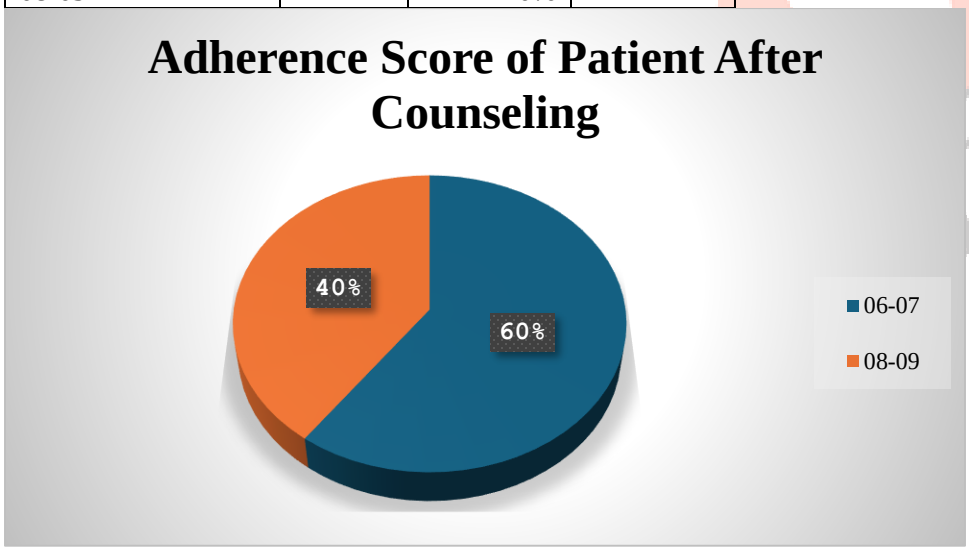


FIGURE 7

According to the MAAS (medication adherence assessment scale), 60% of patients achieved a score of 6-7, and 40% score between 8-9, reflecting higher level of adherence compared to the pre-counselling phase. The pie chart visually reinforces this shift,emphazing the positive impact of structured patient counseling on improving medication taking behavior and supporting the goals of better therapeutic outcome in stoke patient with atrial fibrillation.

COMPARISON OF MEDIACTION ADHERENCE

TABLE 8

Before Counselling	After Counselling	P-Value

3.2±0.87	7.4±1.03	<0.001

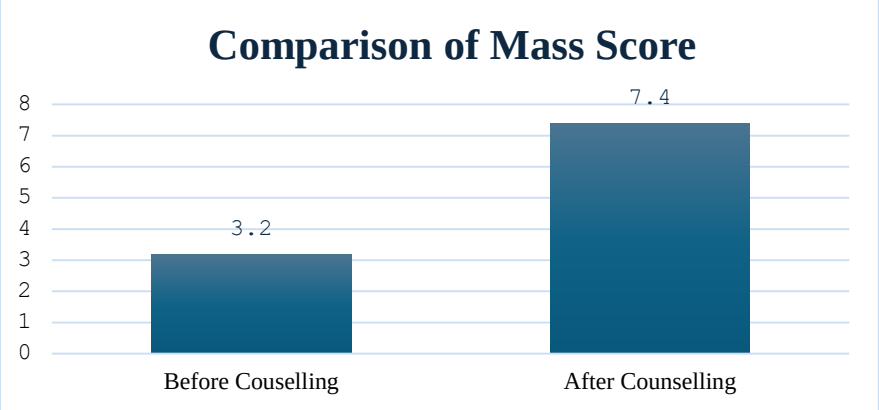


FIGURE 8

Prior to counseling the mean mass score was 3.2±0.87 indicating poor adherence following counseling the mean score increased to 7.4±1.03 this improvement is statistically significant with a p value of <0.001,conforming the effectiveness of patient counseling in enhancing the adherence. The corresponding bar graph visually emphasizes this difference, highlighting the crucial role of patient education and engagement in optimizing medication reconciliation and therapeutic outcomes.

GROUP B-CEREBRO VASCULAR ACCIDENT

STROKE DEMOGRAPHIC DETAILS OF THE PATIENTS

The data related to demographic details of patients below were collected and recorded

Table 9: AGE-WISE DISTRIBUTION

Age wise distribution	Count	Percentage
51-60 years	2	20%
61-70 years	2	20%
71-80 years	4	40%
81-90 years	2	20%

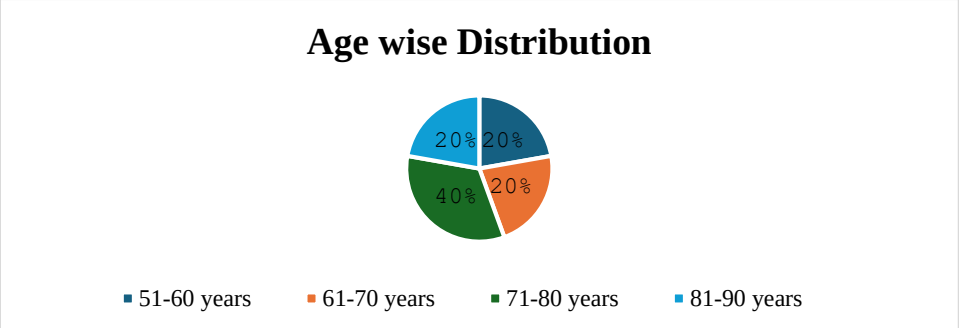


FIGURE 9

As per the demographic data of the study, population stroke patients were found to be more in the age group of 71-80 with a percentage of 40%. Followed by which the age group of 61-70 with a percentage of 20%, the age group of 51-60 with a percentage of 20% and 81-90 with a percentage of 20%.

Table 10: Gender wise Distribution

Gender	No: of patients (n=30)	Percentage (%)
Male	6	60%
Female	4	40%

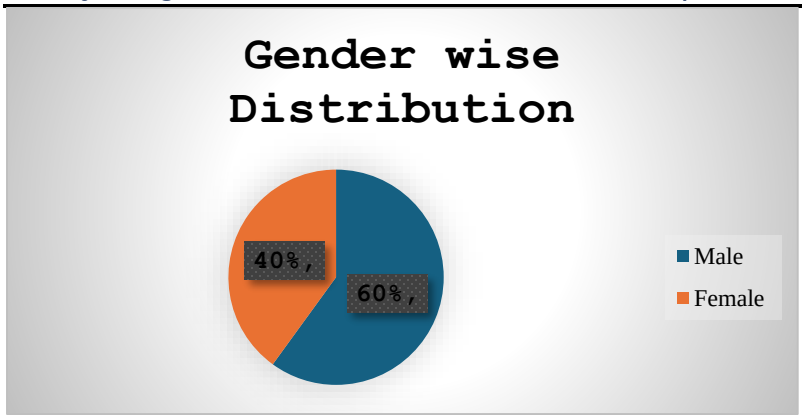


FIGURE 10: Diagrammatic representation of patient based on gender

Among a total of 10 patients included in this study a preponderance of male patients was observed. In this study 4 patients were female(40%) while 6 patients were male (60%).

Table 11: PERCENTAGE DISTRIBUTION OF PATIENTS BASED ON SYMPTOMS

Symptoms	Count	Percentage
Weakness	5	50%
Difficulty In Speaking	10	100%
Vision Changes	9	90%
Dizziness	8	80%
Numbness	3	30%
Severe Headache	4	40%
Confusion	7	70%

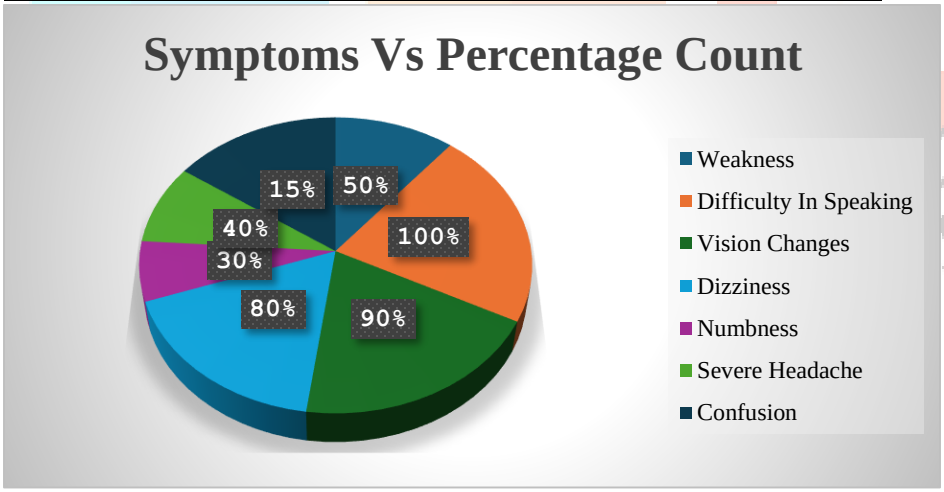


FIGURE 11

It was observed that 50% of patients had weakness, 100% of patients had difficulty in speaking, 90% of patients had vision changes, 80% of patients had dizziness, 30% patients had numbness, 40% of patients had severe headache and 15% of patients had confusion.

Table 12: Showing the correlation between Symptoms and Age Group

Age Group	Weakness	Difficulty In Speaking	Vision Changes	Dizziness	Numbness	Severe Headache	Confusion
51-60	0	2	2	2	1	1	2
61-70	1	2	2	1	1	1	0
71-80	2	3	3	2	1	1	3
81-90	1	2	2	2	0	1	2

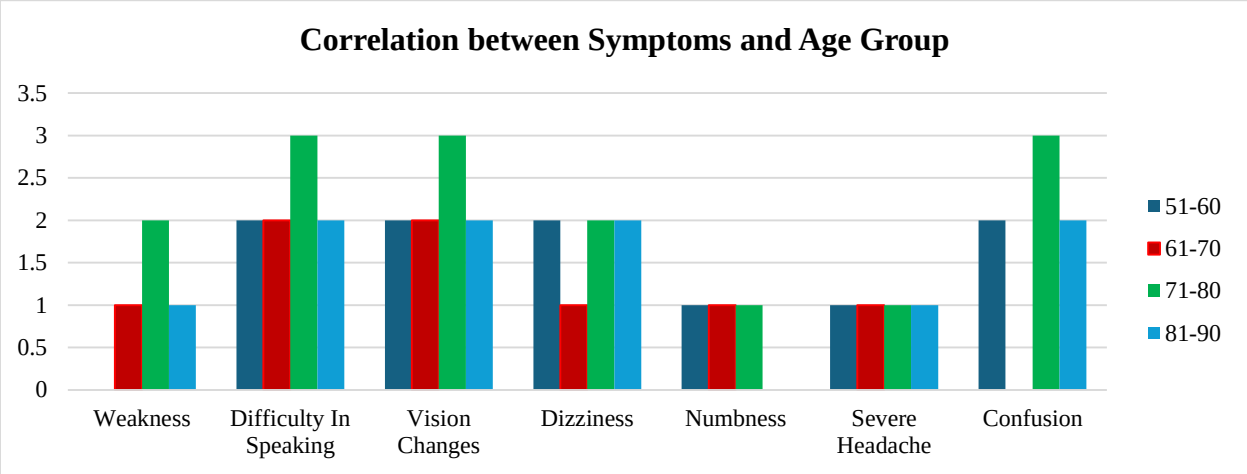


FIGURE 12: Correlation Between Symptoms and Age Group

As per the demographic data of the study population stroke patients were found to be more in the age group of 71 -80 with a percentage of 40%.Followed by which the age group of 51-60 with a percentage of 20%, the age group of 61- 70 with a percentage of 20% and 20% of patients were in the age group of 81-90.

Table 13: ASSESSMENT OF MEDICATION ADHERENCE BEFORE COUNSELLING

Medication adherence is measured by using MAAS scale. There are 9 questions and the possible score ranges between 7-8. The lowest score indicates less adherence.

MAAS Score	Count	Percentage	Mean±SD
03-04	3	30%	3.5±0.5
05-06	3	30%	5.5±0.5
07-08	4	40%	7.5±0.5

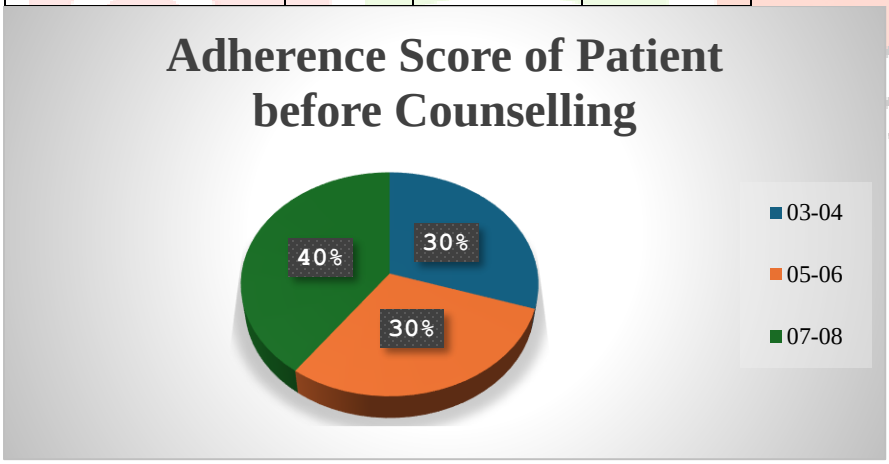


FIGURE 13

Out of the patients assessed 30% scored between 3-4 and another 30% scored between 5-6 indicating low to moderate adherence. Meanwhile,40% of patients scored between 7-8,reflecting relatively better adherence prior counseling. These findings highlight the necessity of patient counseling to improve adherence levels.

Table 14: ASSESSMENT OF MEDICATION ADHERENCE AFTER COUNSELLING

MAAS Score	Count	Percentage	Mean±SD
06-07	6	60%	6.5±0.5
08-09	4	40%	8.5±0.5

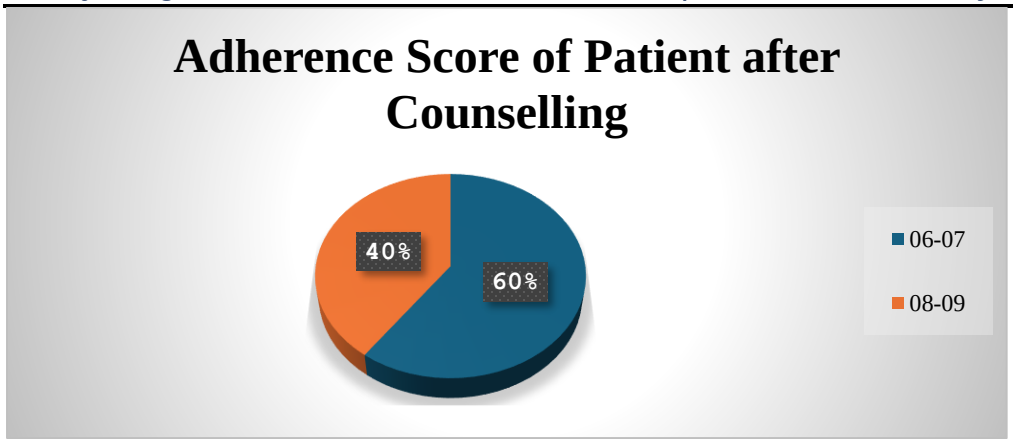


FIGURE 14

adherence category with scores ranging from 8-9. Compared to pre-counseling data,this shift toward higher adherence scores suggests a positive impact of counseling interventions on patient behaviour and medication taking process.

Table 15: COMPARISON OF MASS SCORE

Before counselling	After Counselling	P-value
5.4±1.58	7.4±1.12	<0.001

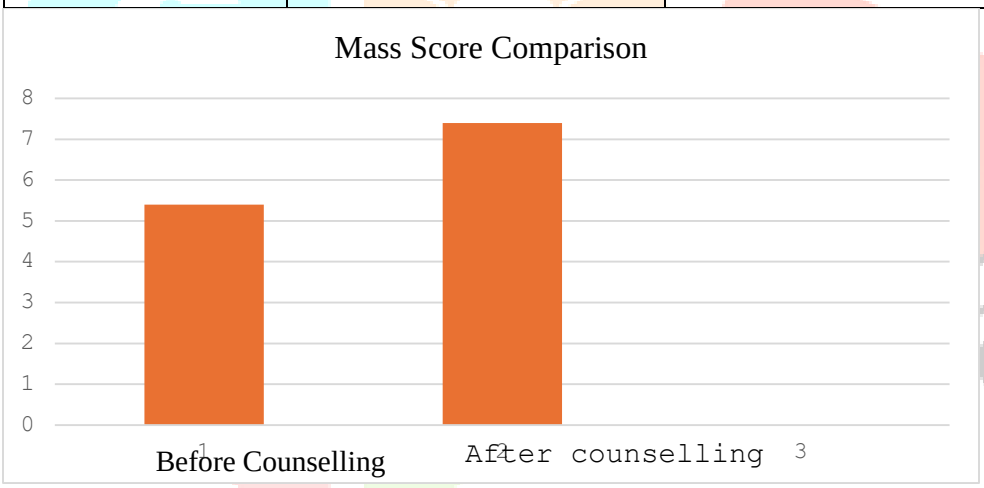


FIGURE 15

This table presents a comparative analysis of the Medication Appropriateness and Safety Score (MASS) before and after patient counseling. The mean score before counseling was 5.4 ± 1.58, while after counseling it improved to 7.4 ± 1.12, indicating a positive change. The P-value < 0.001 suggests this difference is statistically significant, highlighting the effectiveness of patient counseling in enhancing medication reconciliation practices among stroke patients with atrial fibrillation.

Prescribing Patterns and Its Percentage Distribution of CVA

Table 16 THE PERCENTAGE DISTRIBUTION OF DRUGS BASED ON PRESCRIBING PATTERN IS SHOWN IN THE FOLLOWING TABLE

Drugs	N = Count	Mean±SD
Clopidogrel	45	± 0.85
Aspirin	66	.83 ± 1.56

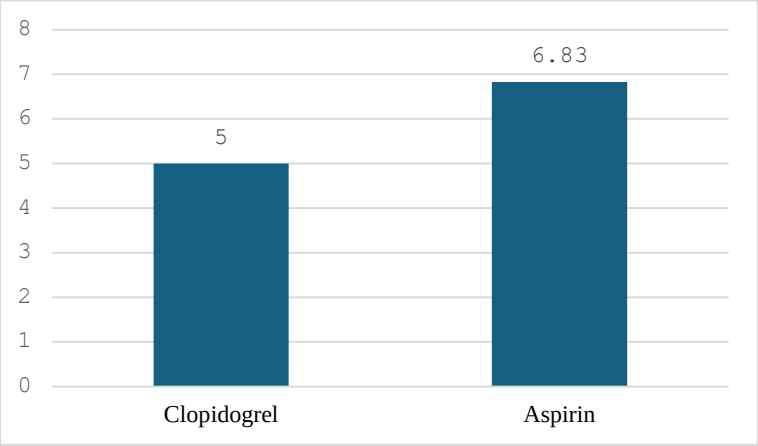


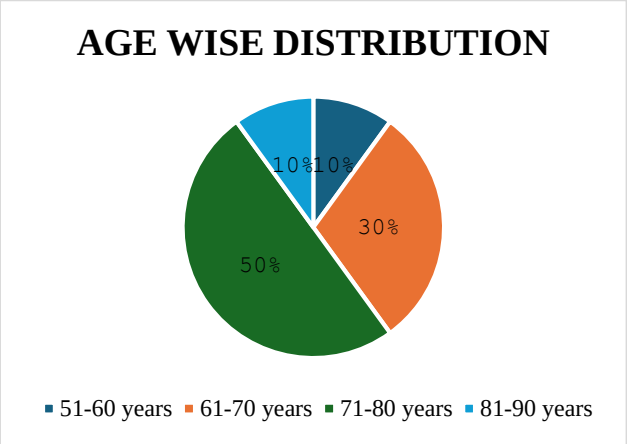
FIGURE 16

The bar graph illustrates the prescribing patterns of two commonly used antiplatelet agents, Clopidogrel and Aspirin, among stroke patients with atrial fibrillation. Clopidogrel was prescribed to 4 patients, with a mean ± SD of 5 ± 0.85, while Aspirin was prescribed to 6 patients, with a mean ± SD of 6.83 ± 1.56. Aspirin demonstrated a slightly higher mean usage compared to Clopidogrel, reflecting its frequent inclusion in stroke prevention strategies. These findings highlight the variability in antiplatelet therapy selection and underscore the importance of assessing prescribing patterns for optimizing patient outcomes.

GROUP C-ATRIAL FIBRILIATION

Table 17: AGEWISE DISTRIBUTION

Age Intervals	Count	Percentage
51-60 years	1	10%
61-70 years	3	30%
71-80 years	5	50%
81-90 years	1	10%



As per the demographic data of the study, population atrial fibrillation patients were found to be more in the age group of 71-80 with a percentage of 50%. Followed by which the age group of 61-70 with a percentage of 30%, the age group of 61-70 with a percentage of 20% and 20% of patients were in the age group of 81-90.

Table 18: Gender wise Distribution

Gender	Gender	Percentage (%)
Female	6	60%
Male	4	40%

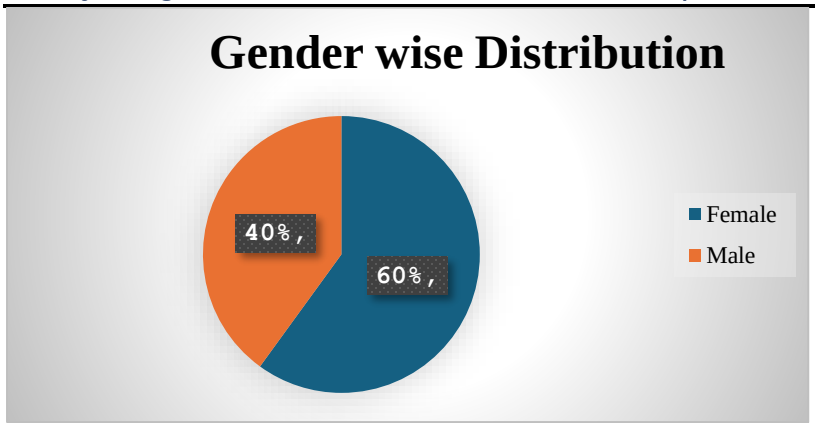


FIGURE 18

Among a total of 10 patients included in this study a preponderance of female patients was observed. In this study 6 patients were female (40%) while 4 patients were male (60%).

Table 19: PERCENTAGE DISTRIBUTION OF PATIENTS BASED ON SYMPTOM

Symptoms	Count	Percentage
Weakness	10	100%
Difficulty In Speaking	9	90%
Vision Changes	8	80%
Dizziness	8	80%
Numbness	5	50%
Severe Headache	10	100%
Confusion	6	60%

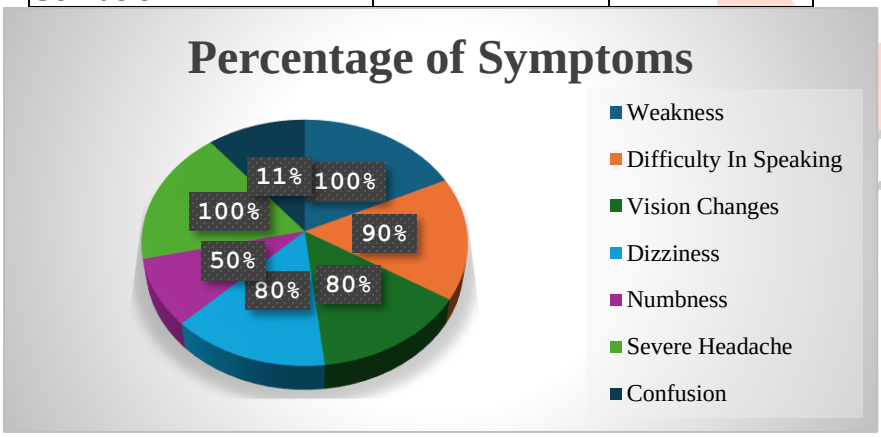


FIGURE19

It was observed that 100% of patients had weakness, 90% of patients had difficulty in speaking, 80% of patients had vision changes, 80% of patients had dizziness,50% of patients had numbness,100% of patients had severe headache and Confusion.

Table 20 SHOWING THE CORRELATION BETWEEN SYMPTOMS AND AGE GROUP

Age Group	Weakness	Difficulty In Speaking	Vision Changes	Dizziness	Numbness	Severe Headache	Confusion
51-60	1	1	0	1	0	1	0
61-70	3	2	3	2	2	3	1
71-80	5	5	4	4	3	5	4
81-90	1	1	1	1	0	1	1

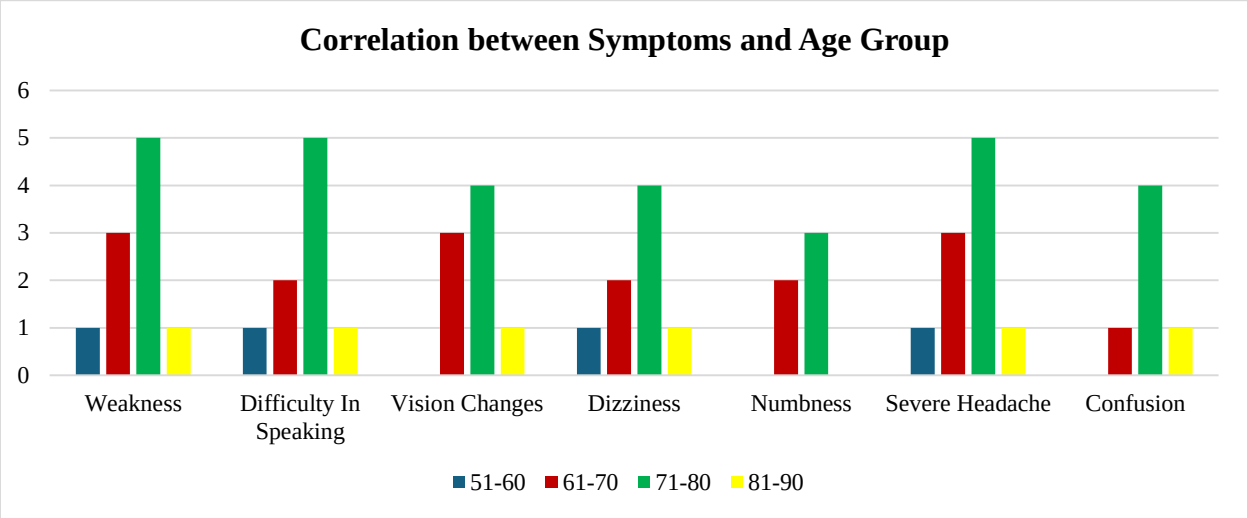


FIGURE 20

Table 20 and the corresponding Figure 20 illustrate the correlation between various neurological symptoms and different age groups among patients with stroke and atrial fibrillation. The symptoms analyzed include weakness, difficulty in speaking, vision changes, dizziness, numbness, severe headache, and confusion. The data reveals that patients in the age group 71–80 reported the highest incidence of symptoms across nearly all categories, indicating a higher symptom burden in this group. Conversely, the 51–60 and 81–90 age groups exhibited fewer reported symptoms. Notably, the symptom of weakness and difficulty in speaking was most frequent in the 71–80 group, each with a count of 5, while vision changes and dizziness also peaked in this group.This analysis helps to understand symptom prevalence across age groups and may assist in tailoring patient education and monitoring strategies when initiating direct oral anticoagulant therapy.

Table 21: ASSESSMENT OF MEDICATION ADHERENCE BEFORE COUNSELLING

Medication adherence is measured by using MAAS scale. There are 9 questions and the possible score ranges between 7-8. The lowest score indicates less adherence**.**

MAAS Score	Count	Percentage	Mean ±SD
03-04	2	20%	3.5±1.5
05-06	4	40%	5.5±1.5
07-08	4	40%	7.5±1.5

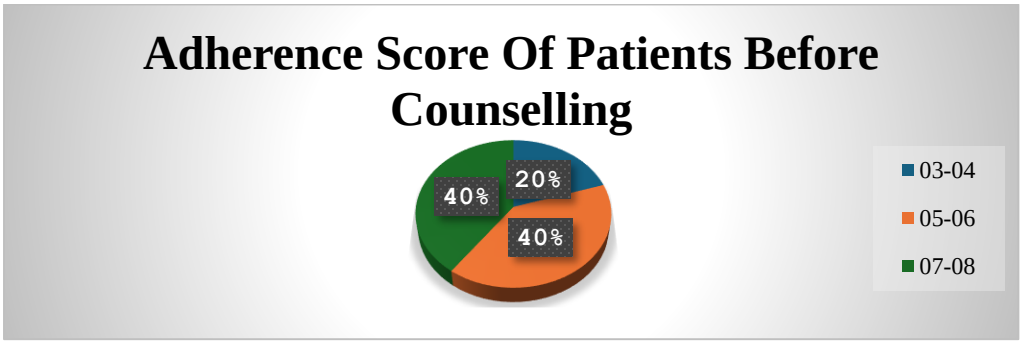


FIGURE 21

Among the patients assessed, 20% scored between 03–04 (low adherence), 40% between 05–06 (moderate adherence), and another 40% between 07–08 (good adherence). The results indicate that a significant portion of patients had room for improvement in adherence, underlining the importance of counseling interventions.

Table 22: ADHERENCE SCORE OF PATIENTS AFTER COUNSELLING

MAAS Score	Count	Percentage	Mean±SD
05-06	7	70%	5.5±0.92
07-08	3	30%	7.5±0.92

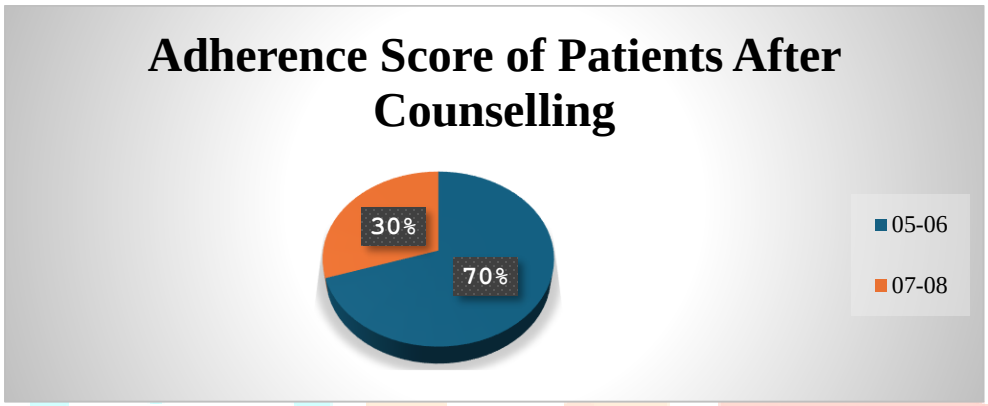


FIGURE 22

The MAAS (Medication Adherence Assessment Scale) scores are categorized into two groups: scores between 05–06 and scores between 07–08. As depicted in the pie chart, 70% of the patients (n=7) scored between 05–06, while 30% (n=3) achieved scores between 07–08. The data suggests that patient counseling had a measurable impact on medication adherence, with a notable portion achieving higher adherence post-intervention.

Table 23: COMPARISON OF MASS SCORE

Before Counselling	After Counselling	P-value
5.9±1.87	6.1±1.04	<0.001

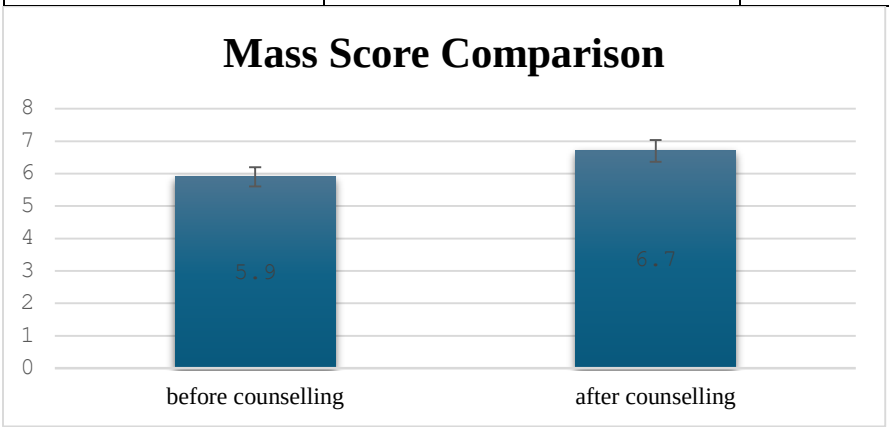


FIGURE 23

It presents a comparative analysis of the Medication Appropriateness and Safety Score (MASS) before and after patient counseling. The mean score before counseling was 5.9 ± 1.87, while after

counseling it improved to 6.1 ± 1.04, indicating a positive change. The P-value < 0.001 suggests this difference is statistically significant, highlighting the effectiveness of patient counseling in enhancing medication reconciliation practices among stroke patients with atrial fibrillation.

PRESCRIBING PATTERNS OF ATRIAL FIBRILLATION BASED ON CHA2DS-VASc SCORE

TABLE 24

Drugs	N=Count	Mean±SD
Digoxin	3	6.43±1.51
Amiodarone	7	5±1

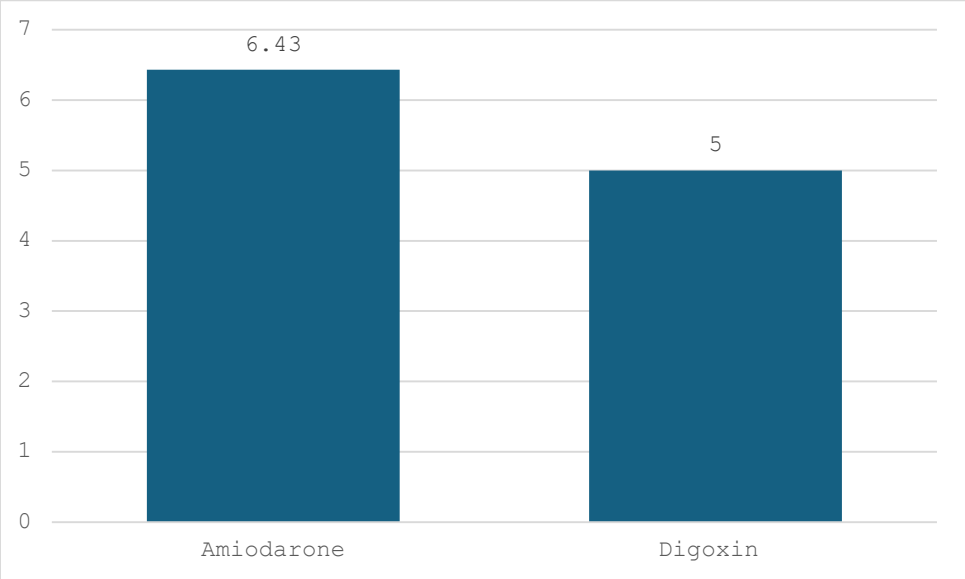


FIGURE 24

The chart and table illustrate the prescribing trends of Digoxin and Amiodarone among stroke patients with atrial fibrillation, stratified by their CHA_2DS_2-VASc scores. Among the observed patients, Amiodarone was prescribed more frequently (N=7) compared to Digoxin (N=3). The mean CHA_2DS_2-VASc score for patients on Digoxin was 6.43 ± 1.51, indicating a higher stroke risk in this group. In contrast, patients receiving Amiodarone had a mean score of 5 ± 1. This data suggests a correlation between higher CHA_2DS_2-VASc scores and the choice of Digoxin, potentially reflecting clinician preference or patient-specific clinical considerations. These findings contribute to the understanding of real-world prescribing behaviors in atrial fibrillation management and highlight the need for targeted counseling interventions to optimize therapy and ensure accurate medication reconciliation.

Comparison of Stroke Specific Scale

The comparison of each group quality of life have noted before and after counselling and treatment are shown in the following table.

TABLE 25

Groups	Number of patient	Baseline SS-QOL (Mean)	First Followup SS-QOL (Mean)	Standard Deviation Before	Standard Deviation After	P-value
CVA	10	109	210	22.26	12.25	<0.001
AF	10	168	215	14.8	13.13	<0.001
CVA with AF	10	97.3	235	11.52	14.14	<0.001

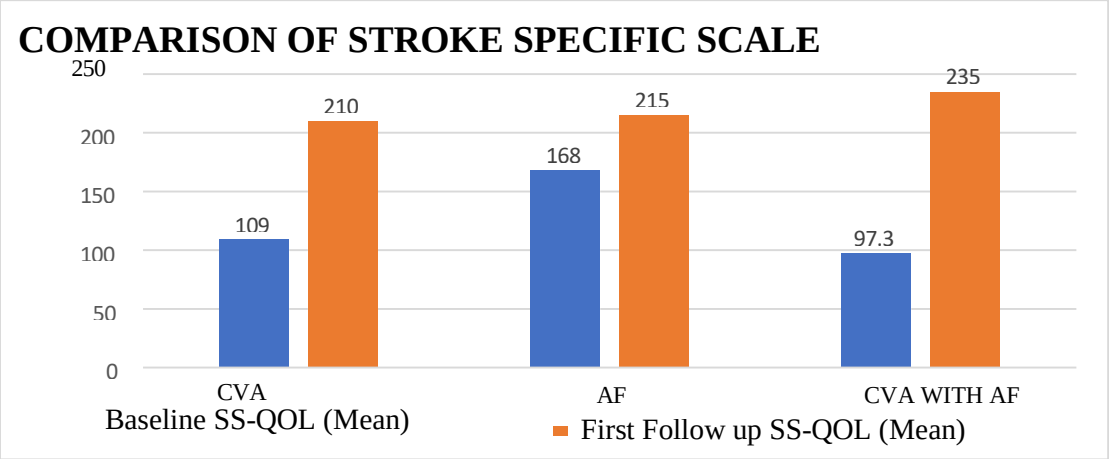


FIGURE 25

Each group consisted of 10 patients. Baseline and post counselling SS-QOL scores showed significant improvement across all groups. Notably, the stroke with Atrial Fibrillation group exhibited the highest improvement, with mean scores rising from 97.3 to 235.Similarly stroke and atrial fibrillation groups improved from 109 to 210 and 168 to 215 respectively. The suggests that patient counselling plays a crucial role in enhancing medication adherence and overall quality of life, particularly in complex cases involving both stroke and atrial fibrillation.

DISCUSSION:

This prospective observational study analyzed the prescribing patterns of direct oral anticoagulants (DOACs) in stroke patients with atrial fibrillation (AF) and evaluated the impact of patient counseling on medication adherence. The study findings highlight the importance of DOACs in stroke prevention and the effectiveness of counseling in improving adherence rates.

The most commonly prescribed DOACs in patients with stroke and atrial fibrillation were Apixaban, Rivaroxaban, and Dabigatran. These medications have been shown to be effective in reducing the risk of stroke by inhibiting clot formation, particularly in patients with a CHA_2DS_2-VASc score greater than 2. Compared to traditional vitamin K antagonists like warfarin, DOACs offer fewer drug interactions, no requirement for frequent monitoring, and a lower risk of intracranial hemorrhage.

This study about 30 patients were taken ,10 stroke with atrial fibrillation patients ,10 stroke patients and 10 atrial fibrillation patients. Statistical analysis were performed using paired-test and a detailed analysis was performed.

The main of our study is to evaluate and analyze the prescribing pattern and quality of life in stroke patients with atrial fibrillation using Stroke Specific Scale(SS-QOL) and Medication Adherence using Medication Adherence Assessment Scale (MAAS).

The observation of our study was similar to to the result of the study conducted by **Katoor et.al** .In their study **"Prescription Patterns and Outcomes of Patients With Atrial Fibrillation Treated With Direct Oral Anticoagulants and Warfarin"** the study was to analyze the current drug prescribing trends in stroke patients with non valvular atrial fibrillation. . This study was

conducted in 2362 patients were on Direct Oral Anti-Coagulants. Among the Direct Oral Anti-Coagulant group apixaban were more prescribed 51% followed by rivaroxaban 28.7% and dabigatran 20.3% respectively.

The observation of our study was similar to to the result of the study conducted by **Krishna et al (2019).**In their study **"Evaluation of Impact of Medication Reconciliation in Stroke Patients in a Tertiary Care Hospital** " the aim was to assess the impact of medication reconciliation and patient counselling in stroke patients along with identification of drug related problems and conducting patient counselling with the aid of Patient Information Leaflet card.

Medication adherence is crucial for optimizing treatment outcomes, and the Medication Adherence Assessment Scale (MAAS) was used to evaluate adherence levels before and after counseling. Before counseling, adherence was suboptimal, with a significant proportion of patients scoring between 3–6 on the MAAS scale. However, after structured patient counseling, adherence improved markedly, with most patients scoring between 6–9, indicating a positive impact of educational interventions.

Quality of life (QoL) assessments using the Stroke-Specific Quality of Life (SS-QOL) scale revealed notable improvements after treatment and counseling. Patients with combined stroke and AF had the most significant improvement in QoL scores, followed by those with isolated AF and stroke. These findings reinforce the role of comprehensive patient education and counseling in enhancing adherence and overall patient well-being.

Demographic analysis revealed that stroke with atrial fibrillation was most common in the 71–80 age group, with a predominance of female patients. Symptom analysis indicated that difficulty in speaking, dizziness, and vision changes were the most commonly reported issues among stroke and AF patients. These observations align with existing literature emphasizing the high burden of neurological and cardiovascular complications in elderly populations.

CONCLUSION:

Apixaban are the primary treatment options for stroke patients with atrial fibrillation. These drugs provide effective stroke prevention with a better safety profile than traditional anticoagulants. Furthermore, structured patient counseling plays a crucial role in enhancing medication adherence, which is directly correlated with improved health outcomes.

The findings demonstrate that patient education significantly enhances medication reconciliation, adherence, and overall quality of life. This highlights the need for integrating structured counseling programs in clinical settings to optimize therapeutic outcomes in stroke and AF patients. Future studies with larger sample sizes and longer follow-up periods may further validate these results and provide additional insights into long-term medication adherence and treatment effectiveness**.**

REFRENCES:

1. Powers, W. J., Rabinstein, A. A., Ackerson, T., et al**.** (2019). Guidelines for the early management of patients with acute ischemic stroke: 2019 update to the 2018 guidelines. *Stroke*, 50(12), e344–e418. https://doi.org/10.1161/STR.0000000000000211
2. Nouh, A., Hussein, H. M., Yaghi, S., et al. (2022). Identifying best practices to improve evaluation and management of in-hospital stroke. *Stroke*, 53(4), e165–e175. https://doi.org/10.1161/STR.0000000000000402
3. Wang, Y., Li, Z., Zhao, X., et al. (2022). Evaluation of a multifaceted quality improvement intervention on adherence to guidelines for acute ischemic stroke in China: A randomized clinical trial. *JAMA Network Open*, 5(5), e221970. https://doi.org/10.1001/jamanetworkopen.2022.1970
4. Powers, W. J., Derdeyn, C. P., Biller, J., et al. **(**2015). 2015 American Heart Association/American Stroke Association focused update of the 2013 guidelines for the early management of patients with acute ischemic stroke regarding endovascular treatment. *Stroke*, 46(10), 3020–3035. https://doi.org/10.1161/STR.0000000000000074
5. Demaerschalk, B. M., Kleindorfer, D. O., Adeoye, O. M., et al. (2016). Scientific rationale for the inclusion and exclusion criteria for intravenous alteplase in acute ischemic stroke: A statement for healthcare professionals from the American Heart Association/American Stroke Association. *Stroke*, 47(2), 581–641. https://doi.org/10.1161/STR.0000000000000086
6. Winstein, C. J., Stein, J., Arena, R., et al. (2016). Guidelines for adult stroke rehabilitation and recovery: A guideline for healthcare professionals from the American Heart Association/American Stroke Association. *Stroke*, 47(6), e98–e169. https://doi.org/10.1161/STR.0000000000000098
7. Holloway, R. G., Arnold, R. M., Creutzfeldt, C. J., et al**.** (2014). Palliative and end-of-life care in stroke: A statement for healthcare professionals from the American Heart Association/American Stroke Association. *Stroke*, 45(6), 1887–1916. https://doi.org/10.1161/STR.0000000000000015
8. Smith, E. E., Saver, J. L., Alexander, D. N., et al. (2014). Clinical performance measures for adults hospitalized with acute ischemic stroke: Performance measures for healthcare professionals from the American Heart Association/American Stroke Association. *Stroke*, 45(11), 3472–3498. https://doi.org/10.1161/STR.0000000000000045
9. Jauch, E. C., Saver, J. L., Adams, H. P., et al. (2013). Guidelines for the early management of patients with acute ischemic stroke: A guideline for healthcare professionals from the American Heart Association/American Stroke Association. *Stroke*, 44(3), 870–947. https://doi.org/10.1161/STR.0b013e318284056a
10. Kernan, W. N., Ovbiagele, B., Black, H. R., et al. (2014). Guidelines for the prevention of stroke in patients with stroke and transient ischemic attack: A guideline for healthcare professionals from the American Heart Association/American Stroke Association. *Stroke*, 45(7), 2160–2236. https://doi.org/10.1161/STR.0000000000000024
11. Saposnik, G., Kapral, M. K., Liu, Y., et al. **(**2011). IScore: A risk score to predict mortality early after hospitalization for an acute ischemic stroke. *Stroke*, 42(2), 342–349. https://doi.org/10.1161/STROKEAHA.110.601204
12. Johnston, S. C., Rothwell, P. M., Nguyen-Huynh, M. N., et al. (2007). Validation and refinement of scores to predict early stroke risk after transient ischemic attack. *The Lancet*, 369(9558), 283–292. https://doi.org/10.1016/S0140-6736(07)60150-0.
13. Murray, C. J. L., & Lopez, A. D. (1997). Global mortality, disability, and the contribution of risk factors: Global Burden of Disease Study. *The Lancet*, 349(9063), 1436–1442. https://doi.org/10.1016/S0140-6736(96)07400-8
14. Collins, R., Peto, R., MacMahon, S., et al. **(**1990). Blood pressure, stroke, and coronary heart disease: Part 2, short-term reductions in blood pressure: Overview of randomised drug trials in their epidemiological context. *The Lancet*, 335(8693), 827–838. https://doi.org/10.1016/0140-6736(90)90944-Z
15. Indian Council of Medical Research (ICMR). (2020). Stroke Management Guidelines for India. New Delhi: ICMR.

16. Priyanka Anilkumar, SoumyaR.V et al (2025) Apixaban to prevent Recurrance after cryptogenic stroke in patients with atrial cardiopathy Volume 10 , Issue 2, Mar-Apr 2025 , Page No : 01-10. DOI : 10.35629/4494-10020110.
17. Reenu Thomas,Soumya R.V et al (2025) Direct Oral Anticoagulants For The Treatment Of Stroke With Atrial Fibrillation:A Systematic Review Volume 10, Issue 1Jan-Feb 2025, DOI: 10.35629/4494-100113711379
18. Ajoe John Kattoor, MD , Naga Venkata Pothineni, MD, Akshay Goel, MD,Mahanazuddin Syed, MD, Shorabuddin Syed, MD, Hakan Paydak, MD,and Jawahar L. Mehta, MD, PhD(2019) Prescription Patterns and Outcomes of Patients With Atrial Fibrillation Treated With Direct Oral Anticoagulants and Warfarin: A Real-World Analysis Journal of Cardiovascular Pharmacology and Therapeutics2019,Vol.24(5) 428-434DOI: 10.1177/1074248419841634.
19. Saloni Krishna, M.T.Gedhanjali, Joseph Noel Jacob, Muhammed Fouzan. "Evaluation of Impact of Medication Reconciliation in Stroke Patients in a Tertiary Care Hospital International Journal of Pharmaceutical sciences and Research 2019,Volume.10(11):5069-5074.
20. .Raed A. Joundi, Lauren E. Cipriano, Luciano A. Sposato, Gustavo Saposnik,2016;47 Ischemic Stroke in Patients with Atrial Fibrillation and CHA_2DS_2-VASc Score of 1Systematic Review and Meta -Analysis Meta- Analysis of CHA2 DS2 -VASc Score 1:1364-1367.
21. Sarah M. Alotaibi,Horia M. Alotaibi, Amira M. Alolyani, Fawziah A. Abu Dali,Alaa K. Alshammari, Amani A. Alhwiesh, Danya M. Gari , Inam Khuda M.Q Khuda,Christopher A. Vallabadoss.Assessment of the stroke-specific quality-of-life scale in KFHU, Khobar Neurosciences 2021; Vol. 26 (2) .
22. Hajra Patel,Dharmendra Singh Rajput,Jitendra Vaghasiya,Medication Adherence Assessment Scale by Mrs. Hajra Patel and Dr. Jitendra Vaghasiya Journal of Young Pharmacists, 2023; 15(2):334-337 .
23. Camm, A. J., Lip, G. Y. H., De Caterina, R., Savelieva, I., Atar, D., Hohnloser, S. H., ... & Kirchhof, P. (2010). *2010 ESC Guidelines for the management of atrial fibrillation*. European Heart Journal, 31(19), 2369-2429. https://doi.org/10.1093/eurheartj/ehq278.
24. Colilla, S., Crow, A., Petkun, W., Singer, D. E., Simon, T., & Liu, X. (2013). Estimates of current and future incidence and prevalence of atrial fibrillation in the U.S. adult population. *American Journal of Cardiology, 112*(8), 1142–1147. https://doi.org/10.1016/j.amjcard.2013.05.063
25. Hindricks, G., Potpara, T., Dagres, N., Arbelo, E., Bax, J. J., Blomström-Lundqvist, C., ... & ESC Scientific Document Group. (2021). *2020 ESC Guidelines for the diagnosis and management of atrial fibrillation*. European Heart Journal, 42(5), 373-498. https://doi.org/10.1093/eurheartj/ehaa612