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A Prospective Investigation Of The General Medicine Department Of A Tertiary Care Hospital's Prescription Patterns For Drugs Used In Stroke Treatment

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Abstract



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This study aimed to identify stroke risk factors and evaluate drug prescribing patterns in a tertiary care hospital's general medicine department. The research focused on assessing stroke categories, with ischemic strokes being more prevalent than hemorrhagic strokes. The study found that male patients outnumbered females, and hypertension, diabetes, obesity, and smoking were the major stroke risk factors. The most commonly prescribed drugs for stroke patients included antiplatelets, antidepressants, hyperlipidemia drugs, anticoagulants, anti-ulcer drugs, antibiotics, antidiabetics, vitamin supplements, analgesics, antihypertensives, and nootropics. Clinical symptoms often included hemiplegia, speech changes, mouth deviation, numbness, and tingling sensations. The study emphasized the importance of adhering to standard treatment guidelines, effective prescribing patterns, and regular awareness programs on stroke prevention, risk factors, and lifestyle modifications to improve outcomes and reduce complications.

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INTRODUCTION

A stroke occurs when the blood supply to a section of the brain is cut off or interrupted, depriving the brain's tissue of oxygen and nourishment [1]. Brain cells start dying in a matter of minutes. A stroke is a critical health issue. Treatment must begin right away. Prompt intervention can reduce brain injury and associated risks. When the blood flow to a portion of the brain is cut off, a stroke is a dangerous medical disease that can be fatal. Strokes require immediate medical attention since they are medical emergencies. A serious medical condition known as a stroke can occur when blood flow to a part of the brain is disrupted. Like all organs, the brain depends on the blood's

supply of nutrients and oxygen to function correctly. Brain cells die if the blood supply is cut off or restricted. Death and brain damage are possible outcomes of this. The illness known as stroke is curable and prevented[2]. Any neurological abnormality, such as limb weakness or numbness, speech difficulties, sight loss, or balance issues, might appear suddenly. A rising body of research over the past 20 years has challenged the conventional wisdom that strokes are just an inevitable byproduct of aging, leading to death or severe disability. Evidence for improved primary and secondary prevention techniques, improved identification of those most at risk and needing proactive intervention, early-onset intervention effectiveness, and comprehension of care processes that lead to improved outcomes are mounting. Furthermore, contemporary research provides strong support for stroke rehabilitation therapies and care protocols. The application of research study evidence is necessary for better patient outcomes. Guidelines at the national level offer evidence summaries and suggestions for clinical practice to doctors, managers, and service consumers. Improved care processes and clinical results are achieved by applying guidelines backed by routine audits[3].

METHODOLOGY

This six-month study is a prospective observational research project. The research was carried out in a tertiary care hospital's neurology department. The patients gave informed and written consent to participate in the study. The practice of prescription drugs for stroke patients was examined over the study period. For the study, 320 patients were chosen. A patient's name, age, sex, admission date, height, and other demographic information were collected using a patient data collection form. Information on the patient's medical history, drug usage, and treatment pharmaceuticals was taken from the medication chart[4].

Study design:

We used a prospective observational study design [5] for our research

Duration of study:

The current investigation lasted six months, from November 2023 to April 2024.

Study site:

The current study was conducted in the general medicine department of the AC Subba Reddy Government Medical College, a 1000-bed tertiary care teaching hospital in Nellore, Andhra Pradesh[6].

Sample size: It was 320 Patients.

Inclusion criteria:

- Patients with aging above 18 years.
- Patients are having stroke symptoms.
- Patients prescribed medications
- Patients diagnosed with stroke
- Patients identified with risk factors [7]

Exclusion criteria:

- Patients under the age of twenty (20) and pregnant or breastfeeding moms are not allowed.
- Patients with COVID-19 are not allowed.
- Patients will not be approved if they refuse to participate in the study
- The study will require qualified patients to provide their informed consent before participating [8]

Institutional Ethics Committee (IEC) consideration:

The study received approval from the general medicine department of ACSR Medical College & Govt. General Hospital in Nellore and the institutional ethics committee of the Ratnam Institute of Pharmacy in Nellore. A standard data entry format was created to gather patient details. The research protocol was developed and presented to the institutional human ethics committee, and after receiving approval, the committee allowed the research to be conducted in the neurology department[9].

Patient data collection and management

With the help of a physician who teaches pharmacy practice, the patient data collection form was designed to gather data from prescription documents. The data collecting tool comprises the following: diagnosis, past medical history, laboratory findings, age, sex, height,

weight, BMI, and diagnosis. Data regarding stroke medications, clinical laboratory report data, risk factors, brain scanning information, dosage and frequency of administration, and therapy duration were gathered from the treatment chart[10].

Statistical analysis:

The results are shown as the mean ± standard deviation and were obtained using the statistical package for the social sciences (SPSS) software to analyze the measurement data.

Group comparisons were examined using the Student's t-test. The χ^2 test was used to compare sample rates in measurement data, expressed as percentages[13]. A difference that was deemed statistically significant was defined as $P < 0.05$.

RESULTS

A total of 320 individuals were diagnosed with stroke in the general medicine department of a tertiary care teaching hospital throughout the six-month study period.

The patient treatment chart was used to gather data about the drug prescribing pattern, which was then assessed

Age-wise distribution

Table 1 displays the age distribution of the 320 enrolled patients in the trial.

There were 75 patients in the 20–30 age group, 89 in the 31–40 age group, 87 in the 41–50 age group, and 69 in the 51–60 age group

Table 1 Age-based distribution

Age	Total patients (N=320)	Percentage (%)
20-30	75	11.81
31-40	89	35.90
41-50	87	38.63
51-60	69	13.53
Total	320	100

Objective:

The occurrence of stroke was predominantly seen at the age of 41-50 years (38.63%) followed by 31-40 years (35.90%) because of more number of risk factors like chronic disease (Hypertension, diabetes mellitus), drug abuse in younger people, a diet high in sodium (salt) can contribute to obesity occur high in middle age people more.

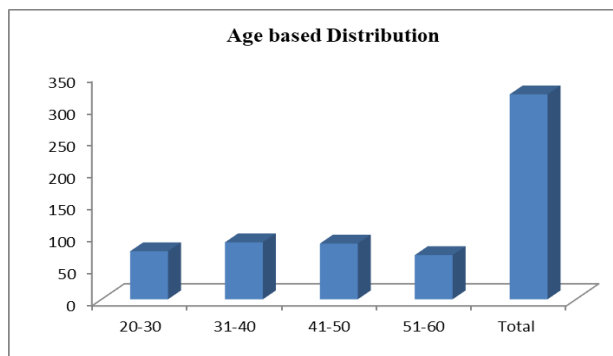


Figure 1 Age-wise distribution

Gender wise distribution

Three hundred twenty patients were chosen for the study, and **Table 2** displays the distribution of patients by gender. Seventy-five of the patients were female, and 245 were male.

Table 2 Gender-based distribution

S. No	Category	Total no of patients (N=320)	Percentage (%)
1	Male	245	89.54
2	Female	75	10.45
	Total	320	100

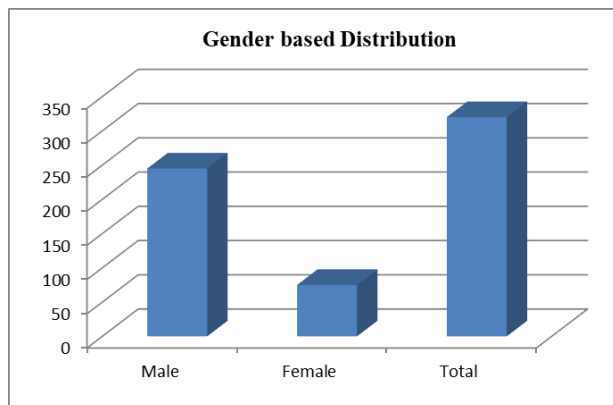


Figure 2 Gender-based distribution

Objective:

1. The incidence of stroke was estimated higher in males as compared to females because of joblessness, voluntary retirement, low high-density lipids, good cholesterol, and smoking lead to stroke.
2. While testosterone has the opposite effects on endothelial, estrogen has strong effects that encourage blood vessel dilatation and blood flow. This suggests that endogenous estrogens shield females.

Social habits wise distribution

Table 3 shows the Social habits distribution of 198 patients who had a habit of smoking and 122 patients who had a habit of alcohol.

Table 3 : Social habits wise distribution

S. No	Social habits category	Total no of patients (N=320)	Percentage (%)
1	Smoking	198	58.63
2	Alcohol	122	41.36
	Total	320	100

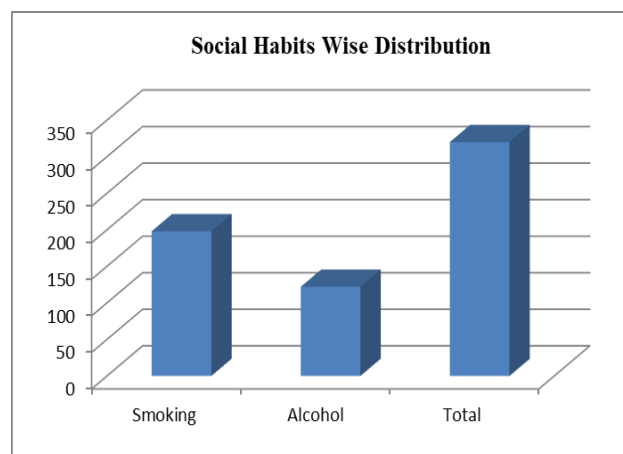


Figure 3 Social habits wise distribution

Objective:

Smoking causes the production of free radicals, which damage blood vessel walls and restrict oxygen delivery. Blood clots can also form, elevated blood pressure increases the risk of stroke, and alcohol consumption mainly damages the liver.

Type of stroke in patient-wise distribution

Table 4 shows the Type of stroke in the patient distribution, including 185 patients with Ischemic stroke and 135 patients with Hemorrhagic stroke.

Table 4 Type of stroke in patient-wise distribution

S. No	Type of stroke	Total no of patients (N=320)	Percentage (%)
1	Ischemic stroke	185	61.81
2	Hemorrhagic stroke	135	36.81
	Total	320	100

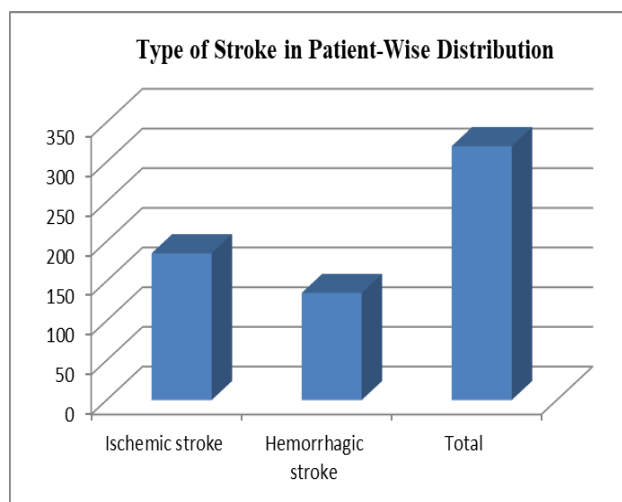


Figure 4 Type of stroke in patient-wise distribution

Objective:

The prevalence of ischemic stroke was found to be higher than that of hemorrhagic stroke because the former is caused by blood clots that travel from other parts of the body (embolism), thrombosis, and blockages brought on by damage to the arterial wall (lacunar infarct). In contrast, hemorrhagic stroke occurs when blood spills into or around the brain, causing swelling and pressure that damages brain tissue and cells.

Risk factors for stroke distribution according to development. **Table 5** displays the distribution of stroke risk factors across time, encompassing 98 patients with Hypertension, 65 patients with diabetes, 43 patients with smoking, 28 patients with heart diseases, 35 patients with obesity, 26 patients with depression, and 25 patients with Neurological abnormalities.

Table 5 Risk Factors for Stroke Development Wise Distribution

Risk factors	Total no of patients (N=320)	Percentage (%)
Hypertension	98	34.54
Diabetes	65	19.54
Smoking	43	10
Heart diseases	28	6.36
Obesity	35	12.72
Depression	26	8.63
Neurological abnormalities	25	8.18
Total	320	100

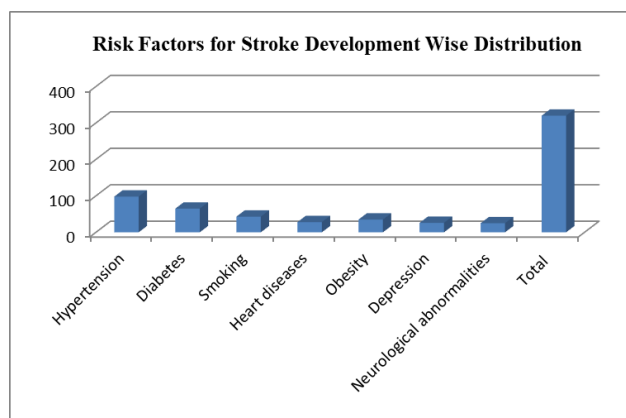


Figure 5 Risk factors for stroke development-wise distribution

Objective:

Hypertension impairs the brain's tiny, deeply piercing arteries, which can lead to microaneurysms, which rupture, giving rise to intracranial hemorrhage and hyaline degeneration of smaller cerebral vessels.

Data distribution according to stroke patients' clinical symptoms

Table 6 shows the Data distribution according to stroke patients' clinical symptoms: 28 patients presented with dizziness, 87 patients presented with Hemiplegia, 54 patients presented with Change in Speech, 42 patients presented with Deviation of Mouth, 53 patients presented with Headache, 34 patients were presented with numbness and Tingling sensations, 22 patients were presented with giddiness.

Table 6 Distribution of data based on Clinical symptoms in stroke patients

Clinical symptoms	Total no of patients (N=250)	Percentage (%)
Dizziness	28	5.45
Hemiplegia	87	35.90
Change in Speech	54	18.18
Deviation of Mouth	42	14.54
Headache	53	10.45
Numbness and Tingling sensations	34	6.81
Giddiness	22	8.63
Total	320	100

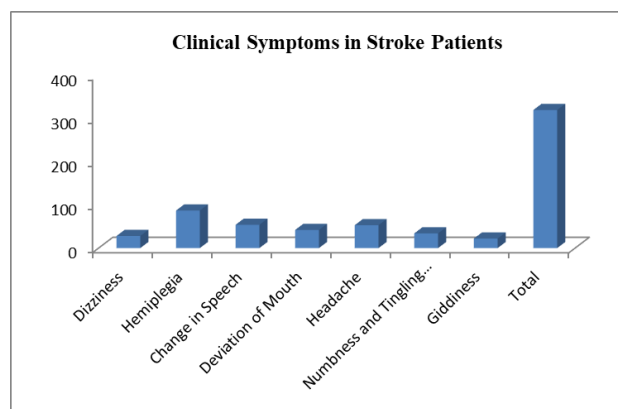


Figure 6 Distribution of data based on Clinical symptoms in stroke patients

Objective:

Hemiplegia means weakness on the opposite side, as injury in the brain is caused by the pyramidal tract, a pathway of neurons that begins motor areas and controls the body's movement.

Drugs prescribing pattern in stroke patient's wise distribution

Table 7 shows the drug prescribing pattern in stroke patients wise distribution includes: 42 patients were prescribed antiplatelets, 12 patients were prescribed Antidepressants, 38 patients were prescribed hyperlipidemia drugs, 32 patients were prescribed Anticoagulants, 21 patients were prescribed Anti-ulcers drugs, eight patients were prescribed with Antibiotics, 33 patients were prescribed with Antidiabetics, 27 patients were prescribed with Vitamin supplements, 20 patients were prescribed with Analgesics, 39 patients were prescribed with Antihypertensives, 48 patients were prescribed with Nootropics.

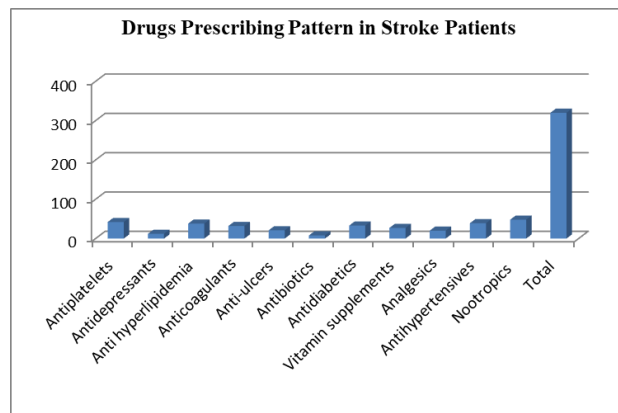


Figure 7 Drugs prescribing pattern in stroke patient's wise distribution

Table 7 : Drugs prescribing pattern in stroke patient's wise distribution

Drugs prescribed	Total no of patients (N=320)	Percentage (%)
Antiplatelets	42	9.09
Antidepressants	12	3.18
Anti hyperlipidemia	38	13.18
Anticoagulants	32	5.45
Anti-ulcers	21	5
Antibiotics	8	2.72
Antidiabetics	33	10
Vitamin supplements	27	8.18
Analgesics	20	4.54
Antihypertensives	39	17.72
Nootropics	48	20.90
Total	320	100

Objective:

Nootropics means brain boosters will increase the blood flow to the brain.

DISCUSSION

- Stroke is a neurological condition that causes the loss of consciousness, weakness, numbness, paralysis, slurred speech, and aphasia. It consists of ischemic and hemorrhagic strokes. It is caused by a blocked artery and leaking of blood vessels in the brain, which causes mortality. Stroke is associated with many risk factors like Hypertension, diabetes, obesity, cardiovascular diseases, smoking, and alcohol. An ischemic stroke may be caused by a blood clot that migrates towards other parts of the body and obstructs the functions of arteries. A hemorrhagic stroke is caused by weakened blood vessel leakage in the brain and damages the tissues in the brain.
- In our study, patients in the 41-50 age group were more 87 (38.63%) than other age groups.
- In our study, male patients were more 245 (89.54%) than females.
- In our study, smoking patients were more than 198 (58.63 %) compared with other social habits.

- In our study, Ischemic stroke patients were more than 185 (61.81%) compared with Hemorrhagic stroke 135 (36.81%).
- In our study, hypertension risk factor patients were 98 (34.54%) compared with other risk factors.
- In our study, clinical symptoms of Hemiplegia patients were more than 87 (35.90%) compared with other clinical symptoms.

In our study, Nootropics drugs prescribed to patients were more than 48 (20.90%) compared with other medications prescribed.

CONCLUSION:

The study revealed that the stroke clinical symptoms include Hemiplegia, change in speech, deviation of mouth, numbness, and tingling sensations followed by other symptoms. The physician's regular adherence to the standard treatment guidelines and effective prescribing patterns can promote better outcomes. Regular initiation of awareness programs on the prevention and management of stroke, risk factors, and lifestyle modification activities in society and regular treatment may reduce the disease complications

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