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Original Research Article **Pharmacy Practice**

Analysing the Prescribing Pattern of Drugs in Patients with Stroke Admitted in a Tertiary Care Hospital in a Remote Area of Malappuram District

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Abstract

To analyse the drug prescription pattern for secondary prevention of stroke, medication adherence, knowledge and awareness about the disease, and direct medical costs involved in the treatment of stroke. A Prospective observational study was carried out for 6 months in the inpatient department. The inclusion criteria of the present study are patients of either sex aged ≥ 18 years, patients who were diagnosed as stroke patients and admitted to the intensive care unit of the hospital. About 120 prescriptions in total were examined during the 6-month trial. Men aged 64 showed a higher prevalence of this (53.33%). 120 individuals were included in the study, 115 (95.5%) of whom had ischemic stroke, while 5 (5%) had a haemorrhagic stroke. Hypertension, dyslipidemia, and diabetes mellitus were the three main co-morbidities found; these conditions were present in 82 (68.0%), 80 (66.6%), and 73 (60.8%%) individuals, respectively. The majority of the patients in this study on pharmacological prescriptions for stroke were being treated with statin and antiplatelet medications. 109 (90.8%) of the 120 patients received statin (Atorvastatin) medication. This study found that clopidogrel, prescribed to 102 (84.8%) and 19 (15.8%) patients, was the most widely used antiplatelet. In our facility, the sole anticoagulant utilized for stroke victims was heparin.

Index Terms: HTN, TIA.WHO, CKD, T2DM, ICH, SAH, CRF.

INTRODUCTION

The World Health Organization (WHO) defines a stroke as a clinical syndrome that includes quickly evolving clinical indications of a focal (or global, in the case of a coma) disruption of brain function that lasts longer than 24 hours or results in death with no conclusive cause other than a vascular origin [1]. In India, stroke is a leading cause of mortality and disability. Stroke-adjusted prevalence rates are expected to be between 84 and 262/100,000 in rural areas and 334 and 424/100,000 in urban areas. Incidence rates range from 119 to 145 per 100,000 people, according to recent population-based research. The percentages of case fatalities also vary greatly, with Kolkata having the highest at 42% [2]. Stroke prevalence varies and is higher in older adults, men, and African Americans. 3. 1.3 million stroke victims live in China each year, and 75% of them suffer from varied degrees of disability as a result of their stroke [3]. It has been determined that factors such as heredity, age, gender, race, and ethnicity are risk factors for stroke. Even though there is no way to change these things. High blood pressure, diabetes, tobacco use, high cholesterol, atrial fibrillation or other heart problems, certain blood disorders, transient ischemic episodes, cigarette smoking, alcohol use, illicit drug addiction, and other common modifiable risk factors include A higher risk of stroke has been linked to several lifestyle factors. Higher blood pressure, blood sugar, and atherogenic serum lipid levels have all been linked to obesity and are known to be independent risk factors for stroke [3]. The three primary forms of stroke are ischemic stroke (caused by blood clots), hemorrhagic stroke (caused by ruptured blood vessels), and transient ischemic attack (TIA), which is a "mini-stroke" caused by a transient blood clot.

An acute episode of focal cerebral, spinal, or retinal impairment brought on by a central nervous system infarction is known as an ischemic stroke—tissue system. In particular, lacunar, thrombotic, and embolic

infarcts are included in ischemic stroke. A transitory incident is known as a transient ischemic attack (TIA), in which a brain artery blockage heals on its own without resulting in tissue death. An immediate episode offocal or widespread dysfunction of the brain or spinal cord brought on by intraparenchymal, intraventricular, or subarachnoid bleeding is known as a hemorrhagic stroke. Hemorrhagic stroke is of two types mainly; Intracerebral haemorrhage (ICH), Subarachnoid Hemorrhage (SAH) [3].

The purpose of the study is to raise knowledge about the risk factors and management of this condition among patients, nursing staff, and clinicians. Using information from patients and their caregivers, evaluate the general knowledge of prescribed medications (antiplatelets, hypolipidemic medications, diuretics, and anticoagulants) and the efficacy of the present inpatient stroke education program. To provide appropriate information on disease risk factors, early intervention, and lifestyle adjustments, particularly during poststroke care at a tertiary care teaching hospital, with a focus on stroke patients and their caregivers.

NEED OF THE STUDY

Stroke is mainly seen in elder people > 65 years old. 10% of people in India who experience stroke are younger than 45 years. According to Global Burden of Diseases (GBD), India had the greatest burden of stroke, accounting for 77.7% of lost disability-adjusted life years (DALYs) and 68.6% of stroke fatalities.

RESEARCH METHODOLOGY

A prospective observational study was done in the neurology department of Almas Hospital with sample size not less than 96 patients. The study was conducted for 6 months to analyze the prescribing pattern of drugs used in the prescribing pattern of drugs in patients with stroke. Study materials are the Case collection form and informed consent form.

(Cochran's equation):

Estimate a proportion

$$n \geq \frac{Z^2_{1-\alpha/2} \times p(1-p)}{d^2}$$

Z = Level of significance (5%), P = Prevalence from reference article (S. Anandkumar *et al*.,) d = Estimation error (0.07) The sample size for the study was estimated based on the proportion of27.2% as a primary outcome and it's expected that 5%level of significance and 7% margin of error.

Inclusion Criteria

- Patients with ≥ 18 years
- Patients diagnosed with Ischemic and Hemorrhagic stroke.

Exclusion Criteria:

- Patient with intracranial abnormalities like subdural hematoma, brain tumour and dementia
- Patients in whom CT/MRI could not be obtained.

Study Materials: Data collection form, Patient case sheet. Patient consent for treatment guidelines for stroke

Study Procedure

The analysis of the prescribing pattern of drugs in patients with stroke is to be carried out in the Neurology department of a tertiary care hospital. The study is to be conducted with the expert guidance of the pharmacy practice department professionals and clinical guide of the study The study will be conducted for 6 months. The data will be collected in a special data entry form which contains patient demographics (age, sex, date of admission, and date of discharge, type of stroke history of present illness, past medical history, family history, name of the drug, dosage regimen, dosage form route, frequency and duration.)

Statistical Tools

The data collected was transcribed into an Excel Spreadsheet and analyzed using Statistical Package for Social Science (SPSS) version 20.0 used for a prospective observational study with 120 samples.

RESULTS

Analyzing the prescribing pattern of drugs in patients with stroke. conducted a prospective observational study with a total of 120 patients. The patient details were collected using the case report form (CRF) according to the inclusion and exclusion criteria.

Table 1: Demographic characteristics of a patient

Gender	Frequency N= (120)	Percentage (%)
Male	64	53
Female	56	47

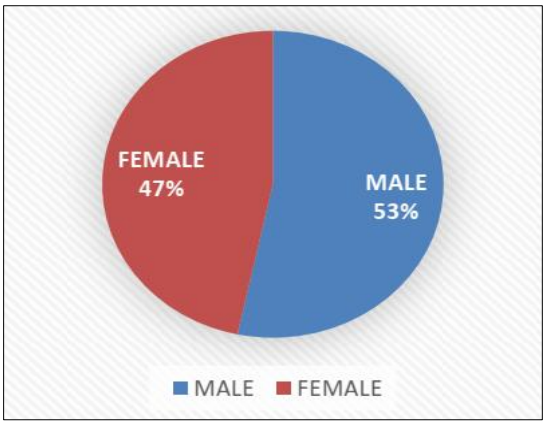

Figure 1: Gender distribution

Table 2: Age distribution

Age	Frequency	Percentage (%)
18-36	1	0.8
40-64	41	34.2
65 above	78	65.0

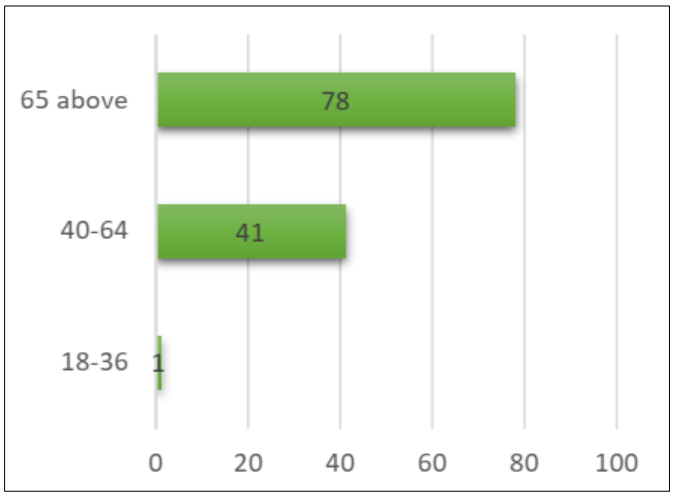

Figure 2: Age distribution

Table 3: Geriatric age distribution (N=120)

Age	Frequency	Percentage (%)
65-74	39	50.0%
75-84	26	33.3%
>85	13	16.6%

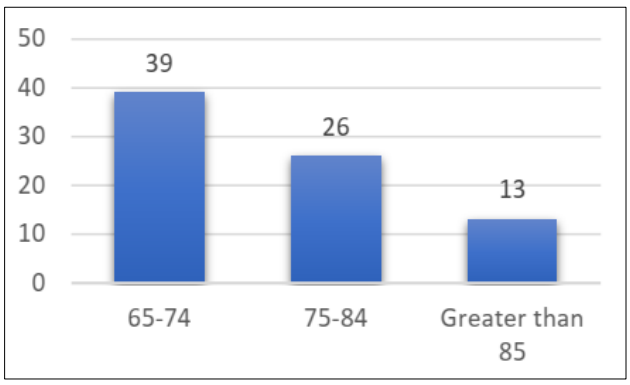

Figure 3: Age distribution of geriatric

Table 4: Family history distribution (N=120)

Family history	Frequency	Percentage (%)
No	94	78.3
YES	26	21.7

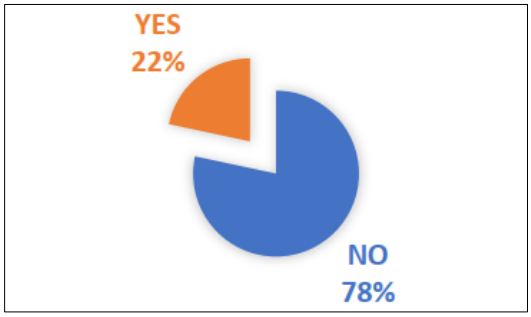

Figure 4: Family history distribution

SYMPTOMS OF PATIENT

Table 5: symptoms of stroke

Symptoms	Number of patients	Symptoms
Weakness on the left side	100	Weakness on the left side
Slurred speech	96	Slurred speech
Deviation of mouth	89	Deviation of mouth
Headache	99	Headache
Change in speech	47	Change in speech
Weakness on the right side	20	Weakness on the right side

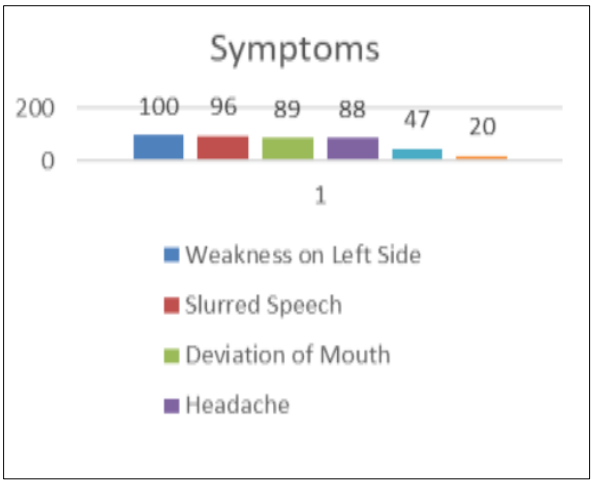

Figure 5: symptom of stroke

Table 5 and Figure 5 shows that out of 120 patients, 100 (66.66%) patients presented with symptoms like weakness of left slide, followed by slurring of speech in 96 (64.66%) patients, headache in 88 (58.66%) patients, change in speech in 47 (31%) patients, weakness on left side in 20 (18.66%) patients and deviation of mouth in 89(60%) patients.

TYPES OF STROKE

Table 6: Types of stroke

Types of strokes	Number of people	Types of stroke
HEMORRHAGIC STROKE	5	4.2%
ISCHEMIC STROKE	115	95.8%

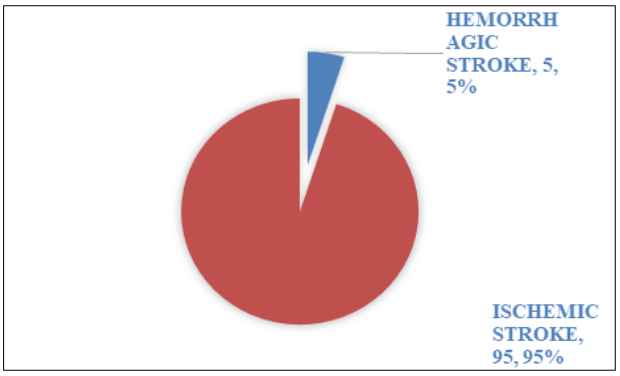

Figure 6: Types of stroke

In this study population, 120 patients experienced Ischemic Stroke and 95(95%) patients experienced hemorrhagic stroke (table 5). The ratio of Ischemic stroke to Hemorrhagic stroke was found to be 2: 1.

ASSESSMENT OF RISK FACTORS IN STROKE PATIENT

Table 7: Assessment of risk factors in stroke patient

Risk	Number of patients	Percentage
HTN	82	68.0
DYSLIPIDEMIA	80	66.4
T2DM	73	60.8
HEART DISEASE	17	14.2
CKD	12	10.0

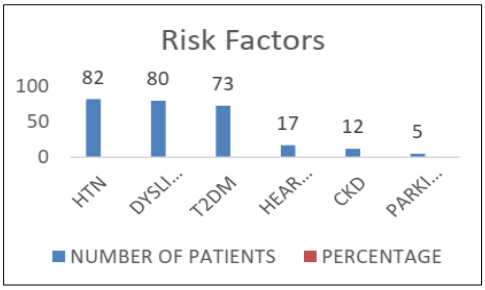

Figure 7: Assessment of risk factors in stroke patient

MEDICATIONS DURING HOSPITAL STAY

From the details of the hospital stay, it was found that a total of 888 medicines were used. In which about 109 (90.8%) were Tab. Atorvastatin, followed by Tab.aspirin 102(84.8%), Inj. heparin 91(75.8%) Inj.piracetam 65(54.2%), Tab.pantoprazole 65(54.2%), Inj.pantoprazole 64(53.3%) IVF. Normal saline 40(33.3%), Tab.Telmisartan 32 (26.6%), Tab.cilnidipine, Tab.clopidogrel 19(15.8%) Tab. Tolvaptan 14 (11.7%), inj.Ondansetron 13(10.8%)

Table 8: Categories of antiplatelet drugs

DRUGS	FREQUENCY
Aspirin	107
Clopidogrel	19
Aspirin+clopidogrel	8

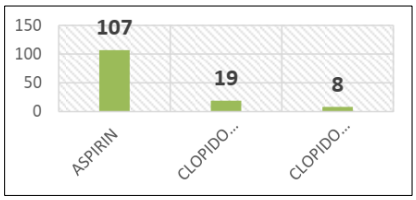

Figure 8: Antiplatelet categories

Table 9: Antihypertensive drug categorization

DRUGS	FREQUENCY
Telmisartan	32
Cilnidipine	30
Torsemide	6
Furosemide	5
Nebivolol	2
Losartan	2

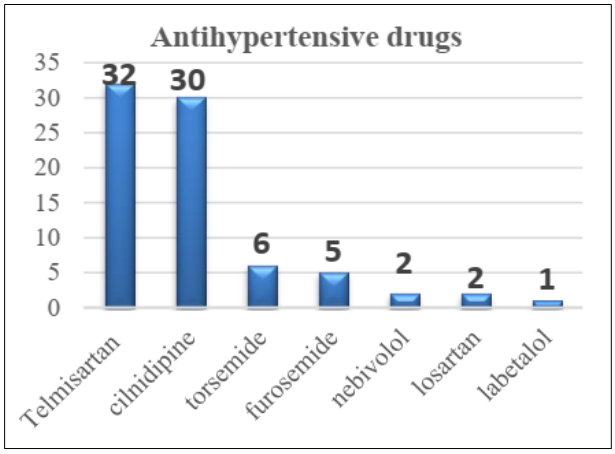

Figure 9: Antihypertensive drug categorization

ANALYSIS OF DISCHARGE MEDICATION

From the discharge medication atorvastatin was found in the first position, constituting about 106 88.3% (106). Are prescribed and 103(85%) were followed pantoprazole, 68(56.7%) aspirin and other drugs.

Table 10: Antiplatelet drug categorization

DRUGS	PERCENTAGE
Aspirin	68%
Aspirin+clopidogrel	32%
Clopidogrel	12%
Aspirin+atorvastatin	4%

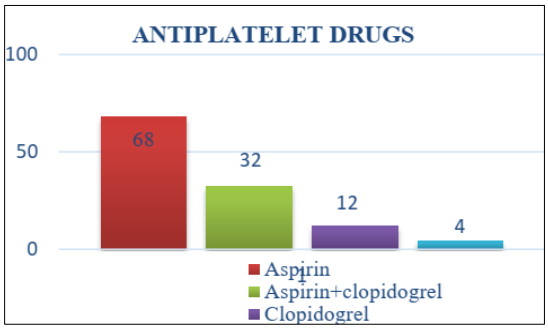

Figure 10: Antiplatelet drug categorization

Table 11: anti-hypertensive drug categorization

DRUGS	PERCENTAGE
TELMISARTAN	43.30
CLINIDIPINE	6.67
NEBIVOLOL	2.50
TORSEMIDE	2.50
LOSARTAN	2.50
FUROSEMIDE	0.83
LABETALOL	0.83

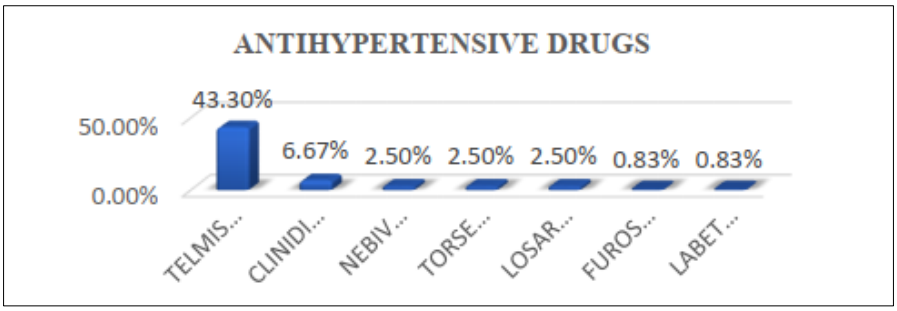

Figure 11: Antihypertensive drug categorization

This study aimed to evaluate the practice of analyzing the prescribing pattern of drugs in patients with stroke and evaluate the length of hospital stays (LOHS). During the baseline period of our study, the case sheets of patients were studied and their data were collected. Analyzed what drugs were prescribed during the hospital stay and discharge medications.

DISCUSSION

In our study majority of the patients were males. Similar findings were observed in the earlier study conducted by Jisha Anniel *et al*., [4], in which the majority of the participants were males as compared to emales. Males are very susceptible to stroke compared with females, this may be due to risk factors and habits. It showed in this study, the numbers of male patients were comparatively more than the numbers of female patients. One survey reported that male to female ratio of stroke was 1.7 [5]. Another study done in Jisha Annie1 *et al*., [6], revealed that 736 and 425 were male and female, respectively [7]. Similarly, one study done in Turkey by Nuray and Mehtap, estimated 40 (57.14%) males and 28 (40%) females [8]. Similar findings correlate with the study at Pondicherry, where 39 (60.93%) and 25 (39.06%) were males and females, respectively [9]. The mean age of the patients in this study was 58.98 ± 12.27 years. In the present study, we found similar results as reported by Po *et al*., in Taiwan [10]. In the case of stroke medication needs, those above 65 years of age showed higher frequency followed by 18-59 years. This showed that in our study, the majority of the patients included were geriatrics. Similar findings were observed in the study done by Hussainy Syed Areefulla *et al*., [11]. In this study majority of the patients with ischemic stroke. Similar findings were observed in the earlier study conducted by Sridhar Srimath Tirumala Konduru *et al*., [12], in which the majority of the participants had an ischemic stroke as compared to hemmorghic stroke. In the present study, most of the patients were prescribed anticoagulants, antiplatelets (aspirin, clopidogrel) dyslipidemic (atorvastatin) and Antihypertensive which is similar to the findings conducted by Hussainy Syed Areefulla *et al*., where the same drugs were prescribed in stroke patients. The most commonly prescribed drugs in our study were followed by Atorvastatin (91%), Aspirin (85%), Heparin (76%), and piracetam (54%). pantoprazole (53.3%) Normal saline (33%), Antiepileptic like levetiracetam (6.7%), betablockers (13%) followed by Angiotensin antagonists (26.6%) and were also prescribed in recruited patients. In the study by Hussainy Syed Areefulla *et al*., she reported that patients were given Levetiracetam for control of seizures, which showed uniform results as that of the present study.

CONCLUSION

In the case of stroke medication needs, those above 65 years of age showed higher frequency followed by 18-59 years. This showed that in our study, the majority of the patients included were geriatrics. Similar findings were observed in the study done by Hussainy Syed Areefulla *et al*., [11]. In this study majority of the patients with ischemic stroke. Similar findings were observed in the earlier study conducted by Sridhar Srimath Tirumala Konduru *et al*., [12], in which the majority of the participants had an ischemic stroke as compared to hemmorghic stroke. In the present study, most of the patients were prescribed anticoagulants, antiplatelets (aspirin, clopidogrel) dyslipidemic (atorvastatin) and Antihypertensive which is similar to the findings conducted by Hussainy Syed Areefulla *et al*., where the same drugs were prescribed in stroke patients. The most commonly prescribed drugs in our study were followed by Atorvastatin (91%), Aspirin (85%), Heparin (76%), and piracetam (54%). pantoprazole (53.3%) Normal saline (33%), Antiepileptic like levetiracetam (6.7%), beta-blockers (13%) followed by Angiotensin antagonists (26.6%) and were also prescribed in recruited patients. In the study by Hussainy Syed Areefulla *et al*., she reported that patients were given Levetiracetam for control of seizures, which showed uniform results as that of the present study. Out of a total of 120 patients, the majority of cases were above the 65 age range. Ischemic stroke was more common than hemorrhagic. The incidence of stroke was higher in men than in women.

Hemiparesis and dysarthria were the two symptoms that were most frequently observed. The most frequent risk factors were hypertension and dyslipidemia, and the most often prescribed medicine type was a statin (Atorvastatin), and antiplatelet which included aspirin and clopidogrel Asprin+Clopidogrel and Aspirin+Atorvastatin combinations are used anticoagulant (Heparin) and antihypertensive also used respectively.

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