

## Drug Utilization Pattern of Anti-Epileptic Drugs For Seizures Occuring in Paediatric Population in a Tertiary Care Centre- A Prospective Observational Study.

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### Abstract:

**Background:** A seizure is a transient alteration of behaviour due to the disordered, synchronous and rhythmic firing of populations of brain neurons. Epilepsy is the most common disorder characterized by the recurrent seizures.

The action of anti-epileptic drugs varies for different types of epileptic conditions, but in general the mechanism of action is by **Na channel inactivation & K channel-mediated hyperpolarisation** prevents abnormal repetitive firing in neuronal cells.

The present study was carried out to obtain demographical information and information on the prescribing patterns of anti-epileptic drugs.

**Objectives:** To evaluate drug utilization patterns in anti epileptic drugs in paediatric population in Tertiary care hospital, Kakinada.

**Methods:** A prospective observational study was conducted in In-patient department of paediatrics, Government General Hospital, Rangaraya medical college, Kakinada during the period of 3 months (April 2019- June 2019). Total 255 patients were prescription pattern of Anti-epileptic drugs were assessed and analyzed.

**Results:** A total of 255 cases recorded during 3 month period. 60 (23.52%) patients were prescribed Inj. phenobarbitone and shifted to syrup phenobarbitone. 75 (29.41%) cases were prescribed Inj. phenytoin. 45 (17.64%) children were prescribed Inj. Sodium valproate. 45 (17.64%) were prescribed T. clobazem. and 30 (11.76%) cases were prescribed Inj. Midazolam

**Conclusion:** Anti-epileptic drugs like phenytoin, phenobarbitone, clobazam, midazolam and sodium valproate were commonly prescribed for convulsive disorders like atypical seizures and fever provoked seizures. Among which phenytoin and phenobarbitone were commonly prescribed for convulsive disorder. Sodium valproate were prescribed for atypical febrile seizures and midazolam were prescribed for other convulsive disorders.

Rationale prescription of drugs in anti-epileptic patients is followed in our hospital.

**Key Words:** children, drug prescription, drug utilization, Anti-epileptic drugs.

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### I. Introduction

➤ Drug utilization research was defined by WHO in 1977. The marketing, distribution, prescription & use of drugs in a society, with special emphasis on the resulting medical, social & economic consequences<sup>1</sup>.

➤ The principle aim of Drug utilization study is to facilitate "Rational use of drugs" in populations.

➤ A seizure is a transient alteration of behaviour due to the disordered, synchronous and rhythmic firing of populations of brain neurons.<sup>1</sup> Epilepsy is the most common disorder characterized by recurrent seizures. The most common cause in **Neonates (<1 month)** are Perinatal hypoxia & ischemia, Intracranial hemorrhage and trauma, CNS infection, Metabolic disturbances, Drug withdrawal, Developmental disorders and Genetic disorders<sup>2</sup>. **Infants and children:** Febrile seizures, Genetic disorders, CNS infection, Developmental disorder and Trauma.

### Epidemiology:

➤ Epilepsy affects about 50 million people world wide. About 4-10% of children experience at least 1 seizure in the 1<sup>st</sup> 16 years of life. Annual prevalence of epilepsy: 0.5-1.0%. Epidemiological studies reveal approximately 1,50,000 children sustain a first time provoked seizures every year. Of these 30,000 will develop epilepsy<sup>3</sup>.

**OBJECTIVES:**

➤ To evaluate drug utilization patterns in anti epileptic drugs for seizures in paediatric population in Tertiary care hospital, Kakinada.

**MATERIALS AND METHODS:**

➤ A prospective observational study was conducted in In-patient department of paediatrics, Government General Hospital, Rangaraya Medical College , kakinada during the period of 3months (15<sup>th</sup> April 2019 -15<sup>th</sup> june 2019) . Total 255 patients were admitted in Paediatric department in our study period and diagnosed as epilepsy disorder , Anti-epileptic drugs were prescribed . Case records of these patients were assessed and analyzed.

**INCLUSION CRITERIA:**

➤ Case records of patients of age  $\leq 15$  yrs ,both the gender who are diagnosed to have seizures and other convulsive disorders in In- patient department were included in our study.

**EXCLUSION CRITERIA**

➤ Out Patients, patient age of  $>15$  yrs, Follow up visit patients are excluded in our study.

**SAMPLE SIZE**

➤ Case records of 255 patients were assessed.

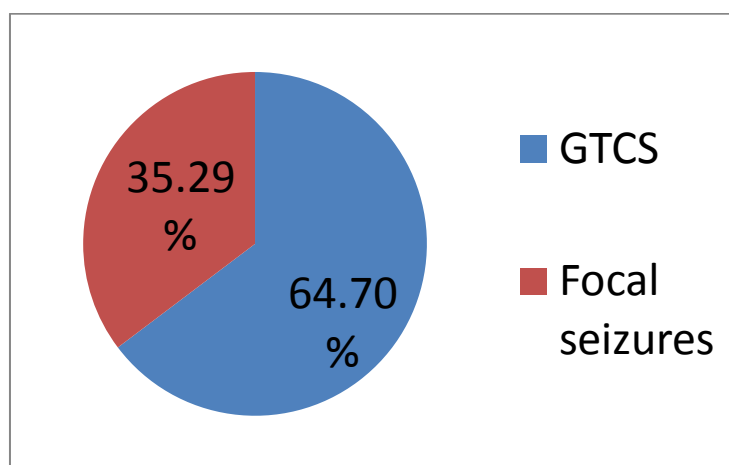
**STUDY DESIGN:**

➤ A prospective, observational study was conducted in the In-patient department of Paediatrics in GGH Kakinada, East Godavari district, Andhra Pradesh. Institutional Ethics committee approval at Government General Hospital was taken to conduct this study. Data from the case records of 255 patients was processed in Excel (percentage) and analyzed.

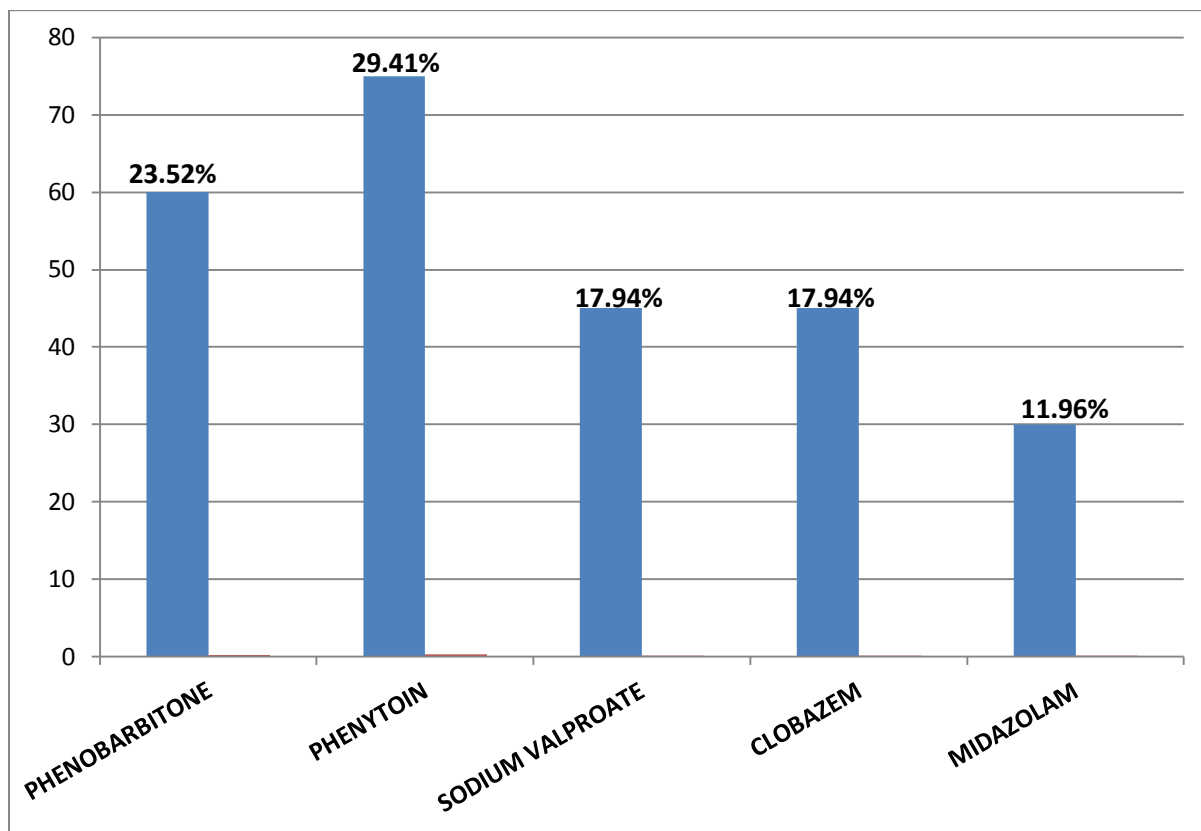
**II. Results**

➤ A total of 255 cases who are diagnosed to have seizures and other convulsive disorders and were prescribed Anti- epileptic drugs, These patients cases records recorded during 3month period(15<sup>th</sup> April 2019-15<sup>th</sup> june 2019).

➤



➤ As shown in pie diagram, Total patients were 255, Anti epileptic drugs were prescribed for each seizure. 165 (64.70%) patients were diagnosed as GTCS (Generalized Tonic Clonic Seizures)and prescribed Anti-epileptic drugs.90(35.29%) patients were diagnosed as Focal seizures and prescribed Anti- epileptic drugs.



➤ As shown in the above graph. Total 255 patients were diagnosed to have seizures and other convulsive disorders and Anti-epileptic drugs were prescribed. Out of which 60 (23.52%) patients were prescribed Inj. phenoobarbitone and shifted to syrup phenobarbitone. 75(29.41%) cases were prescribed Inj. Phenytoin. 45 (17.64%) children were prescribed Inj. Sodium valproate. 45(17.64%) were prescribed Tab. Clobazem. 30 (11.76%) cases were prescribed Inj. Midazolam

### III. Discussion:

DRUGS	Y. Hanssens* et al(26/05/2018)	Dave HH, Trivedi (2002)	CURRENT STUDY
Sodium valproate	49.2%	38%	17.64%
Carbamazepine	43.6%	41%	-
Phenytoin	12.1%	10%	29.41%
Lamotrigine	10.6%	1%	-
clobazem	8.8%	12%	17.64%
Phenobarbital	3.1%	3%	23.52%
Diazepam	0.6%	-	-
Midazolam	-	-	11.76%

➤ As shown in the table 1, Our study is compared with **Y. Hanssens\* et al(26/05/2018)**. In his study 49.2% patients were prescribed with Sodium Valproate, 43.6% were prescribed with Carbamazepine , 12.1% were prescribed with Phenytoin, 10.6% were prescribed with Lamotrigine, 8.8% were prescribed with Clobazem, 3.1% were prescribed with Phenobarbital, 0.6% were prescribed with Diazepam , nil for Midazolam. Another study **Dave HH, Trivedi (2002) et al**, 38% patients were prescribed Sodium valproate, 41% were prescribed with carbamazepine, 10% were prescribed with Phenytoin , 1% with Lamotrigine, 12% were prescribed with clobazem, 3% with Phenobarbital, Diazepam and Midazolam were nil .In both studies the most

commonly prescribed drugs were sodium valproate , Phenytoin , Carbamazepam , less commonly prescribed are phenobarbital , Diazepam .comparing with these studies , in our study the most commonly

➤ prescribed drugs were Phenytoin, phenobarbitone and less coomonly prescribed drugs were midazolam and clobazem.

Type of seizure	Nice guidelines	Current study
GTCS	<b>FIRST LINE DRUGS:</b> Carbamazepine Lamotrigine Oxcarbazepine Sodium valproate Topiramate	<b>ADJUNCTIVE:</b> Clobazam Lamotrigine Levetiracetam Sodium valproate
FOCAL SEIZURES	<b>FIRST LINE DRUGS:</b> Carbamazepine Lamotrigine Levetiracetam Oxcarbazepine Sodium valproate Clobazam	<b>ADJUNCTIVE:</b> Carbamazepine Gabapentin Lamotrigine Levetiracetam Oxcarbazepine Sodium valproate Topiramate

➤ As shown in the table 2 , According to NICE guidelines , the first line drugs prescribed for the Generalized Tonic Clonic Seizures are Carbamaepine, Lamotrigine, Oxcarbaepine, Sodium valproate, Adjunctive drugs are Clobazam, Levetiracetam, Sodium valproate, Topiramate. In our study, the drugs for GTCS are Sodium valproate, Phenytoin, Phenobarbitone, Clobazam, Midazolam.

➤ The first line drugs for Focal seizures are Carbamazepine, Lamotrigine, Levetiracetam, Oxcarbazepine, Sodium valproate, Clobazam. Adjunctive drugs are Carbamaepine, Lamotrigine, Oxcarbaepine, Gabapentin, Levetiracetam, Sodium valproate, Topiramate In our study the drugs for focal seizures are Sodium valproate, Phenytoin, Phenobarbitone.

**LIMITATION:**

➤ Our study was conducted over 3 month period. For better understanding and good results it would have been extended for 1 year.

➤ As our study was conducted in government hospital , other new anti epileptic drugs was unable study during my study period .

**IV. Conclusion:**

➤ Anti-epileptic drugs like phenytoin, phenobarbitone clobazam, midazolam and sodium valproate were commonly prescribed for convulsive disorders like atypical seizures and fever provoked seizures. Phenytoin was commonly prescribed for convulsive disorder. Sodium valproate was prescribed for atypical febrile seizures.

➤ Rationale prescription of drugs in anti-epileptic patients is followed in our hospital.

➤ Latest advanced treatment yet to be followed. As our Institute is a Government set up . New and Advanced drugs are not following because of cost effectiveness of the newer drugs.

**References:**

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