



Co-morbidities and Treatment Approaches of Cerebrovascular Accident Patients Admitted in a Government Tertiary Care Hospital in Mandya: A Record Based Study

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ABSTRACT

OBJECTIVE: The key objective of our study is to lay out the various treatment approaches for cerebrovascular accident cases as well as to identify and analyze the co-morbidities and their respective treatment and additionally we aimed to identify the risk factors for cerebrovascular accident. **METHOD:** A record based study was conducted for duration of 6 months in the In-patients Department of General Medicine, MIMS Mandya. **RESULTS:** A total of 110 patients were examined during study period, the occurrence of stroke was higher in males (56.3%) as compared to females (43.6%). In the study of 110 patients, 83.64% of them had ischemic stroke, 14.55% were identified as hemorrhagic stroke and 1.82% was suffered from TIA. The major risk factors identified were Hypertension (90% of total patients) and Diabetes mellitus (47%). 43% of our patients were having the habit of alcohol consumption and 39% were having the habit of smoking. Hypertension and Diabetes mellitus were the two main co-morbidities found, which affected 90% and 49.09% of total patients respectively. Among 110 patients, majority were treated with Antiplatelets (98% of total cases), then Osmotic diuretics (81%), antihypertensives (81%) and Hypolipidemics (79%). Osmotic diuretics + Hypolipidemics + Antiplatelets + Antihypertensives were the most commonly used (39%) combination therapy. **CONCLUSION:** The cerebrovascular accident cases had a male predominance and majority of them had comorbidities, which are linked to poor outcomes. To enhance patient clinical outcomes, early identification of stroke risk factors and appropriate treatments are essential.

KEYWORDS: Cerebrovascular accident, Ischemic stroke, Risk factors, Co-morbidities, Treatment.

INTRODUCTION:

Stroke is a medical emergency and a global health burden ranked as second leading cause of death worldwide with significant mortality and morbidity¹. According to WHO stroke is defined as “ rapidly developing clinical signs of focal or global disturbances of cerebral function, lasting more than 24hours or may leading to death with no apparent cause other than vascular origin”. One in four people are now believed to experience a stroke throughout their lifetime, according to the world stroke fact sheet issued in 2022, and the lifetime chance of having one has climbed by 50% in the previous seventeen years.

Based on pathophysiology, a stroke is a clinical condition that can be roughly split into three classes:

- **Ischemic strokes** are caused by the potential obstruction of arteries supplying the brain, either as a result of a thrombus form at the occlusion at the site or originating from another area of circulation. It accounts for 50-80% of strokes worldwide.
- **Hemorrhagic strokes** are affected by subarachnoid hemorrhage, arterial bleeding in the area between the meninges, intracranial hemorrhage and intraventricular hemorrhage are the three types of hemorrhagic strokes that results from bleeding into or around the brain tissue. Approximately 1-27% of all strokes worldwide fall within this category.²
- **Transient Ischemic Attack (TIA)** is a medical emergency. It is defined as a short period of neurological impairment brought on by focal ischemia of the brain, spinal cord or retina that is not accompanied by acute infarction or tissue damage.³

There are many potential risk factors for stroke, such as modifiable (e.g., diet, lifestyle and comorbid conditions) and non-modifiable risk factors (e.g., age, race). Neurological damage that develops over time in the brain can result in loss of memory and thinking, altered physical movement and even death. Stroke requires a combination of therapeutic modalities including the use of thrombolytics, antiplatelets, anticoagulants, antihypertensive drugs, lipid lowering medications and cerebral activators.

Early stroke recognition and diagnosis can help save lives and reduce disability.

METHODOLOGY

A retrospective study was carried out in the In-patient Department of General Medicine, MIMS Mandya over a period of six months after getting approval from ethical committee. About 110 patient records those satisfied inclusion and exclusion criteria were included in the study.

INCLUSION CRITERIA

Record of patient's who aged 18 and above, diagnosed with stroke.

EXCLUSION CRITERIA

Incomplete records.

METHOD OF DATA COLLECTION (study tools)

All the relevant data was obtained from the patient medical records and through the counseling the patient who visited Department of General Medicine, MIMS Mandya.

Following information were collected;

- Socio-demographic details like name, age, gender.
- Details of patients who were suffered from CVA.
- Details on treatment taken by the patient.
- Details of co-morbidities and treatment for co-morbidities.
- Details of CVA risk factors present in these patients.

STATISTCAL ANALYSIS

Data collected were coded and checked for completeness and uniformity. Microsoft Excel has been used to enter the obtained data, while word has been utilized to produce graphs and tables. In the present study, descriptive statistics like percentage and mean were also used.

RESULT

A total of 110 patient records those satisfying the inclusion and exclusion criteria were selected. Among the 110 patients, there were 62 (56.3%) males and 48 (43.6%) females. Most of the patients were between the ages of 60 and 69 years for males and 70 to 79 for females. Most prevalent type of stroke identified was Ischemic stroke, seen in 92 (83.64%) patients. Most patients were diagnosed with Hemiparesis as the major complication in 69 (93.24%) patients and infarcts was identified as the major clinical feature seen in 15 (51.72%) patients. Hypertension was identified as the major risk factor seen in 99 (90%) patients.

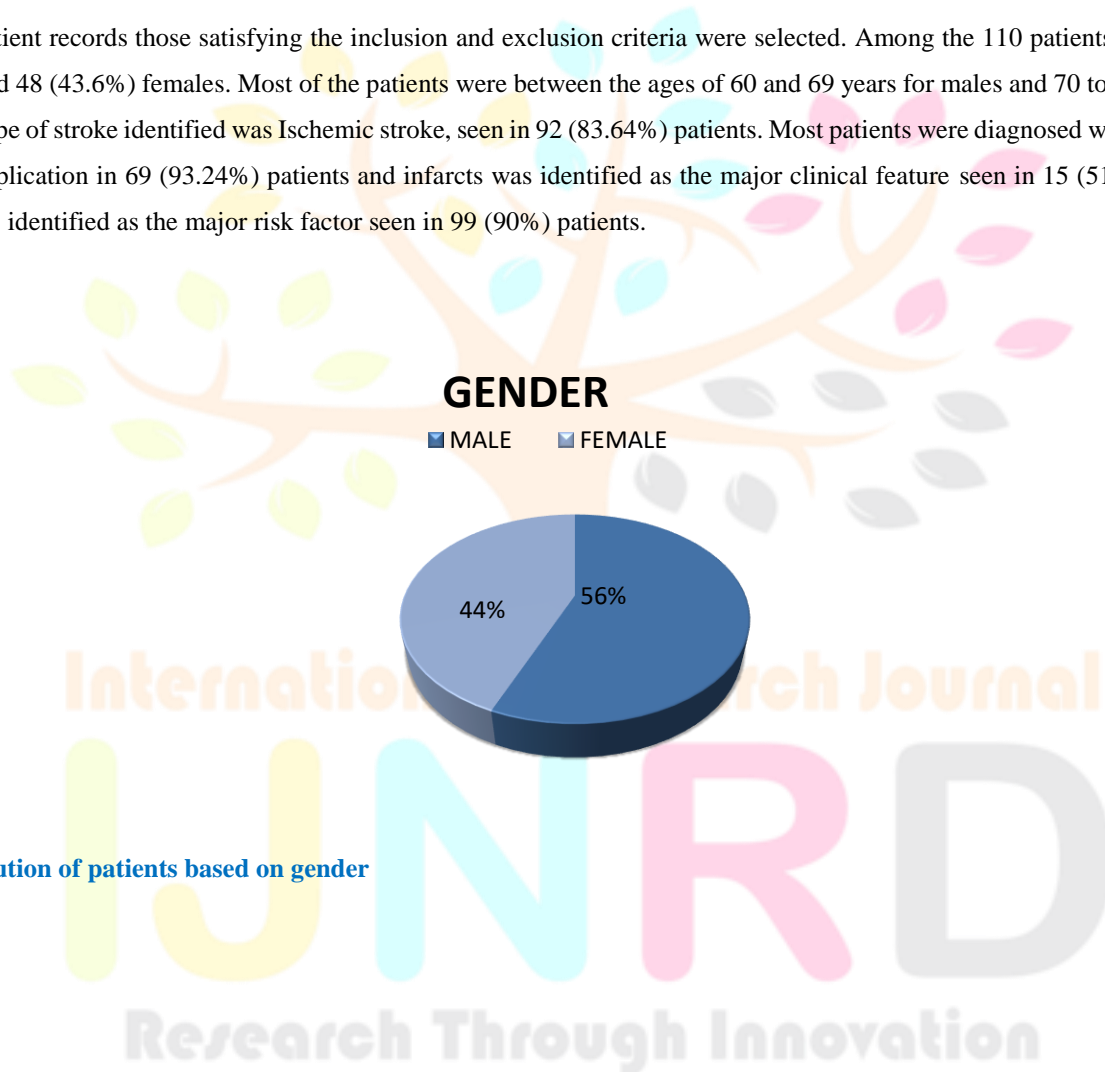


Figure1: Distribution of patients based on gender

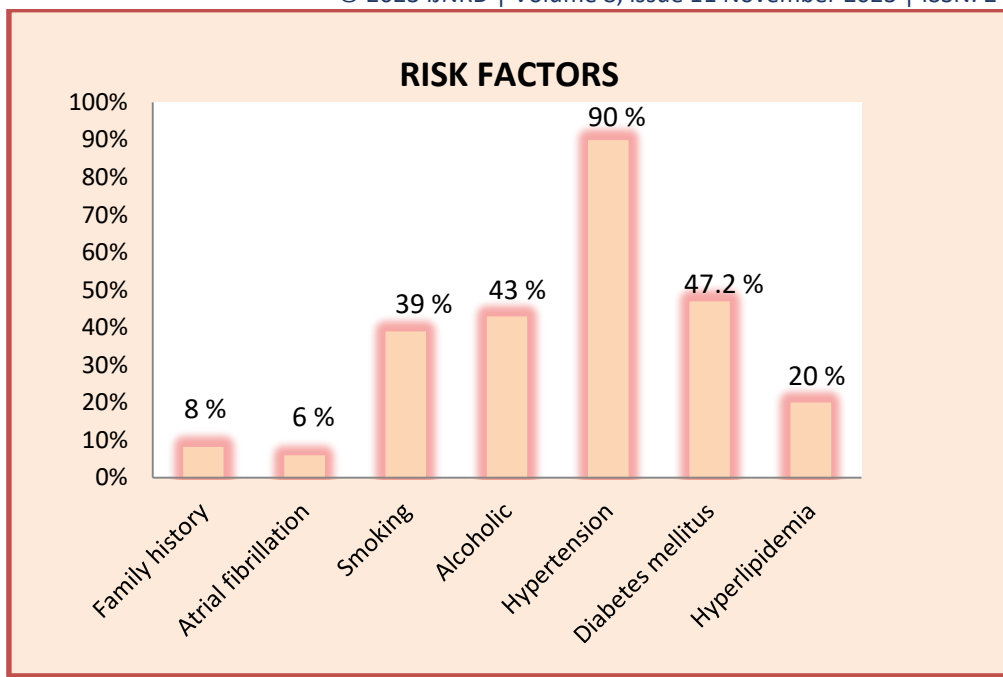


Figure 2: Patient distribution based on risk factors

Figure 2 shows patient distribution according to risk factors. Hypertension (90%) was most common risk factor followed by diabetes mellitus (47.2%), alcoholism (43%), smoking (39%), hyperlipidaemia (20%), family history (8%) and history of atrial fibrillation (8%).

Table1: Distribution of patients based on co-morbidities.

Cardiovascular	Hypertension	99	90%
	IHD	7	6%
	CHD	3	5%
	HHD	6	4%
	AF	5	2%
	MI	2	2%
	Dyslipidemia	6	5%
	Atherosclerosis	1	1%
Endocrine	Diabetes mellitus	52	47%
	Hypothyroidism	2	2%
Nervous	Seizure	12	11%
	Cervical spondylosis	1	1%
	COPD	3	3%
	Pneumonia	2	2%

Respiratory	Pulmonary edema	1	1%
	Pleural effusion	1	1%
Hematology	Anemia	21	19%
Infection	Post TB	4	4%
	Sepsis	1	1%
	Cellulitis	3	3%
	Gastroenteritis	3	3%
	Urinary tract infection	3	3%
	Meningitis	1	1%
Hepatic	Alcoholic hepatitis	4	4%
	Chronic hepatitis	4	4%
	ALD	2	2%

Among 110 patients, a total of 24 types of co-morbidities were identified and these are categorized on the basis of various systems. The systems includes cardiovascular system in that hypertension (90%) and other CV disease (27.2%), endocrine (49.09%), hematology (19%), infection (15.45%), neurologic (11.2%), hepatic (9.09%) and respiratory (6.36%). Major co-morbidity identified was hypertension seen in 99 (90%) patients followed by diabetes mellitus in 52 (47%) patients, anemia in 21 (19%) patients and seizure in 12 (11%) patients.

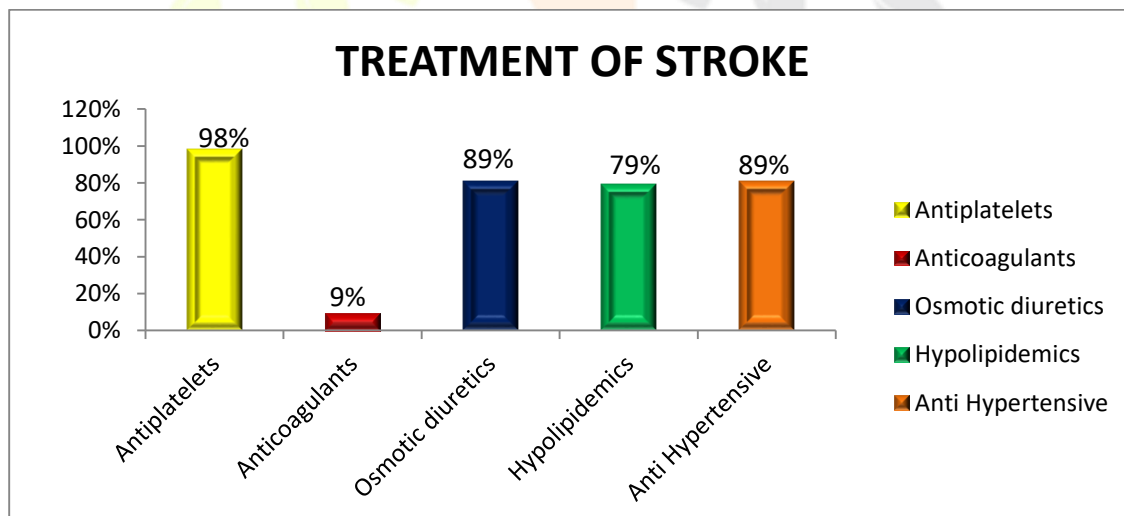


Figure 3: Distribution of patients based on treatment of stroke

Figure 3 shows various treatment approaches used in the management of stroke most commonly prescribed class of drug was antiplatelets seen in 108 (98%) patients followed by hypolipidemics in 87 (79%) patients, antihypertensives in 89 (81%) patients, osmotic diuretics in 89 (81%) patients and anticoagulants were prescribed only in 10 (9%) patients. Aspirin and Clopidogrel were the commonly used antiplatelets and LMWH (Low Molecular Weight Heparin) and UFH (Unfractionated Heparin) were the only used anticoagulants in these patients.

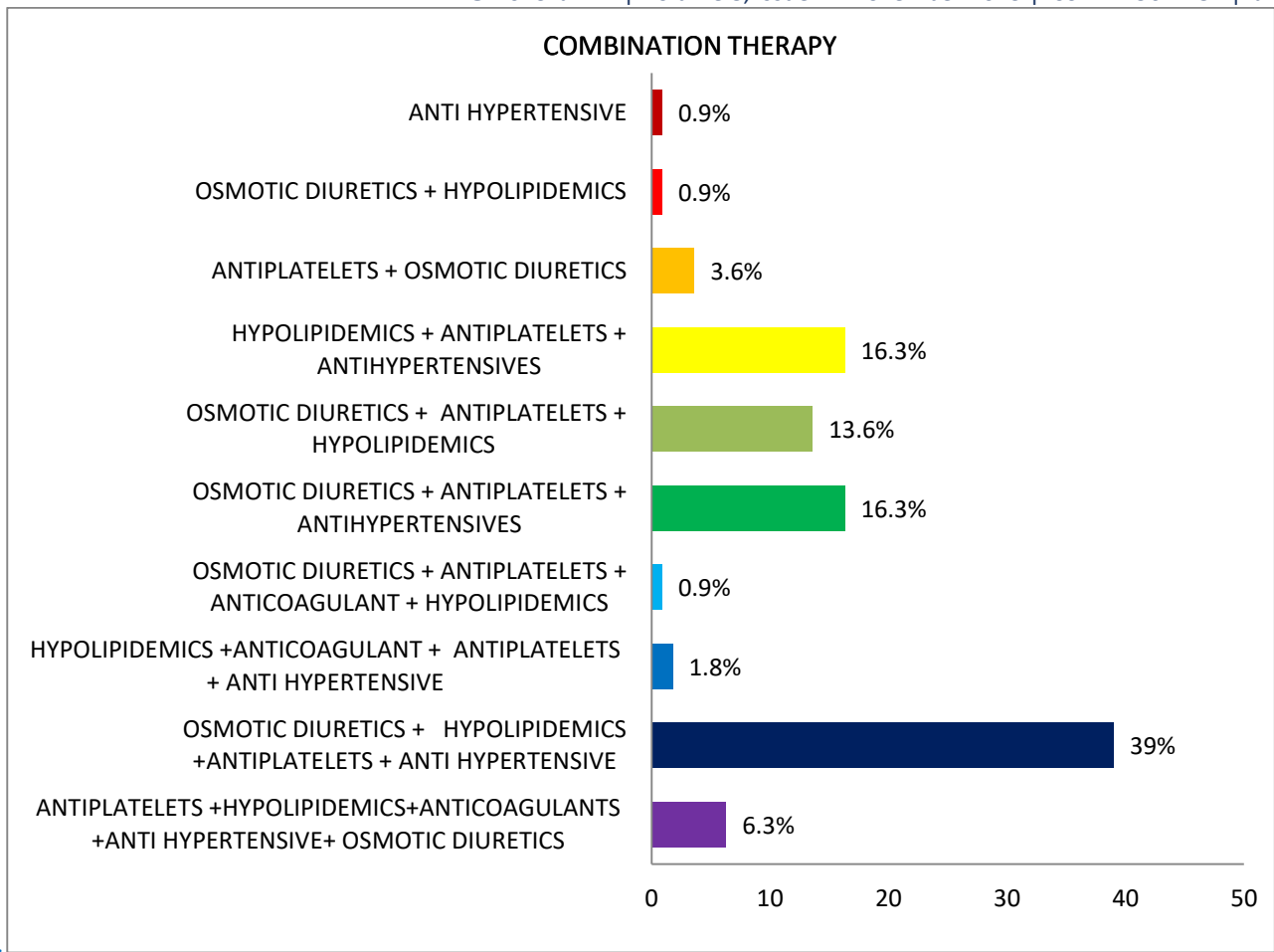
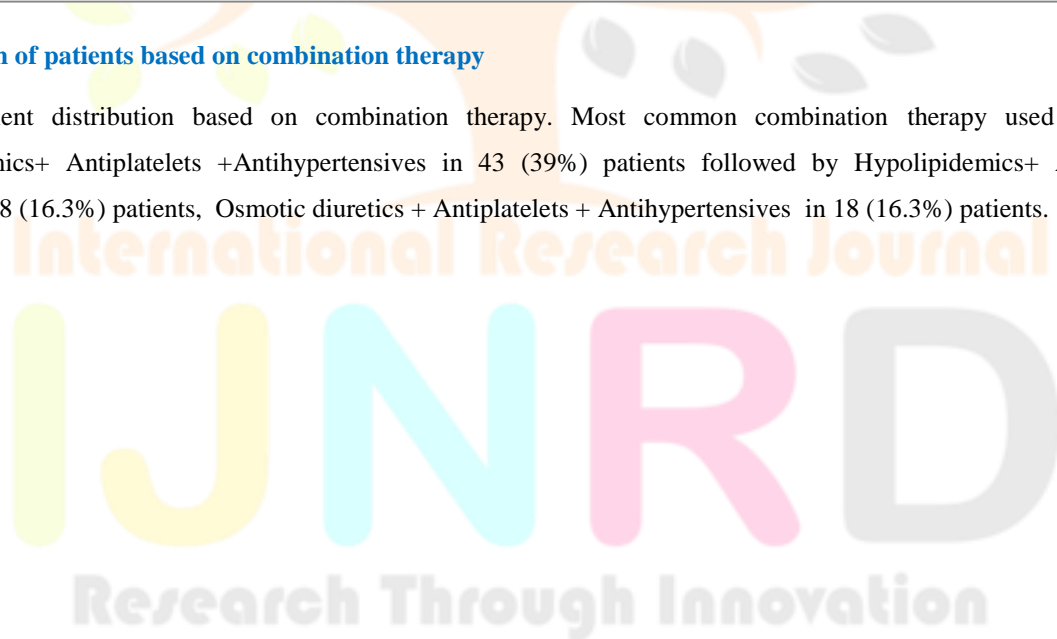


Figure 4: Distribution of patients based on combination therapy

Figure 4 shows patient distribution based on combination therapy. Most common combination therapy used was Osmotic diuretics+Hypolipidemics+ Antiplatelets +Antihypertensives in 43 (39%) patients followed by Hypolipidemics+ Antiplatelets + Antihypertensives in 18 (16.3%) patients, Osmotic diuretics + Antiplatelets + Antihypertensives in 18 (16.3%) patients.



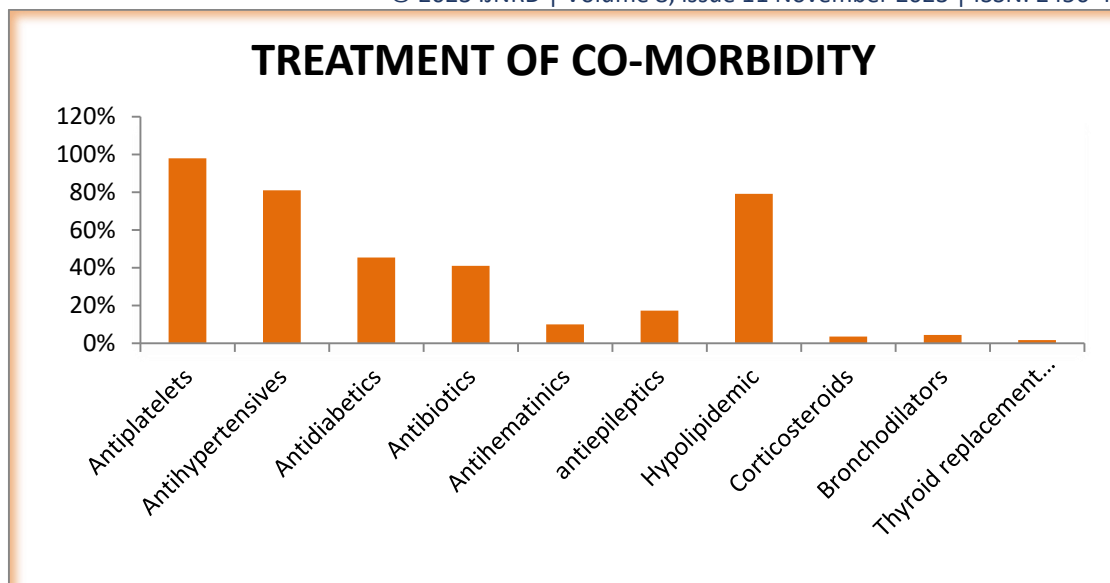


Figure 5: Distribution of patients based on treatment of co-morbidities.

Figure 5 shows patient distribution based on treatment of co-morbidities. Different classes of medications prescribed for treating co-morbidities were identified, among this antihypertensive in 89 (81%) patients was the commonly prescribed drug followed by antidiabetics in 50 (45%) patients, antibiotics in 45 (41%), antiepileptics in 19 (17%) patients and least commonly prescribed drugs were bronchodilators in 5 (5%) patients, corticosteroids in 4 (4%) patients and thyroid replacement therapy in 2 (2%) patients. Along cerebrovascular accident, cardiovascular disease also include the use of drugs such as antiplatelets, antihypertensives and hypolipidemics

DISCUSSION

Since the burden of stroke is expected to increase in the future and due to life altering impacts the stroke can affect on a family and society, it is important to understand stroke and recognize its risk factors and to employ measures to lower the risks. A retrospective study was conducted to evaluate the risk factors, co-morbidities & treatment approaches in stroke patients. Our study findings suggest that the predominance of stroke was found to be high in males 56% than female patients 44%. In line with the research conducted by Abbasi MY *et al*⁴, most of the patients appeared in the age group of 60-69 years. Most patients were diagnosed with ischemic stroke 83.64%. Similarly, another study by K Swetha *et al*² showed that incidence of ischemic stroke was high 78%.

The risk factors of stroke can be divided into modifiable (Hypertension, Diabetes mellitus, smoking, alcohol,atrial fibrillation...) and non modifiable factors (age, gender...). Our findings suggest that age is one of the non modifiable risk, increase the chance of developing stroke after 60 years of age and hypertension (90%) was the predominant modifiable risk factor identified. We found that Hypertension and diabetes mellitus were the most frequent co-morbidities, similar to a study conducted in south India in 2019.⁵

The study findings also revealed that commonly prescribed drug was antiplatelet, followed by antihypertensives, osmotic diuretics, lipid lowering drugs and anticoagulants. Most patients were treated with combination therapy. Combination therapy of Osmotic diuretics + Hypolipidemic + Antiplatelets + Antihypertensives was the most used.

Thus, results of our study indicate that co-morbid diseases and risk factors have an impact on a larger population, emphasizing the significance of lowering stroke risk factors in society and patients with cerebrovascular accidents need to receive comprehensive care for their coexisting diseases. The extend of stroke and all relevant data should be taken into consideration when treating it. Furthermore, early recognition and diagnosis can help save lives and reduce disability.

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