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A STUDY ON DRUG UTILIZATION PATTERN OF ANTIEPILEPTICS IN EPILEPSY IN A TEACHING HOSPITAL

Soumyashree Mathapati*[1], Dr. Neelkanth Reddy Patil[2]

[1,2]Department of Pharmacy Practice, H.K.E. S's Matoshree Taradevi Rampure Institute of Pharmaceutical Sciences Kalaburgi-585105, Karnataka, India.

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***Corresponding Author**

Soumyashree Mathapati
Department of Pharmacy Practice, H.K.E. S's Matoshree Taradevi Rampure Institute of Pharmaceutical Sciences Kalaburgi-585105, Karnataka, India.

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ABSTRACT

The objective of the study was to analyse the drug utilization pattern of antiepileptics in paediatric and medicine department. A 9 months hospital based prospective observational study was carried out in the department of paediatrics and medicine at BTGH, Kalaburgi. A total of 104 epilepsy patients were enrolled into the study and the relevant data was collected in a specially designed data collection form, the demographic data, socioeconomic data and usage of various antiepileptic drugs was analysed. The result showed that, majority were patients in the age group of 0-20 (52.88%). 66 (67.30%0) patients were male and 34 (32.70%) patients were female, 46 (44.23%) were from rural and 58 (55.76%) were from urban. The majority of the patients were students (42.30%). Most of the patients were of low economic status (37.50%). Majority of the patients prescribed oral drug 90 (58.44%).The total numbers of drugs prescribed were 154, the average number of drugs per prescription was 1.94%. The drugs prescribed with brand name were 112 (72.72%) and drugs prescribed with generic name were 42 (27.27%). The maximum number of drugs were prescribed in the form of tablet 70 (45.45%), injection 64 (41.55%) and syrup 20 (12.98%). The study concludes that the prevalence of epilepsy was more among younger generation. The most preferred antiepileptic drug is Phenytoin. Majority of the antiepileptics were prescribed with brand name. this is of concern the pharmacist can play a vital roll by motivating the prescribers to prescribe in generic name.

KEYWORDS: Antiepileptic, Prescription analysis, Brand name, Generic name.

INTRODUCTION

EPILEPSY is a disorder characterized by recurrent seizures of cerebral origin, presenting with episodes of sensory, motor or autonomic phenomenon with or without loss of consciousness. Epilepsy is the second most common chronic neurological condition seen by neurologists.[1]

Epilepsy is not a disease, but it is a syndrome of different cerebral disorders of the central nervous system which is characterized by excessive discharges of large numbers of neurons The risk of having epilepsy at some point in average life span of any individual varies between 2percentage -5percentage. Worldwide prevalence of the active epilepsy ranges from 4 to 5 per 1000 population and in India, the prevalence rate of epilepsy ranges between 4.15 and 7.03 per 1000 population. In newly diagnosed cases, 60% are partial and 40% generalized Epileptic seizures they have many causes, including a genetic predisposition head trauma, stroke, brain tumors, alcohol or drug withdrawal, and other conditions.[2] Epilepsy is the most common chronic neurologic condition managed by neurologists. It is estimated that there are 55, 00,000 persons with epilepsy in India. Epilepsy and seizers are more common in young children's and elders. 1 in 26 people will develop epilepsy in their lifetime. 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 70percentage of patients.[3]

Epileptic convulsions have negative consequences on the patient's psychological and social life such as relationships, education and employment. Uncontrolled seizures are associated with physical and psychosocial morbidity, dependent behavior, poor quality of life and an increased risk of sudden unexpected death. Therefore, it is mandatory to treat epilepsy with antiepileptic drugs (AEDs) as soon as the patient has reported more than one documented or witnessed seizure. The goal of treatment should be to maintain a normal a life style through complete seizure control with no or minimal side effects.[4]

Antiepileptic drug therapy is the mainstay of treatment for most patients with epilepsy. Seizure classification is an important element in designing the treatment plan, since some antiepileptic drugs have different activities against various seizure types. The International League against Epilepsy (ILAE) classifies the three main types of seizures: partial,

generalized, and unclassified. Amongst the various factors affecting anti-epileptic drug usage, the major determinants are type of epilepsy, age and gender of patient, side effect profile and availability of medicines, affordability of the patient, and preference of the treating physician as well as the practice setting.[5]

Available AEDs share three basic mechanisms of action. They reduce repetitive firing due to interference with sodium currents; augment γ-amino butyric acid (GABA) neurotransmission or reduce transient Ca++ currents. Later to 1993 some new drugs have entered the worldwide market such as Felbamate, Gabapentin, Lamotrigine, Topiramate, Zonisamide, Leviracetam, Vigabatrin etc. The growing numbers of newly approved drugs have contributed to the increased adverse drug reactions (ADRs).[6]

The choice of drug is most often based on factors like patients tolerance. Some patients may need more than one medication to prevent the epileptic seizures more effectively.[3]

There are several AEDs available and are broadly categorized as conventional AEDs and new AEDs. The desired outcome of AED therapy in patients is seizure-free throughout the rest of their lives, and it depends on many factors such as identification of underlying cause, type of seizure and selection of appropriate AEDs. Initial treatment approaches focus on drug therapy, either monotherapy or adjunctive therapy. Treating children with epilepsy differs from treating adults because the cognitive effects of AEDs may be more serious than occasional seizures. Another concern is that biological half-life of AEDs in children varies significantly from that of the adults, because these medications are eliminated faster in children, so, doses generally have to be adjusted. This is especially true for drugs that are metabolized by the liver. Drug utilization evaluation is defined by World Health Organization (WHO) as the marketing, distribution, prescription, and use of drugs in society, with special emphasis on the resulting medical, social, and economic consequences Medical audit improves the standards of medical treatment at all levels of health care delivery system. The study of prescribing pattern is a component of medical audit which seeks monitoring, evaluation and necessary modifications in the prescribing practices of the prescribers to achieve rational and cost effective medical care AEDs are selected based on the risk to benefit ratio and the type of seizure. As such children are at increased risk of adverse events, hence, anti-epileptic drug dosing, frequency; duration is to be properly opted.[7]

Drug utilization review (DUR) is a review and assessment of the appropriateness of prescription and also the prescribing patterns. Additionally, DUR includes healthcare provider who prescribe the drug, a dispensing pharmacist and the consumer that use the drug i.e. patient. In other words, a drug utilization study describes the users of a given drug or class of drugs and/or the conditions of use in quantitative and qualitative terms. As drug utilization studies serve as a mean to interpret, intervene and promote the rational prescribing, dispensing and administration of medication. Thus, the ultimate outcomes of DUR are: improved quality of patient care, better therapeutic outcomes and cost effective pharmacotherapy.[8] The interest in drug utilization studies began in the early 1960s, and its importance has increased since then because of increase in marketing of new drugs, wide variation in the pattern of drug prescribing and consumption, growing concern about delayed adverse effects and the increasing concern regarding the cost of drugs.[5]

In the view of above facts, the present study aims at getting insight in to the type of epileptic seizers and to describe the drug utilization pattern of AEDs at a teaching hospital.

MATERIALS AND METHODS

Source of data: Data was collected from

- Case sheets of epilepsy patients
- Lab reports of epilepsy patients
- From other relevant resources

Method and Collection of Data

Study site: The study was conducted in the Department of Medicine and pediatric at Basaweshwar Teaching and General (BTGH) Hospital, Kalaburgi.

Study duration: Study was carried out for a period of nine months.

Study design: A prospective observational study**.**

Study criteria: The study was carried out by considering following criteria.

Inclusion Criteria

- Epileptic patients of either sex admitted to dept. of medicine & pediatric.
- Epileptic patients irrespective of age.
- Epileptic patients prescribed with antiepileptic.
- Epileptic patients willing to participate.

Exclusion Criteria

- Epileptic patients visiting hospital on OPD basis.
- Epileptic patients with status epileptics and seizures associated with acute conditions like paralytic stroke.
- Epileptic patients not willing to participate.

Preparation of data collection form

A suitable data collection form was designed in order to collect all required data as per the objectives of the study by referring books, journals, internet and other relevant resources.

Study procedure

A prospective observational study was conducted in the Department of Medicine and pediatric BTGH Kalaburagi a teaching hospital, with the permission from head of department and after obtaining ethical clearance from institutional Review Board. The epilepsy patients admitted to the department of medicine will be enrolled in to the study by considering study criteria. The consent was obtained from them. The relevant data from the case sheets, prescriptions of enrolled patients will be collected in suitably designed data collection form.

RESULTS

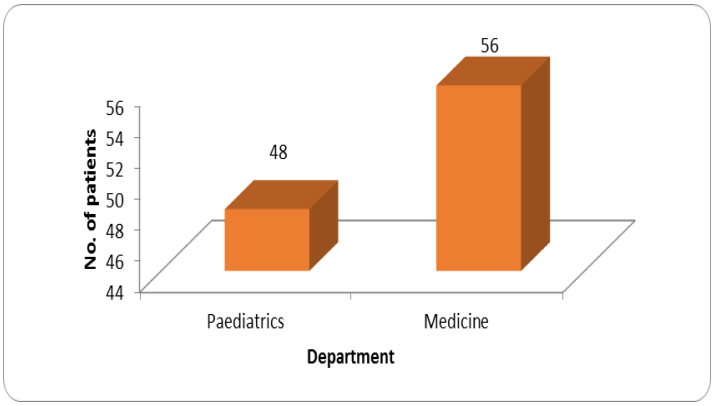
During the study period of nine months, a total of 104 Epilepsy cases were enrolled into the study and data was collected and analyzed.

Details of departments wise patients

Among 104 patient enrolled in the study, were as 56 (46.15%) patients admitted in Medicine department, followed by 48 (53.84%) was in Pediatrics.

Table 1: Department wise patients

Department	No. of patients	Percentage (%)
Paediatrics	48	46.15
Medicine	56	53.84
Total	**104**	**100**



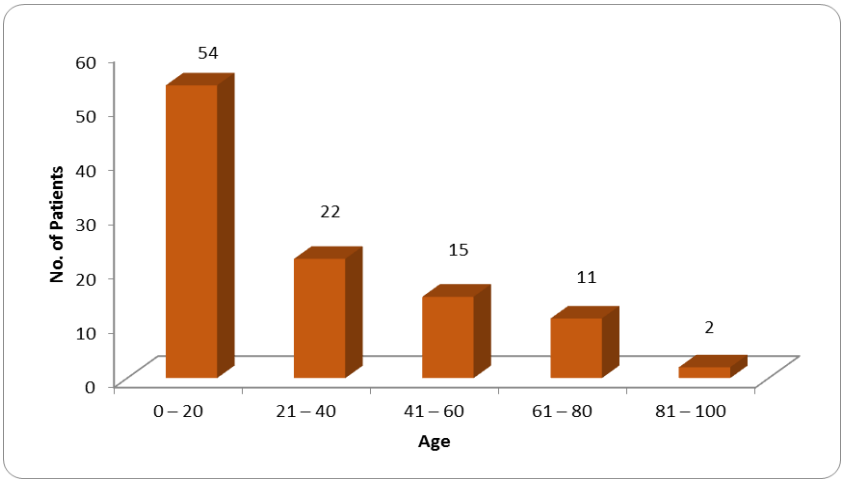
Graph 1: Department wise patients.

Details of age distribution of the patients

Among 104 patients enrolled in the study, age distribution of the patients showed that 55 (52.88%) were in the age group of 0-20 yrs, 22 (21.15 %) were in the age group of 21-40 yrs, 15 (14.42%) were in the age group of 41-60, 11 (1o.57%) were in the age group of 61 – 80 & there was only 2 (1.9%) patient in the age group of 81 - 100.

Table 2 : Details of Age distribution of the Patients

Age	No. of Patients	Percentage (%)
0 – 20	54	51.92
21 – 40	22	21.15
41 – 60	15	14.42
61 – 80	11	10.57
81 – 100	2	1.92
Total	**104**	**100**



Graph 2: graph showing details of Age distribution of the Patients.

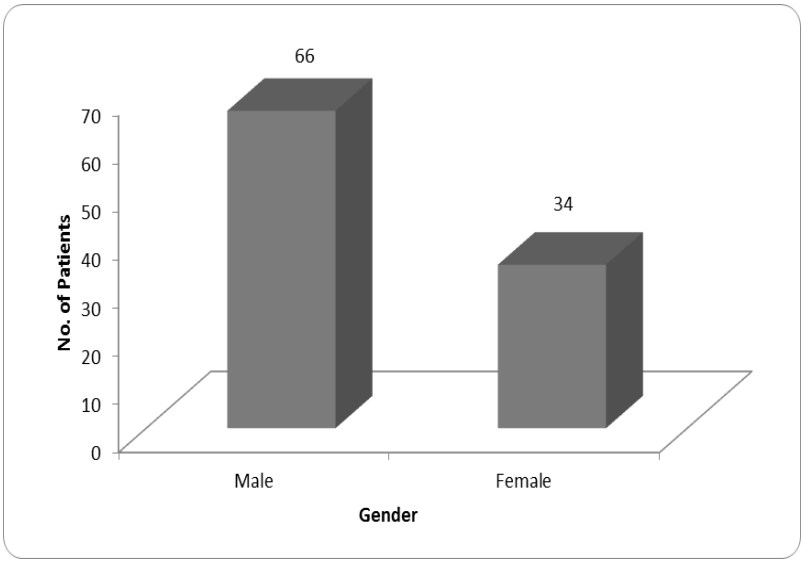
Details of Gender distribution of the Patients

Out of 104 patients enrolled in the study, 66 (67.30%) were males and 34(32.70%) patients

were females.

Table 3 : Details of Gender distribution of the Patients

Gender	No. of Patients	Percentage (%)
Male	66	67.30
Female	34	32.70
Total	**104**	**100**



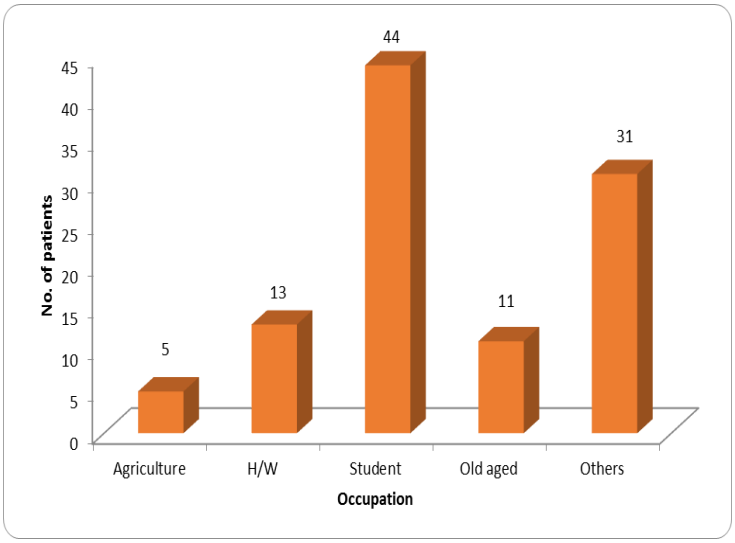
Graph 3: Graph showing Gender distribution of the Patients.

Details of Occupational status of the Patients

Out of 104 patients, 5 (4.80%) patients were agriculturists, 13 (12.5%) were house wives, 44 (42.30%) were students, 11 (10.57%) were old age patients & 31 (29.80%) patients were dependent on other private occupations.

Table 4 : Details of Occupational status of the Patients

Occupation	No. of patients	Percentage (%)
Agriculture	5	4.80
H/W	13	12.5
Student	44	42.30
Old aged	11	10.57
Others	31	29.80
Total	**104**	**100**



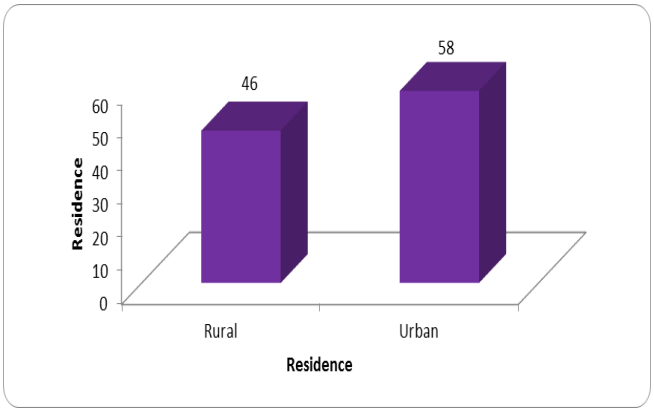
Graph 4: Graph showing Occupational status of the Patients.

Details of Residential distribution of the patients

The results revealed that more number of patients were of urban than rural. out of 104 patients 58(55.76%) were urban and 46 (44.23%) were rural.

Table 5: Residential distribution of the patients.

Residence	No. of Patients	Percentage (%)
Rural	46	44.23
Urban	58	55.76
Total	**104**	**100**



Graph 5: Graph showing residential distribution of the patients.

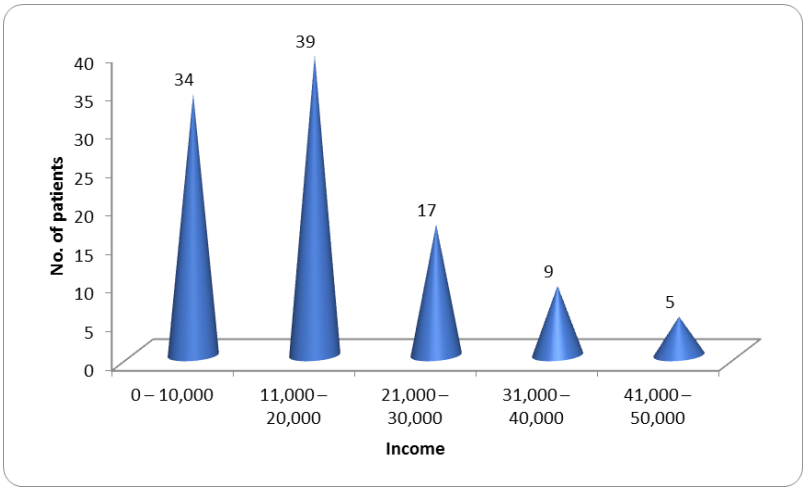
Details of family income of the patients

The results revealed that 34 (32.69%) were having an annual income between 0 – 10,000, followed by 39 patients (37.50%) with an annual income between 11,000 – 20,000, 17 patients (16.34%) with an annual income 21,000 – 30,000, 9 patients (8.65%) with an annual

income between 31,000 – 40,000 and 5 patients (4.80%) with an annual income between 41,000 – 50,000.

Table 6: Details of Family Income of the patients.

Income	No. of patients	Percentage (%)
0 – 10,000	34	32.69
11,000 – 20,000	39	37.5
21,000 – 30,000	17	16.34
31,000 – 40,000	9	8.65
41,000 – 50,000	5	4.80



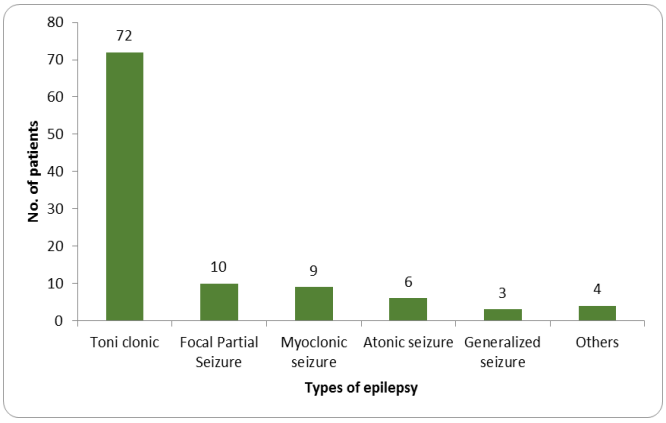
Graph 6: Graph showing details of Family Income of the patients.

Details of Types of epilepsy

In this study, among 104 patients enrolled there were 72 (69.23%) patients with Tonic clonic Seizures, followed by Focal Partial Seizure 10 (9.61%), Myoclonic Seizure 9 (8.65%), Atonic Seizure 6 (5.76%), Generalized Seizure 3 (2.88%), Others 4 (3.84%).

Table 7: Details of types of epilepsy.

Types of epilepsy	No. of patients	Percentage (%)
Toni clonic	72	69.23
Focal Partial Seizure	10	9.61
Myoclonic seizure	9	8.65
Atonic seizure	6	5.76
Generalized seizure	3	2.88
Others	4	3.84
Total	**104**	**100**



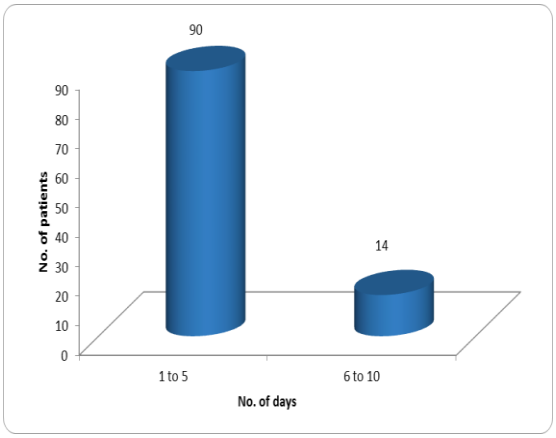
Graph 7: Graph showing details of types of epilepsy.

Details of the duration of hospital stay of the patients

The results revealed that more number of patients i.e, 90 patients (86.53%) stayed in hospital between 1 to 5 days, followed by 14 patients (13.46%) stayed between 6 to 10 days.

Table 8: Details of duration of hospital stay of the patients

No. of days	No. of patients	Percentage (%)
1 to 5	90	86.53
6 to 10	14	13.46
Total	**104**	**100**



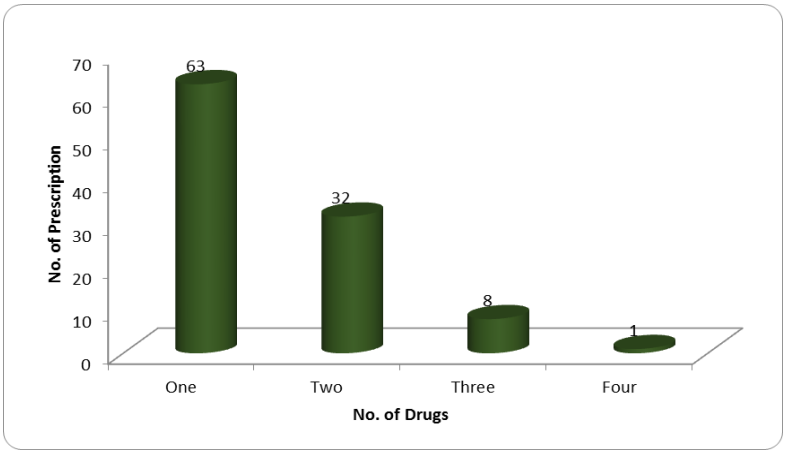
Graph 8: Graph showing details of duration of hospital stay of the patients.

Details of number of Antiepileptic drugs per prescription

In this study, a total of 104 prescriptions were collected from enrolled patients and analyzed, of these the number of drugs per prescription varied from one to four. Were as 63 (60.57%) patients prescribed one drug, 32 (30.76%) patients prescribed Two drugs, 8 (7.69%) patients prescribed Three drugs, only 1 (0.96%) prescribed Four drugs.

Table 9: Details of number of Antiepileptic drugs prescribed.

No. of Drugs	No. of Prescription	Percentage (%)
One	63	60.57
Two	32	30.76
Three	8	7.69
Four	1	0.96
Total	**104**	**100**



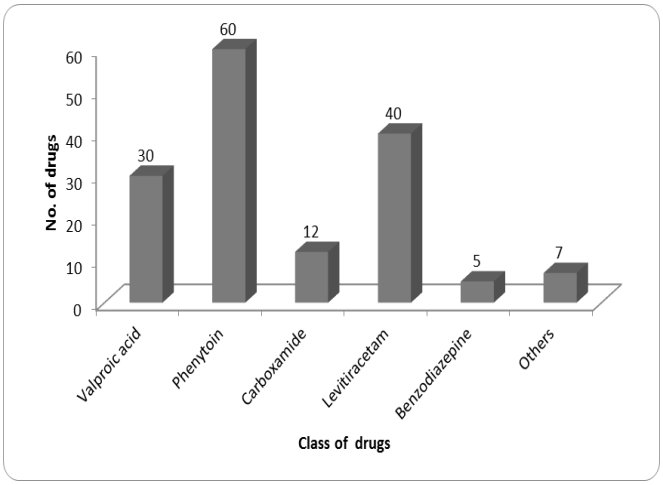
Graph 9: Graph showing details of type of Antiepileptic drugs prescribed.

Details of class of Antiepileptic drugs prescribed

In this study, the class of epilepsy involved Phenytoin 60 (38.96%), followed by Levitiracetam 40 (25.97%), Valproic acid 30 (19.48%), Carboxamide 12(7.79%), Benzodiazepine 05 (3.24%), & Others 07 (4.54%).

Table 10: Details of class of Antiepileptic drugs prescribed.

Class of drugs	No. of drugs	Percentage (%)
Valproic acid	30	19.48
Phenytoin	60	38.96
Carboxamide	12	7.79
Levitiracetam	40	25.97
Benzodiazepine	05	3.24
Others	07	4.54
Total	154	100



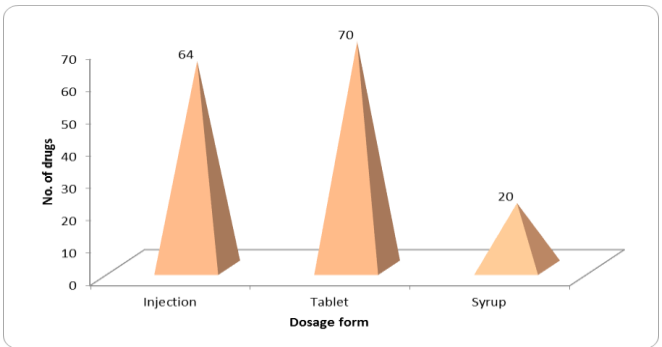
Graph 10: Graph showing details of class of Antiepileptic drugs prescribed.

Details of Dosage form of Antiepileptic drugs prescribed

The study revealed that the type of Dosage form of drugs involved were more with Tablets 70(41.55%), followed by injections 64 (45.45%), syrups 20 (12.98%).

Table 11: Details of dosage form of Antiepileptic drugs prescribed.

Dosage form	No. of drugs	Percentage (%)
Injection	64	41.55
Tablet	70	45.45
Syrup	20	**12.98**
Total	**154**	**100**



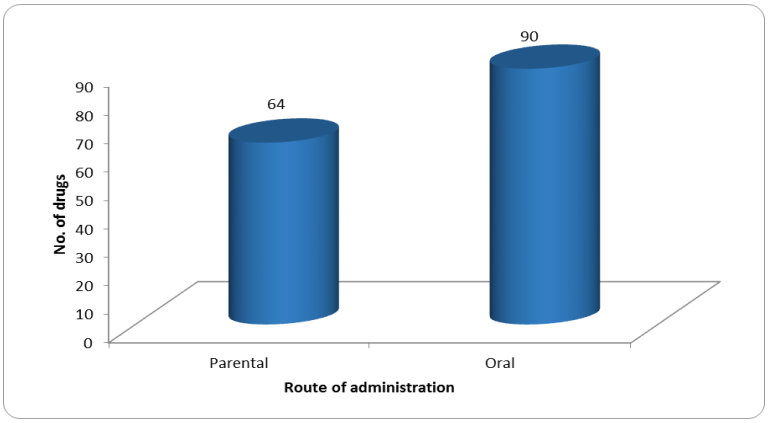
Graph 11: Graph showing details of dosage form of Antiepileptic drugs prescribed.

Details of Route of administration of Antiepileptic drugs prescribed

The study revealed that, the route of administration of drugs was Oral 90(58.44%), followed by Parental 64 (41.55%).

Table 12: Details of route of administration of Antiepileptic drugs prescribed

Route of administration	No. of drugs	Percentage (%)
Parental	64	41.55
Oral	90	58.44
Total	**154**	**100**



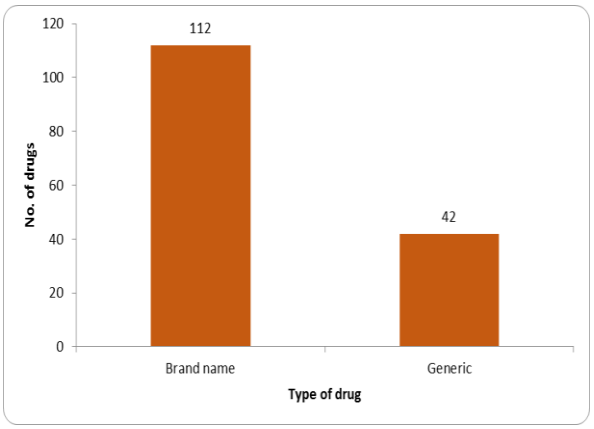
Graph 12: Graph showing details of route of administration of Antiepileptic drugs prescribed.

Number of Antiepileptic drugs prescribed with generic and brand name

The study revealed that, the route of administration of drugs was Branded 112 (72.72%), followed by Generic 42 (27.27%).

Table 13: Details of antiepileptic drugs prescribed with generic and brand name.

Type of drug	No. of drugs	Percentage (%)
Brand name	112	72.72
Generic	42	27.27
Total	**154**	**100**



Graph 13: Graph showing details of antiepileptic drugs prescribed with brand name and generic name.

DISCUSSION

A total of 104 epilepsy patients were enrolled into the study. The data collected from the epilepsy cases were analyzed. The results revealed that, the age distribution of the patients showed that there were more 55 (52.88%) patients in the age group of 0-20 yrs, followed by 22 (21.15 %) patients in the age group of 21-40 yrs, 15 (14.42%) patients in the age group of 41-60, 11 (10.57%) patients in the age group of 61 – 80 & there were only 2 (1.9%) patient in the age group of 81 - 100. Our findings comply with the study conducted by Shrinivasan A et al[3] in which majority of the cases were in the age group of 11-20 and 21-30. The gender distribution of the epilepsy cases reveals that, majority of the cases were 66 (67.30%) males and 34(32.70%) patients were females, which is similar to the study conducted by Sachchidanand P et al[16] in which majority of the cases were male 63%, followed by female 37%. The results revealed that more number of patients were from urban than rural. Out of 104 patients 58(55.76%) were urban and 46 (44.23%) were rural. When the occupational status of the cases showed that, majority of the patients were students 44 (42.30%) followed by 31 (29.80%) patients were other occupations, 13 (12.5%) were house wives, 11 (10.57%) were old age patients, 5 (4.80%) patients were agriculturists. When the economic status of the patients were studied, The results revealed that majority of cases 39 patients (37.50%) were with an annual income between 11,000 – 20,000, followed by 34 (32.69%) were having an annual income between 0 – 10,000, 17 patients (16.34%) with an annual income 21,000 – 30,000, 9 patients (8.65%) with an annual income between 31,000 – 40,000 and 5 patients (4.80%) with an annual income between 41,000 – 50,000.

The results revealed that more number of patients i.e, 90 patients (86.53%) stayed in hospital between 1 to 5 days, followed by 14 patients (13.46%) stayed between 6 to 10 days. In this study, a total of 104 prescriptions were collected from enrolled patients and analyzed, of these the number of drugs per prescription varied from one to four. 63 (60.57%) patients prescribed with one drug, 32 (30.76%) patients prescribed with two drugs, 8 (7.69%) patients prescribed with three drugs, only 1 (0.96%) patient prescribed with Four drugs.

Among 104 patients enrolled majority of them 72 (69.23%) were with Tonic clonic Seizures, followed by Focal Partial Seizure 10 (9.61%), Myoclonic Seizure 9 (8.65%), Atonic Seizure 6 (5.76%), Generalised Seizure 3 (2.88%), Others 4 (3.84%). Which is comparable to the study conducted by Srinivasan A et[3] al in which majority of cases were with Tonic clonic seizures (65%).In this study, majority of the patients were prescribed with Phenytoin 60

(38.96%), followed by Levitiracetam 40 (25.97%), Valproic acid 30 (19.48%), Carboxamide 12(7.79%), Benzodiazepine 05 (3.24%) & Others 07 (4.54%). Which is comparable to the study conducted by Deepalakshmi M et al[5] in which majority of the patients were prescribed with Phenytoin.

The study revealed that the type of Dosage form majorly prescribed was tablets 70(41.55%), followed by injections 64 (45.45%), syrups 20 (12.98%).

The study also revealed that, the prefered route of administration was oral 90(58.55%), followed by Parental 64 (41.55%).

The study revealed that, the majority of the drugs prescribed with Brand name 112 (72.72%), followed by Generic name 42 (27.27%).

CONCLUSION

A total of 104 epilepsy cases were analyzed during the study period. The results revealed that majority of the patients were in the age group of 0-20 years. This shows that the prevalence of epilepsy is more among them. The more number of epilepsy cases were males. In our study majority of the patients were of low economic status.

The study shows that the most preferred antiepileptic drug was Phenytoin, followed by Valproic acid and Levitiracetam. The least preferred drugs were Carbaxamide, Benzodiaepine, Topiramet and Phenobarbitpne. The trend of prescribing the drugs in branded names instead of generic names has been noticed. In this regard pharmacist can play a vital roll in educating and encouraging the prescribers about prescribing in generic name.

This study helps to understand the present trend of prescribing in our Hospital. This may help them to make necessary modifications in the prescribing patterns.

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