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DRUG UTILIZATION PATTERNS OF STROKE PATIENTS IN A TERTIARY CARE TEACHING HOSPITAL

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ABSTARCT

Background: Polypharmacy often with propensity to cause serious adverse drug interactions is common phenomenon in many developing countries, including in India. This phenomenon can be extremely harmful in patients with stroke, as few combinations significantly increase the risk of reccurent stroke. Hence drug utilization study using prescribing indicators enables us to detect and also to quantify problems in prescribing practices. **Objectives:**

1. To study the drug prescribing pattern among stoke patients and the indications for which they have prescribed.
2. To Determine the average drug encounter per prescription
3. To analyze the conformity of the drug usage pattern with WHO indicators and standard treatment guidelines.

Materials and Methods: Study design: The current study was a prospective observational study of stroke patients presented to the department of neurology and emergency, NRI medical college, Hospital, Chinakakani, located in Guntur, Andhra Pradesh. The data collection for the study was conducted between October 2016 to December 2016. Data on demographic parameters, drug prescription pattern and clinical profile was documented in a structured proforma. **Results:** There was high proportion of polypharmacy among the study

population. There were about 8.5% of the people who were taking more than 19 medications. The proportion of subjects who were taking 16 to 18, 13 to 15 and 10 to 12 medications were 16.19%, 14.28% and 26.67%. About 28.57% of the patients were taking 7 to 9 medications and 7.61% of the subjects were taking 4 to 6 medications. The most common categories of the drugs being consumed were antiplatelet drugs (82.8%), followed by Anti-ulcer medication (75.2%) and Antihypertensive (74.25). Among the antiplatelet drugs, 21.9% were taking aspirin alone, 1.9% were taking clopidogrel alone and remaining 73.3% were taking both aspirin and clopidogrel. **Conclusions:** The study findings suggest that high proportion of stroke patients are on polypharmacy. Regular audit of the prescribing pattern and monitoring the patients may prevent serious Adverse drug reactions (ADR`s).

KEYWORDS: Stroke, prescription pattern, polypharmacy.

INTRODUCTION

There exist effective and safe medicines to treat most diseases affecting the world's population. They are the pillars of a functioning health care system and crucial for attaining health, wealth and productivity of individuals and populations. Various studies conducted across the globe since the past few years regarding the safe and effective drug utilization have shown that inappropriate drug use is a widespread phenomenon.[1]

Globally research on drug utilisation has increased in different health situations to assess the use of drugs in a society, owing to its potential social, economic and medical significance. There has been growing emphasis on drug use in developing countries like India. The government has inadequate control over the drug supply system, which is further crippled by inadequate health infrastructure.[2] Moreover drugs are readily available with prescription.[3] and sometimes illegally[4] resulting in their irrational use, overconsumption and drug shortage.

It has been reported that for an effective drug treatment and compliance, patients should be informed well about the therapy.[5] Identifying the prescribing problems is one of the most fundamental steps towards improving the prescribing quality and medication safety. Thus it requires rational prescription of medication, which is patients receiving drugs as per their health needs for an adequate time period and at a minimum cost and recognising and avoiding irrational prescriptions.[6]

WHO has defined cerebrovascular accidents (CVA), commonly reffered as stroke as "rapidly developing clinical signs of focal or global disturbance of cerebral function, lasting for more than twenty four hours or leading to death, with no apparent cause other than vascular origin.[7] Stroke is still one of the leading causes of mortality and morbidity worldwide, especially affects elderly. More than 30 million persons are affected by stroke each year, leading to nearly 4 million deaths.[8] The aetiology of stroke is multifactorial and may develop as an end state in patients with serious vascular conditions particularly, uncontrolled arterial hypertension. Apart from death, the greatest burden of stroke is serious long-term physical and mental disability, which can directly affect the quality of life.

Drug utilization study using prescribing indicators enables us to detect and also to quantify problems in prescribing practices. Such study helps to frame appropriate interventions based on type of problems and ultimately promotes rational use of drugs in the community. Also drug utilisation statistics are an important tool in the planning, monitoring and assessment of national drug policies. Hence the present study aimed to assess indications for prescription of drugs for stroke patients and their utilisation in a tertiary care hospital.

OBJECTIVES

1. To study the drug prescribing pattern among stoke patients and the indications for which they have prescribed.
2. To Determine the average drug encounter per prescription.
3. To analyze the conformity of the drug usage pattern with WHO indicators and standard treatment guidelines.

MATERIALS AND METHODS

Study design: The current study was a prospective observational study of stroke patients present to the department of neurology and emergency, NRI medical college, Hospital, Chinakakani, located in Guntur, Andhra Pradesh, India. The data collection for the study was conducted between October 2016 to December 2016.

The study had included all patients with stroke who were diagnosed either clinically or radiologically without any age or gender restrictions. Patients with all co-morbidities like diabetes mellitus, hypertension, hyperlipidemia etc were also included.

Patients who met with in hospital mortality, referred to higher centers due to critical illness, pregnant and lactating women, traumatic stroke and out patients were excluded from the study.

Data on demographic parameters, drug prescription pattern and clinical profile was documented in a structured proforma. The study was approved by institutional human ethics committee and informed written consent was obtained from all the participants.

Data was analyzed using mean and standard deviation for quantitative variables and frequency and proportion for categorical variables using IBM SPS software version 21.

RESULTS

A total of 105 subjects were included in the final analysis.

Table 1: Descriptive Analysis of demographic parameters (N=105).

Age group	Frequency	Percentage
Age group		
21-30	3	2.85%
31-40	10	9.52%
41-50	22	20.95%
51-60	23	21.90%
61-70	33	31.42%
71-80	14	13.33%
Gender		
Male	75	71%
Female	30	29%
Co-morbidities		
HTN	52	49.5%
DM	39	37.1%
ALCOHOL	5	4.7%
SMOKING	5	4.7%
CAD	8	7.6%

HTN-hypertension, DM- diabetes mellitus, CAD- coronary artery disease.

Highest proportion (31.42%) of study subjects belonged to 61 to 70-year age group, followed by 51 to 60 years (21.90%) and 41 to 50 years (20.95%). The proportion of subjects below 30 years was 2.85% and 13.33% of the subjects belonged to 71 to 80-year age group. Males constituted 71% and females constituted 29% of the study population. The most common co-morbidity was Hypertension (49.5%), followed by Diabetes mellitus (37.1%) and CAD

(7.6%). The proportion subjects with smoking and alcoholism were 4.7% each respectively. (table 1).

Table 2: Descriptive Analysis of Incidence of Poly pharmacy in prescriptions in Study Group (N=105).

Incidence of Poly pharmacy in prescriptions (Number of drugs)	Frequency	Percentage
4 to 6	8	7.61%
7 to 9	30	28.57%
10 to 12	28	26.67%
13 to 15	15	14.28%
16 to 18	17	16.19%
More than 19	9	8.57%

There was high proportion of polypharmacy among the study population. There were about 8.5% of the people who were taking more than 19 medications. The proportion of subjects who were taking 16 to 18, 13 to 15 and 10 to 12 medications were 16.19%, 14.28% and 26.67%. About 28.57% of the patients were taking 7 to 9 medications and 7.61% of the subjects were taking 4 to 6 medications. (table 2).

Table 3: Descriptive Analysis of Different categories of drugs prescribed to patient in Study Group (N=105).

Different categories of drugs prescribed to patient	Frequency	Percentage
Antiplatelet	87	82.8%
Anti-Ulcers	79	75.2%
Anti-hypertensive	78	74.2%
Analgesics	63	60%
Antibiotics	62	59%
Anti-diabetics	43	40.9%
Anti-epileptics	41	39%
Electrolytes	33	31.4%
Anticoagulants	31	29.5%
Anti-histamines	28	27.6%
Anti-Parkinson’s	24	22.8%
Anti-depressant	20	19%
Anti-vertigo	6	5.71%
Anti-emetics	12	11.4%
Anti-Asthmatics	11	10.4%
Glycerol	7	6.6%
Steroids	6	5.71%
Cough syrups	5	4.7%
Others	57	54.2%

The most common categories of the drus being consumed were antiplatelet drugs (82.8%), followed by Anti-ulcer medication (75.2%) and Antihypertensive (74.25). Analgesics, antibiotics and anti-diabetic drugs were being consumed by 60%, 59% and 40.9% of the subjects. The other common medications were electrolytes, antihistamines, antiparkinson's and anti-depressants.

Table 4: Descriptive Analysis of Types of Anti-platelet drugs prescribed in Study Group (N=105).

Types of Anti-platelet drugs prescribed	Frequency	Percentage
Aspirin	23	21.9%
Clopidogrel	2	1.90%
Aspirin + Clopidogrel	77	73.33%

Among the antiplatelet drugs, 21.9% were taking aspirin alone, 1.9% were taking clopidogrel alone and remaining 73.3% were taking both aspirin and clopidogrel. (Table 4).

DISCUSSION

Study of risk factors and drug-prescribing patterns can give insight into the trends in using the drugs in cerebrovascular stroke in treating their co-morbid conditions. The knowledge of drug utilization pattern can lead us towards the rational drug use and help to take measures to improve prescribing habits. Risk factors modification remains as the principal aspect of care for stroke prevention. Correct diagnosis, accurate prescribing, proper dispensing, appropriate packing and good patient counseling are the important criteria for rational use of drugs.[9,10]

Misunderstanding over brand names, cost issue, unpredictable drugs supply, non-existent formulary in hospitals and lack of knowledge by patients regarding dosing schedules are the major causes of irrational use of drugs[6] which may lead to inadequate therapeutic effects, undesirable drug event and adverse drug interactions.[11] Also the use of multiple drugs not only facilitates the cost and regimens complication but also increases the incidence of undesirable drug reactions and drug interactions.[12]

Out study included total of 105 patients, of whom 75 (71.4%) of were males. This is in line with the finding of by Prathyusha GR et al[13] in which 60% patients were males. A total of 33(31.4%) patients were in the age group of 61-70years similar to that of Himaja J et al[14] (27 : 38.5%) of patients.

Regarding the risk factors associated with stroke are, age (74: 70.4%) and hypertension (52: 49.5%) were the most common, which concurs the findings of Spurthi T et al[15], hypertension (68: 68%) and age (58: 58%), Himaja et al[14] hypertension (38: 48.6%). High blood pressure seems to be a major risk factor for stroke accounting for almost 35-50% of the risk.[16] A reduction of 10 mmHg systolic or 5 mmHg diastolic blood pressure reduces the risk of stroke by ~40%. Lowering blood pressure has been conclusively shown to prevent both ischemic and haemorrhagic strokes.[17]

In present study the prescription pattern of drugs revealed that anti-hyperlipidemics (86.6%) and anti-platelets (78.2%) were most commonly prescribed. A similar which is similar to the findings of Jaladi Himaja et al[14] antiplatelet drugs 59 (84.28%), anti-hyperlipidemic drugs 70 (100%). Evidence suggests that in line with the major underlying risk factors for cerebrovascular stroke[18,19], anti-hyperlipidemic drugs, anti-hypertensives, antiplatelet drugs were the most commonly prescribed class of drugs.[13,17,20]

The largest proportion of patients were prescribed with Aspirin + clopidogrel 77(73.3%) followed by 23(21.9%) Aspirin alone which was in accordance with the study done by Jaladi Himaja et al[14] in which 28 (40%) were prescribed with Aspirin +clopidogrel followed by 20(28.5%) Aspirin alone.

The study findings suggest that hypertension is the major risk factor for Stroke. To reduce hypertension, proper patient counselling is required for the stroke patients. Among all the drugs, anti platelet drugs are majorly prescribed. Ischemia is the most predominant form of stroke among the patients. Proper prescribing pattern and monitoring the patients may prevent the ADR's and drug interactions occurring in stroke patients. Follow up of the patient should be taken for the medication adherence and to prevent relapse. Lack of generic drugs prescribing and low incidence of drugs prescribing from essential drug list are the concerns that are to be addressed in order to maintain rational drug therapy.

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