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ASSESSMENT OF PRESCRIPTION PATTERN OF ANTI- EPILEPTIC DRUGS IN EPILEPSY

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ABSTRACT

Aim: Epilepsy has been considered as a public health problem by world health organization. Antiepileptic drugs (AEDs) are primary therapeutic mode for epilepsy. AED treatment has been demonstrated to control seizure, which decreases morbidity and mortality associated with epilepsy. So the aim of study is to assess the prescription pattern of anti epileptic drugs in epilepsy. **Methodology:** This is a hospital-based prospective cross-sectional study in which 110 patients were enrolled in this study, following data were collected from patients prescriptions that demographical data, types of epileptic disorder and types of anti epileptic drugs used in patients. **Result:** We reviewed 110 prescriptions which contained 206 antiepileptic drugs. Males are more 67(60.9%) more using AEDs. Age groups of 40-49 (32.7%) years are more using AEDs. Out of 110 patients 49(44.4%) were suffered from Generalised tonic clonic siezures (GTCS). Over all 71(64.6%) patient got polytherapy and 39 (35.4%) patients got monotherapy. In that Phenytoin (47.6%) was commonly prescribed Antiepileptic drugs. Prescription contains Levetiracetam was only one newer antiepileptic that is 7(3.3%) and older ones are 199(96.7%) of AEDs. **Conclusion**: Our study concludes that polytherapy is needed to treat epilepsy. Care should be taken while prescribing polytherapy which leads to drug-related problems. Physician plays an important role during selection of AEDs. Clinical pharmacist plays an important role in identifying and reducing the drug therapy related problems. This study concludes that patient education and observation were necessary for proper utilization of drugs.

KEY WORDS: Prescription, Mortality, Pharmacist, Epilepsy.

INTRODUCTION

Epilepsy is a major public health concern, directly affecting an estimated 50 million people worldwide and involving an additional 500 million people as family members and caregivers of patients.[1] In India, the prevalence rate of epilepsy ranges between 4.15 and 7.03 per 1000 population.[2] Epilepsy is defined as the repeated occurrence of sudden, excessive and/or synchronous discharges in cerebral cortical neurons resulting in disruption of consciousness, disturbance of sensation, movements, impairment of mental function, or some combination of these signs.[3] Age, missed medication, lack of sleep, psychological stress, and flash light are some of common risk factors in epilepsy. Although the different types of epilepsy vary greatly, in general, medication can control seizures in about 70% of patients.[4]

Antiepileptics can be classified as older and newer generation. Older/conventional drugs like phenytoin, carbamazepine, valproic acid and phenobarbitone are commonly used as first line drugs. They are relatively less expensive than the newer anti-epileptics but have serious side effect. Drugs like levetiracetam, gabapentin, lamotrigine, vigabatrin, topiramate, lacosamide and zonisamide are the newer ones and currently used as add-on or alternative therapy. Newer agents are promoted as effective as older drugs but with less side effects.[5]

Some side effects may be common with the above-mentioned drugs and include sedation and ataxia. They can be diverse as well, ranging from idiosyncratic reactions like bone marrow depression (carbamazepine) to acute myopia and glaucoma (topiramate).[6]

The choice of most appropriate antiepileptic drug (AED) depends on classification of seizures and age of patient. Seizure control may be achieved by monotherapy in about 80% of the patients, with the other 20% requiring two to three AEDs. Monotherapy is normally the first line of treatment, as it has less drug interactions and side effects; lower cost, better tolerability, medication adherence, and quality of life.[7]

There is a lack of safety & efficacy information to guide clinical decisions about AED therapy in older people. The complexity of medical problems and co-medications among older people requiring AEDs can result in an increased likelihood of drug-related problems & drug interactions, which in turn can affect seizure control and toxicity.[1] So, the aim of the study is to assess the prescribing pattern of AEDs in a tertiary care teaching hospital at Mandya.

OBJECTIVE
➢ To assess the prescription pattern of anti-epileptic drugs in epilepsy.
➢ To assess the prevalence of different types of epilepsy.
➢ Number of patients receiving monotherapy and multiple AEDs, respectively.

METHODOLOGY
Study population: 110 In-patients.

Study design
This is a hospital-based prospective cross-sectional study conducted on in-patients to review the current prescribing pattern of AEDs in patients with epilepsy admitted in the psychiatric department.

Study site
This study was conducted in MIMS teaching Hospital, Mandya, Karnataka. It is a 500 bedded Tertiary Care Hospital, providing specialized health care services to all strata of people in and around Mandya and also the rural population.

Study duration: 6 months.

Study approval
Ethical clearance was obtained from the Institutional Ethical Committee at Mandya Institute of Medical Sciences, Mandya.

Inclusion criteria
➢ Age of >18 years of age.
➢ Both sexes male and female.
➢ Patients diagnosed as epilepsy.
➢ More than 2 months of antiepileptic drugs taken patients.

Exclusion criteria
➢ Epilepsy due to secondary causes.
➢ Pregnant/lactating women.

Study procedure
In-patients who met the study criteria were enrolled to the study for assessing prescription pattern after obtaining their written informed consent form from patient/patient care taker in medicine units. The data collecting format had framed based on study need, it includes demographical details of patients and types and duration of illness and details of different classes of anti-epileptic drugs prescribed to the patients.

Statistical methods
The data were subjected to descriptive statistical analysis using Microsoft Excel. Microsoft word and Excel have been used to generate bar graph, pie charts and tables.

RESULTS
Socio-demographic details of subjects
A total of 110 subjects were assessed for prescription pattern of AEDs for the 6 months study period. Gender wise details of study participants are represented in Table and Figure 1. The result shows that males are more 67(60.9%) when compared to that of females 43(39.1%) on AED prescription.

Table 1: Gender wise distribution.

Gender	Number of patients	Percentage
Male	67	60.9%
Female	43	39.1%
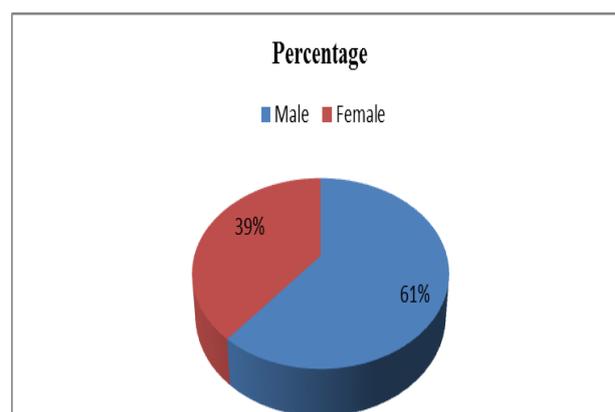
Figure 1: Gender wise distribution.

Distribution of age groups
The age distribution of the study population revealed that maximum number of patients is between the age group of 40-49 (32.7%) years on AEDs followed by age group of 18-30(24.5%), 31-39(20%), >60(11.8%) and 50-59(10.9%).

Table 2: Distribution of age groups.

Age in years	Number of patients	Percentage
18-30	27	24.5%
31-39	22	20%
40-49	36	32.7%
50-59	12	10.9%
>60	13	11.8%
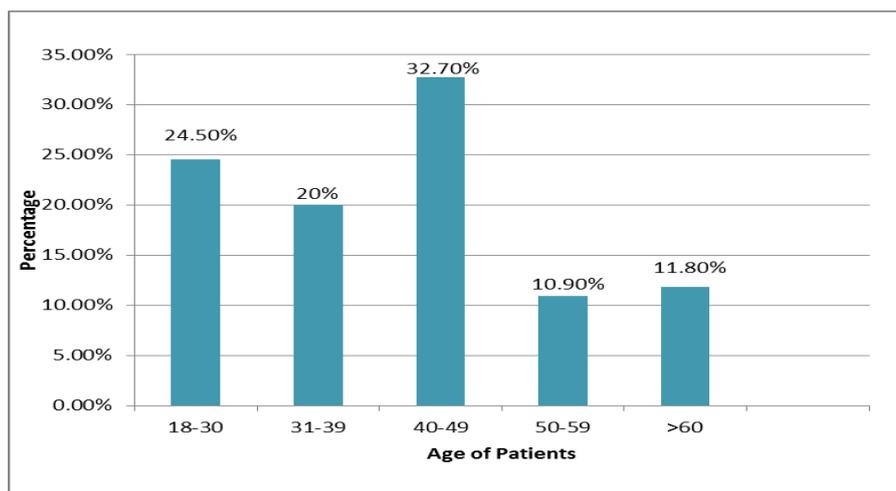
Figure 2: Distribution of age groups.

Different types of epilepsy

Table and figure 3 shows that out of 110 patients 49(44.4%) were suffered from Generalised tonic clonic siezures (GTCS) followed by 22(20%) patients were suffered from Complex partial seizure, 16(14.5%) patients were suffered from Simple partial seizure, 12(10.9%) were suffered from Focal seizure, 8(7.2%) were suffering from Status epilepticus and 3(2.7%) were suffered from Myoclonical seizure.

Table 3: Distribution of type of epilepsy.

Different types epilepsy	Number of patients	Percentage
Generalised tonic clonic siezures	49	44.5%
Complex partial seizure	22	20%
Simple partial seizure	16	14.5%
Focal seizure	12	10.9%
Status epilepticus	8	7.2%
Myoclonical seizure	3	2.7%
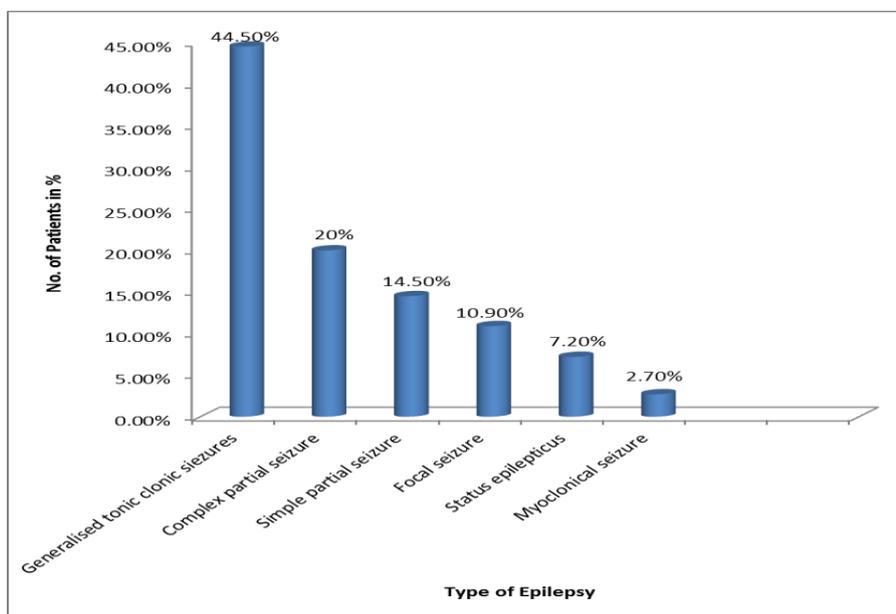
Figure 3: Distribution of type of epilepsy.

Prescription pattern of antiepileptic drugs

Table and figure 4 showed that in majority of cases antiepileptic drugs were used as poly therapy other than monotherapy. Overall 39 (35.4%) patients got monotherapy i.e. 1 antiepileptic dugs and 71(64.6%) patient got more than 2 drugs i.e. polytherapy. Among the patients who got polytherapy, 51 patients got 2 antiepileptics, 15 patients got 3 antiepileptics and 5 patients got 4 antiepileptics.

Table 4: Details on Therapy pattern of antiepileptic drugs.

Therapy pattern		Number of patients	Percentage	Total
Monotherapy	One drug	39	35.4%	35.4%
Polytherapy	Two drug	51	46.4%	64.6%
	Three drug	15	13.7%	
	Four drug	5	4.5%	
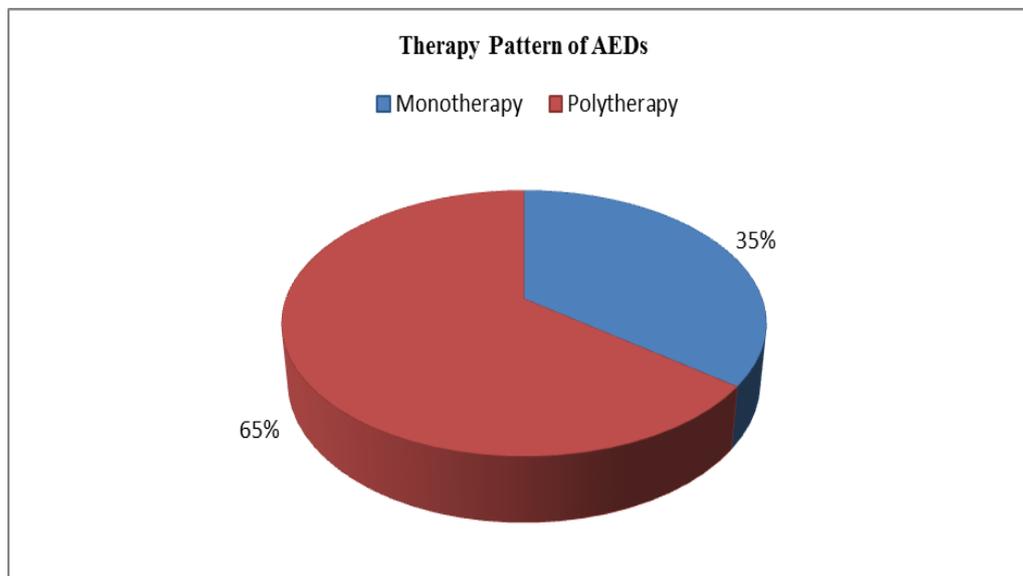
Figure 4: Details on Therapy Pattern of Antiepileptic drugs.

Prescription Pattern of AEDs in Different Types of Epilepsy

The choice of antiepileptic drugs will depend on types of epilepsy, drug specific adverse drug reactions and patient preferences. Most commonly used antiepileptic drug was phenytoin followed by carbamazepine, Lorazepam, Valproic acid, Phenobarbitone, Diazepam, Clobazam and Levetiracetam. phenobarbital, clobazam with phenytoin which introduced polytherapy.

Table 5: Details on Prescription Pattern of AEDs in Different Types of Epilepsy.

Indication	Utilisation pattern of antiepileptics	Number of patients	Status of therapy
Generalised toinic Clonic seizures	Phenytoin	12	Monotherapy=16 Polytherapy=33
	carbamazepine	4	
	Phenytoin+ lorazepam	5	
	Phenytoin + clobazam	6	
	Phenytoin +carbamazepine	9	
	Phenytoin +valproic acid	9	
	Phenytoin +diazepam+ Phenobarbital	3	
	Phenyoin+lorazepam + +levetiracetam+ Phenobarbital	1	
Complex partial seizure	Phenytoin	4	Monotherapy=6 Polytherapy=16
	clobazam	2	
	Phenytoin+ lorazepam	7	
	Phenytoin +diazepam	3	
	Phenytoin +carbamazepine	2	
	Phenytoin + Phenobarbital+ levetiracetam	3	
	Phenyoin+lorazepam + +levetiracetam	1	
Simple partial seizure	Phenytoin	8	Monotherapy=11 Polytherapy=5
	carbamazepine	3	
	Phenytoin +diazepam	3	
	Phenytoin + clobazam	1	

	Phenytoin +diazepam+ valproic acid	1	
Focal seizures	Phenytoin	2	Monotherapy= 2 Polytherapy= 10
	Phenytoin+ lorazepam	5	
	Phenytoin + carbamazepine + valproic acid	3	
	Phenyoin+lorazepam + +levetiracetam+ Phenobarbital	2	
Status epilepticus	Phenytion	3	Monotherapy= 3 Polytherapy= 5
	Phenytoin +valproic acid	1	
	Phenytoin +valproic acid+ carbamazepine	2	
	Phenytoin+ lorazepam+ Phenobarbital	2	
Myoclonical seizure	Phenytion	1	Monotherapy= 1 Polytherapy= 2
	Phenytoin + carbamazepine + valproic acid+lorazepam	2	
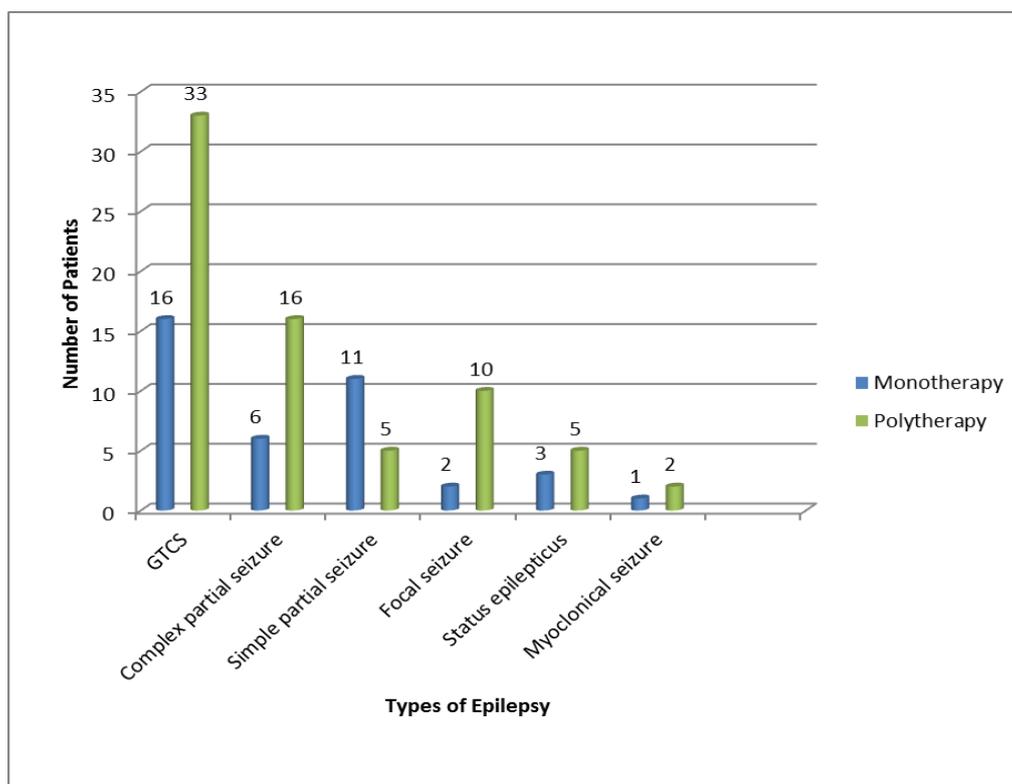
Figure 5: Details on Prescription Pattern of AEDs in Different Types of Epilepsy.

Utilization of Antiepileptic drugs

There are many drugs used in the treatment of epilepsy. Out of 206 Antiepileptics drugs most prescribed in the study site is Phenytoin (47.6%) followed by carbamazepine (13.6%), Lorazepam (11.2%), Valproic acid (9.2%), Phenobarbitone (5.9%), Diazepam (4.8%), Clobazam (4.4%) and Levetiracetam (3.3%).

Table 6: Details on Utilization of Antiepileptic drugs.

Antiepileptics drug	Total number (n=206)	Percentage
Phenytoin	98	47.6%
Carbamazepine	28	13.6%
Lorazepam	23	11.2%
Valproic acid	19	9.2%
Phenobarbitone	12	5.9%
Diazepam	10	4.8%
Clobazam	9	4.4%
Levetiracetam	7	3.3%
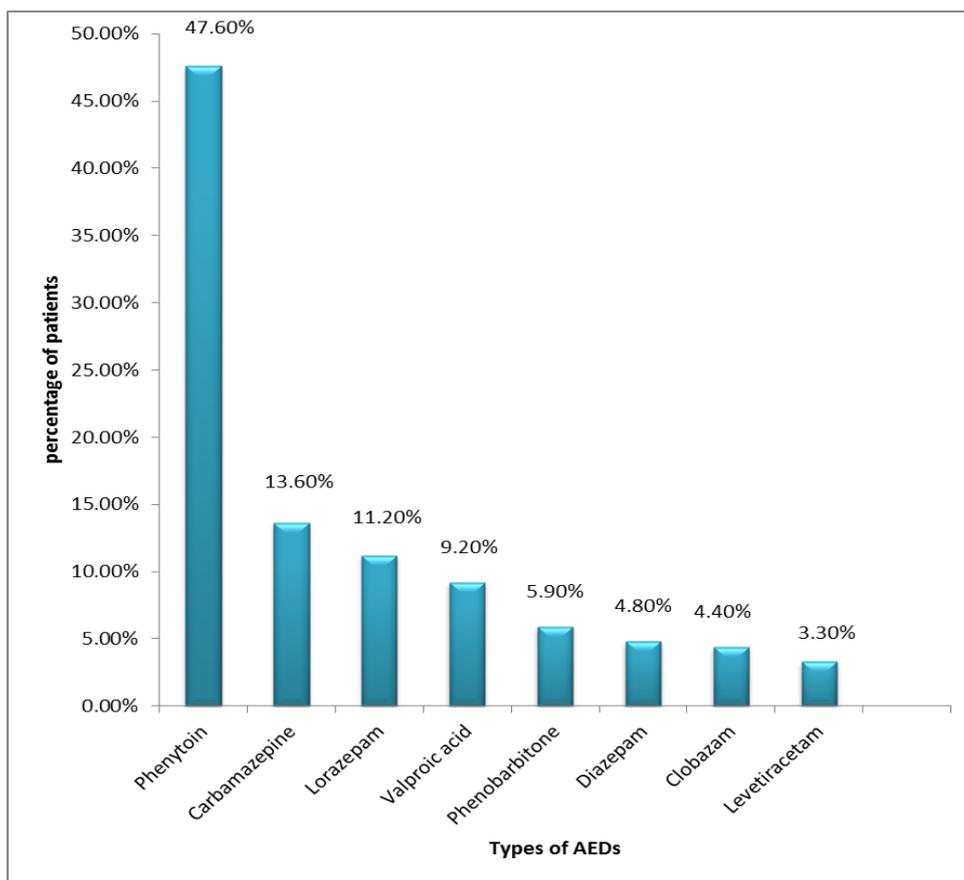
Figure 6: Details on Utilization of Antiepileptic drugs.

Utilization of Newer Vs Older Antiepileptics
Drugs introduced before 1990's are called older and after 1990's are newer antiepileptic drugs. In our study we found Levetiracetam was only one newer antiepileptic that is 7(3.3%) and older ones are 199(96.7%) of AEDs which includes Phenytoin, carbamazepine, Lorazepam, Valproic acid, Phenobarbitone, Diazepam, Clobazam.

Table 7: Details on Utilization of Newer Vs Older Antiepileptics.

Type of antiepileptic drugs	Frequency (N)	Percentage (%)
Newer generation antiepileptics	7	3.3%
Older antiepileptics	199	96.7%
Total	206	100%
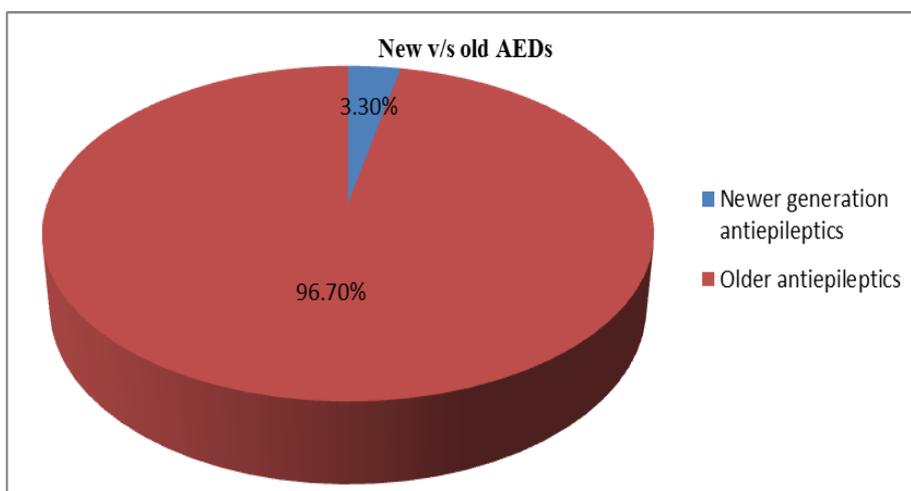
Figure 7: Details on Utilization of Newer Vs Older Antiepileptics.

DISCUSSION

A total of 110 cases from which prescriptions with AED have been analyzed for demographic variables, characteristics of seizures, classification of seizures and used to assess the prescription pattern and rationality of AED in the in-patient. In our study we found the males 67(60.9%) more when compared to that of females 43(39.1%) on AED prescription.

In the present study, the peak was observed at the age group of 40-49 (32.7%) years are more using AEDs followed by age group of 18-30(24.5%), 31-39(20%), >60(11.8%) and 50-59(10.9%).

Our study reveals that out of 110 patients 49(44.4%) were suffered from Generalised tonic clonic siezures (GTCS) followed by 22(20%) patients were suffered from Complex partial seizure, 16(14.5%) patients were suffered from Simple partial seizure, 12(10.9%) were suffered from Focal seizure, 8(7.2%) were suffering from Status epilepticus and 3(2.7%) were suffered from Myoclonical seizure.

In our study majority of cases antiepileptic drugs were used as polytherapy other than monotherapy. Overall 39 (35.4%) patients got monotherapy and 71(64.6%) patient got polytherapy. Guidelines mention that medical management of newly diagnosed epileptic patients should start with monotherapy. Polytherapy should be considered when failure of two attempts of monotherapy. Failing of monotherapy may also result from lack of adherence or adequate counseling on medications.

Out of 206 Antiepileptic drugs most prescribed in the study site is Phenytoin (47.6%) followed by carbamazepine (13.6%), Lorazepam (11.2%), Valproic acid (9.2%), Phenobarbitone (5.9%), Diazepam (4.8%), Clobazam (4.4%) and Levetiracetam (3.3%). The above studies justify the use of phenytoin because it was as equally effective as other AEDs when used in monotherapy with very less incidences of adverse drug reactions, and also the cost was least.

Drugs introduced before 1990's are called older and after 1990's are newer antiepileptic drugs. We found very less new antiepileptic drugs than older ones in prescriptions. The newer drugs have favorable side effects. In our study we found that Levetiracetam was only one newer antiepileptic that is 7(3.3%) of AEDs and older ones are 199(96.7%) of AEDs which includes Phenytoin, carbamazepine, Lorazepam, Valproic acid, Phenobarbitone, Diazepam, Clobazam.

CONCLUSION

Our study concludes that polytherapy is needed to treat epilepsy. Care should be taken while prescribing polytherapy which leads to drug-related problems and drug interactions, which in turn can affect seizure control and toxicity. Phenytoin was commonly used because it was as equally effective as other AEDs when used in monotherapy with very less incidences of adverse drug reactions. Physician plays an important role during selection of AEDs. Clinical pharmacist plays an important role in identifying and reducing the drug therapy related problems. This study concludes that patient education and observation were necessary for proper utilization of drugs.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

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