ISSN: 2755-6468

Research Article

Open Access Journal of Clinical Pathology Research

A Prospective Observational Study on Drug Utilization of Antiepileptic Medications Used During Treatment at a Tertiary Care Teaching Hospital

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Received: December 11, 2025; **Accepted:** December 18, 2025; **Published:** December 29, 2025

ABSTRACT

Background: Epilepsy is a chronic neurological disorder characterized by recurrent seizures resulting from abnormal neuronal discharges. This study aims to analyze the drug utilization patterns of antiepileptic drugs (AEDs), assess adverse drug reactions (ADRs), and understand seizure types in a tertiary care hospital setting.

Methods: A prospective observational study was conducted over six months in the Department of General Medicine, Osmania General Hospital. A total of 150 patients aged above 18 years with diagnosed epilepsy were enrolled. Data on demographics, seizure types, AED prescriptions, and ADRs were collected and analyzed.

Results: Majority of patients were males (76.52%) within the 15–45 years age group (80.4%). Generalized tonic-clonic seizures (GTCS) constituted 53.3% of cases. Phenytoin was the most commonly prescribed AED (51.33%), followed by benzodiazepines (17.33%), sodium valproate (9.33%), levetiracetam (15.33%), and carbamazepine (5%). ADRs were most common in the 41–60 years age group, predominantly dermatological and CNS-related.

Conclusion: Phenytoin remains the primary AED in this population. Rational prescribing, monitoring for ADRs, and patient adherence education are crucial to optimize epilepsy management.

Keywords: Epilepsy, Antiepileptic Drugs, Drug Utilization, Adverse Drug Reactions, Seizure Types

Introduction

Epilepsy is a chronic neurologic disorder characterized by recurrent seizures caused by abnormal, excessive, and synchronous neuronal discharges in the brain. Seizures can be broadly classified into:

- Generalized epilepsy: involving both hemispheres, including tonic-clonic seizures, absence seizures, myoclonic seizures, and infantile spasms [1-6].
- Partial (focal) epilepsy: originating from a localized brain region, subdivided into complex partial seizures, motor epilepsy, sensory epilepsy, and akinetic seizures.
- Status epilepticus: a neurological emergency characterized by continuous or rapidly recurring seizures without recovery of consciousness [6-13].

Understanding the types, causes, and treatment patterns is essential for improving management and outcomes.

Aims and Objectives

- To evaluate drug utilization patterns of different classes of AEDs in a tertiary care hospital.
- To identify adverse drug reactions related to AED therapy.
- To analyze seizure types and evaluate the extent of polypharmacy.

Citation: Nilofer Shams, Syed Faiz Ullah Hussain, Mohsin Ullah Khan, Musa Khan, Javed Akhter Ansari. A Prospective Observational Study on Drug Utilization of Antiepileptic Medications Used During Treatment at a Tertiary Care Teaching Hospital. Open Access J Clin Path Res. 2025. 1(2): 1-3.
DOI: doi.org/10.61440/OAJCPR.2025.v1.29

Materials and Methods

- Study Design: Prospective observational study.
- Study Setting: Department of General Medicine, Osmania General Hospital, Hyderabad [14-25].
- Study Duration: Six months.
- Study Population: 150 patients aged above 18 years diagnosed with epilepsy, including generalized and partial seizures.
- Inclusion Criteria: Diagnosed epilepsy patients presenting to outpatient and inpatient departments [26-31].
- Exclusion Criteria: Patients below 18 years, pregnant or lactating women, those with major surgery, and HIV-positive patients.
- Data Collection: Demographic details, seizure classification, AED prescriptions, and ADRs were documented using a structured data collection form.
- Statistical Analysis: Data were analyzed descriptively using frequencies and percentages.

Results

Demographic Profile

- Age Distribution: 80.4% of patients were aged 15-45 years.
- Gender: 76.52% males and 23.48% females.
- Socioeconomic Status: Majority were unskilled workers from lower socio-economic groups [32-40].
- Family History: Present in 18.9% of cases.
- Mean Age of Seizure Onset: 28.32 years.

Seizure Types

Seizure Type	Number of Cases	Percentage (%)
Generalized Tonic-Clonic	80	53.3
Focal Seizures	15	10
Complex Partial Seizures	6	4
Alcohol Withdrawal Seizures	38	25.3
Atypical Seizures	6	4
Status Epilepticus	5	3.33

AED Prescription Pattern

Drug	Usage (n)	Percentage (%)
Phenytoin	77	51.33
Levetiracetam	23	15.33
Benzodiazepines	26	17.33
Carbamazepine	6	5
Sodium Valproate	14	9.33
Oxcarbazepine	4	3.33

Treatment Regimens by Seizure Type

Seizure Type	Monotherapy	Dual Therapy	Polytherapy
GTCS	57	20	10
Focal Seizures	3	4	0
Alcohol Withdrawal	25	6	10
Complex Partial	0	5	5
Atypical Seizures	0	5	0

Adverse Drug Reactions (ADR)

- Most ADRs occurred in the 41–60 years age group.
- Common ADR types were dermatological (46.6%) and CNS-related (33.3%).
- Phenytoin accounted for the highest ADRs (7 cases).

ADR Type	Number	Percentage (%)
Dermatological	7	46.6
CNS	5	33.3
Hematological	1	6.6
Gastrointestinal	1	6.6
Others	1	6.6

Discussion

The study shows that phenytoin is the most prescribed AED among patients with epilepsy, primarily males aged 15–45 years. Generalized tonic-clonic seizures are the predominant seizure type. Monotherapy is the most common treatment regimen, reflecting adherence to rational pharmacotherapy guidelines [41-43].

Significant ADR incidence, especially dermatological reactions linked to phenytoin, highlights the need for vigilant monitoring. The study also notes a considerable rate of non-compliance, underlining the necessity for patient education on adherence.

Conclusion

This study emphasizes the need for:

- Rational prescribing practices to reduce polypharmacy and ADRs.
- Enhanced patient education for better adherence.
- Further research on the efficacy and safety of AEDs across different seizure types.

Conflict of Interest

The authors declare no conflict of interest.

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