Original Research Article

# Pharmacovigilance in Post Stroke Patient's: A Cross Section Prospective Analysis

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**Abstract:** Drug related adverse effects may be minor or major. Pharmacists have an ethical obligation to notify the appropriate bodies whenever adverse effects where suspected. Stroke affect one's physical and communication abilities, as well as causing emotional changes and difference in behaviour. The study underlines the importance of monitoring stoke survivors emotional and behaviour alternation. The objective is to determine the drug utilization review in post stroke patients and to assess the adverse reactions in stroke management. Cross-sectional prospective study was performed for six-month and the patients diagnosed as stroke and wished to participate were identified. All the subjects were evaluated for adverse drug reactions through telephonic or face to face interview. Out of 52 patients 71.15% were males and 28.84% females. The mean age of the patients was 63.21 (±10.19) years and 61% patients had Blood Pressure, followed by 55% Dyslipidymia, 42% Diabetes Mellitus. A total of 38 incidences of ADRs were observed during the study period for 15 patients. The highest reported ADR was GI bleeding (17.3%) followed by GI Distress and Constipation. Causality of ADRs found to have probable 74%, possible 23.6% and definite 2.6% and no doubtful categories. The study results cleared that majority of the stroke patients have adequately severe neurological impairment and need assistance to carryout activities of daily living. Majority of the patients seems to have mistaken the symptoms of ADR to be due to the disease being treated and old age. Drug utilisation studies should be carried out in large number of population and at different locations which helps to reduce the drug related problems and improve the rational use of drugs by the patients.
**Keywords:** Post Stoke, ADR, DUE, Quality of life

## INTRODUCTION

During the first half of the 20th century, very little scientific attention was given to understanding the clinical characteristic of patients with different types of stroke and no attention was directed at differentiating mechanism. The nosologic term for stroke in the mortality statistics in the early stage of 20th century was "*apoplexy*" from the Greek "to strike down". The derivation of generic clinical term cerebrovascular accident is obscure. This term helped to promote the idea that patients with stroke were victims and that somehow the disorder was providential and therefore, not something that was subject to intervention by physicians or scientists. In earlier times patients with stroke were either admitted to an acute care hospital or non-teaching services for maintenance care. So the students and residents were not able to know in detail about the disease process.

The last half of the 20th centuary began with a few clinicians calling attention to the importance of stroke as a clinical problem and providing leadership in efforts to understand the mechanisms of how some disorders lead to the occurrence of stroke. These early efforts led to increasing interest of clinicians and soon attracted clinical and laboratory research attention to this common clinical disorder. Clinicians now recognise the importance of differentiating types of stroke and pathophysiologic substrate when possible. Increasingly sophisticated imaging studies have greatly enhanced the ability of the neurologist or others to determine the type and characteristic of stroke. Successful treatment until recently has centred around management of risk factors and co-morbid conditions to prevent stroke [1, 2].

The assessment of drug usage is important for clinical, educational and pharmacoeconomic purposes. Monitoring of prescriptions and study of drug utilisation could identify the associated problems and provide feedback to the prescriber so as to create awareness for rational use of drugs. The general objectives of drug utilisation studies are identification

of problems and their analysis, which are very important in decision making throughout the drug and health chain. Medication use evaluation is a performance improving method that focuses on evaluating and improving medication use process with the goal of optimal patient outcomes. The success of a medication use process should be assessed in terms of improved patient outcomes. It can identify problems in drug use, reduce drug reactions, optimise drug therapy and minimise drug related expenditure [3].

The World Health Organisation (WHO) has defined ADR AS "A response to a drug which is noxious and unintended, which occurs at doses normally used in man for the prophylaxis, diagnosis, or therapy of disease, or for the modification of physiological functions" [4]. Some common ADR due to antiplatelet agents include GI disturbances, epigastric discomfort, hemetemisis prolonged bleeding time, urticaria,dyspepsia, abdominal pain, gastric and duodenal ulcers[2]. Drug related adverse effects may be minor or major. In general, patients who have minor adverse effects should be encouraged to continue the treatment with symptomatic measures. If major adverse effects occur, the regimen, or the offending drug, if identified, must be stopped. Further management depends on the nature of adverse effects and may be done in hospitals.

It has been very important to draw attentions of all health workers towards adverse effects of drugs since adverse effects can be harmful to the patients. Pharmacists have an ethical obligation to notify the appropriate bodies whenever adverse effects where suspected. The decisions to report such cases should not depend on whether the potential adverse effects are already well known. Instead pharmacist is encouraged to report any suspected adverse effects. If the adverse effects are already well-known further report on occurrence will be helpful in minimising if not, avoiding these adverse effects. Stroke affect one's physical and communication abilities, as well as causing emotional changes and difference in behaviour. So, present study underlines the importance of monitoring stoke survivors emotional and behaviour alternation.

## AIM AND OBJECTIVES
To determine the drug utilization review in post stroke patients and to assess the adverse reactions in stroke management.

## METHODOLOGY
Cross-sectional prospective study was performed for six-month duration after getting clearance from the Human Ethical Committee (order no: IEC no.07/22/2011/MCT). The patients diagnosed as stroke and wished to participate were identified from Neurology Department of hospital and consent was obtained. The patients and caregivers found suitable for inclusion were included and inclusion criteria as follows; 1) patients diagnosed as ischemic stroke using neuro imaging either computerized tomography or Magnetic resonance imaging; 2) those who gave consent voluntarily to participate in the study and; 3) post stroke period ranges up to 1 year. The exclusion criteria included; 1) a history of major psychiatric illness such as depression, bipolar disorder, schizophrenia in the past; 2) patients who had previous stroke; 3) patients who had undergone surgery; 4) patients who have other chronic disabilities (cancer, renal failure or hepatic failure); and 5) patients who are not willing to participate in the study. All the subjects were evaluated for adverse drug reactions through telephonic or face to face interview.

## RESULTS AND DISCUSSION
Out of 52 patients 71.15% were males and 28.84% females. The mean age of the patients was 63.21 ($\pm$10.19) years and the median was 65. 85% stroke patients were non-vegetarian. 61% patients had Blood Pressure, followed by 55% Dyslipidymia, 42% Diabetes Mellitus. Depression (46.15%) was observed high in percentage of domain present, subsequently Aggregation (30.77%), Anxiety (26.92%). A total of 38 incidences of ADRs were observed during the study period for 15 patients (Figure-1), out of which 30 incidences from males and 8 from females. The highest reported ADR was GI bleeding (17.3%) followed by GI Distress and Constipation (Table-1). Aspirin was considered as suspected drug with high incidence (Figure-2). This conclusion was made based on the literature evidence suggesting the incidence of ADR and by analysing the data available in Micromedex Thomson Healthcare evidence data base.
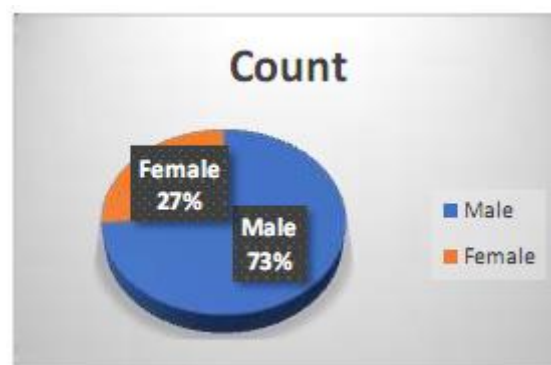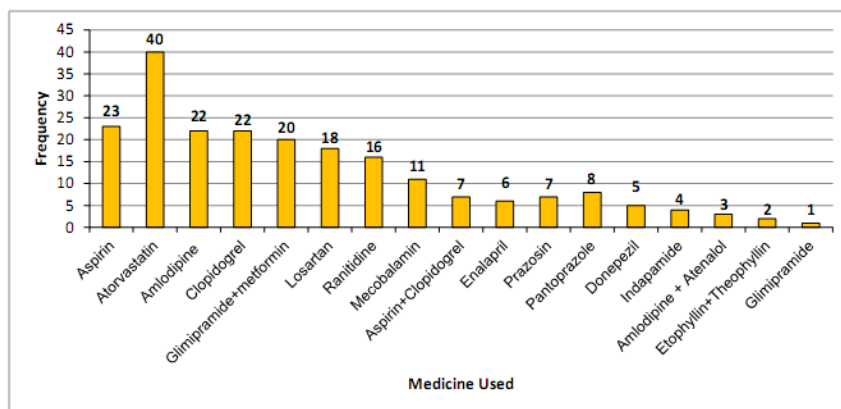


**Fig-1: Percentage distribution of sample according to gender**

**Fig-2: Categorisation of patients based on drugs used**

According to Naranjos algorithm majority of ADRs found to have probable 74%, possible 23.6% and definite 2.6% and no doubtful categories (Figure-3). It is based on points given for each of ten questions that comprises the algorithm. Here we failed to analyse the exact cause of the disease as placebo effect was not studied and also laboratory investigations were not done to find out the concentration of the drug in the body fluids or tissues. All the patients were prescribed with antiplatelet agents, aspirin (44.2%), clopidogrel (42.3%) or combination of both (13.5%). Hypertension,

diabetes, dyslipidaemia are the risk factors for stroke, so antihypertensive, antidiabetic and dyslipidemic agents were prescribed. Antihypertensive agents include Amlodipine (42.3), Prazozin (13.46%), Indapamide (7.69%), Enalapril (13.46%). Atorvastatin was the only dyslipidaemic agents used, i.e. about (76.9%). Antidiabetic agents comprise Glimipramide and a combination of Glimipramide and metformin (38.5%) were highest prescribed medication. Other agents include pantoprazole, ranitidine, mecobalamine and donepezil.

**Table 1: Types of ADRS experienced by the patients.**

| Type of Adverse Events | Frequency | Percentage |
|---|---|---|
| GI Bleeding | 9 | 17.3 |
| GI Distress | 6 | 11.5 |
| Constipation | 6 | 11.5 |
| Nausea | 4 | 7.69 |
| Fatigue | 4 | 7.69 |
| Skin Rash | 2 | 3.85 |
| Anaphylactic Reaction | 2 | 3.85 |
| Tinnitus | 1 | 1.92 |
| Hearing Loss | 1 | 1.92 |
| Vomiting | 1 | 1.92 |
| Edema | 1 | 1.92 |
| Hemetemesis | 1 | 1.92 |
| **Total** | **38** | **100.0** |
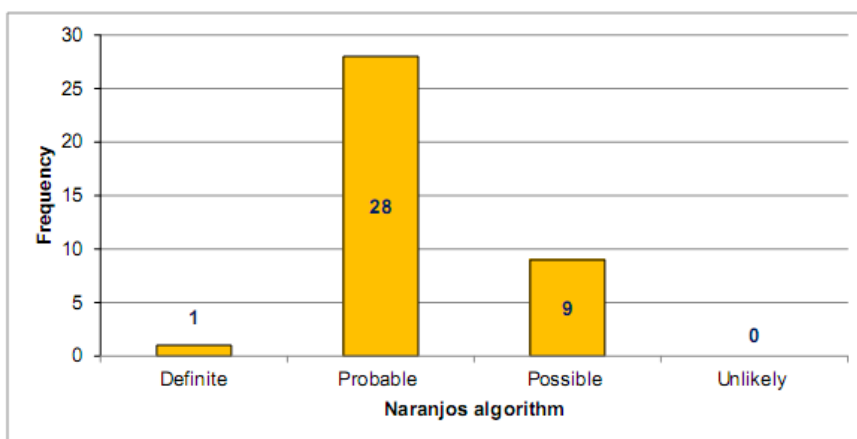


**Fig-3: Causality of ADR using Naranjo's algorithm**

The study found most of the drugs were prescribed using trade names as against generic names which is against WHO guidelines, where using generic name is one of the indicators for rational prescribing. Therefore, there is a need for general consensus for using generic names while prescribing. The study also evaluated the cost for the treatment for a duration of one month. The evaluated medical cost consists of cost for the drugs and lab investigations. Medical cost for drug varies from rupees 300 to 800. This is because some of the medicines like aspirin, clopidogrel, amlodipine, and metformin were supplied by Govt. according to the availability. This is a great relief for poor socio economic groups. Cost for lab investigations varies from 600 to 7000 per patients. Lab investigations include CT, MRI, EEG, and FBS and varies from patients to patients. CT and MRI price arrays from rupees 200 and 2000 respectively in the Medical college hospital but same expenses approximately rupees 600 and 5500 respectively in the private sectors. Cost of the drugs were calculated from Price List of Essential drug List of Kerala Medical Corporation Ltd.(KMSCL) (based on National Pharmaceutical Pricing List (NPPL). Lab values are taken as per the Government order.

**CONCLUSION**

The incidence of ADRs were more for males compared to females. Majority of the patients seems to have mistaken the symptoms of ADR to be due to the disease being treated and old age. From the study, it was clear that majority of the stroke patients have adequately severe neurological impairment and need assistance to carryout activities of daily living. The present study identified the pattern of ADRs experienced by the patients. In causality assessment with Naranjo's algorithm majority of the reactions were found to be probable. Majority of the patients seems to have mistaken the symptoms of ADR to be due to the disease being treated and old age. Drug utilisation studies should be carried out in large number of population and at different locations which helps to reduce the drug related problems and improve the rational use of drugs by the patients.

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