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Assessment of prescription pattern and quality of life in patients with epilepsy: A tertiary care hospital based prospective study

[*1] Thasni K, [2] Abdurahiman P, [3] Shamna Sadan E
[1, 3] Department of Pharmacy Practice, KMCT Medical College, Manassery, Calicut, Kerala, India
[2] Department of Neurology, KMCT Medical College, Manassery, Calicut, Kerala, India

Abstract
Background and objectives: The present study aimed to evaluate the pattern of antiepileptic drugs (AEDs) used and to assess the impact of demographic data (according to age and gender) on quality of life (QOL) of the epileptic patients.
Methods: In this prospective cross-sectional study carried out from the department of neurology in KMCT medical college to find out the prescription pattern of AEDs and to assess the Quality of life in outpatients with Epilepsy.
Result: The analysis of the results revealed that there were 65 (52.8%) male patients and 58 (47.2%) female patients, where more no of patients involved in the study was adult age group (19-59 Yrs). The most prescribed drug was levetiracetam (52%). The quality of life of 115 patients was assessed by using specific questionnaires. A Higher score indicates better quality and poor score reflect poor quality of life. From the analysis of the QOL, gender as no significant difference in the QOL but in age group there is a significant decrease in the QOL as increases in age group.

Keywords: anti-epileptic drugs, epilepsy, prescription pattern, quality of life

1. Introduction
According to the International League Against Epilepsy (ILAE) definition, `Epilepsy is a disorder of the brain characterized by an enduring predisposition to generate epileptic seizures and by the neurobiological, cognitive, psychological, and social consequences of this condition' [1]. Epilepsy (from the Ancient Greek ἐπιληψία (epilēpsía) —to seize") is a common chronic neurological disorder characterized by recurrent unprovoked seizures [2]. Epilepsy affects 0.5 to 1% of the population (50 million people worldwide) [3, 4]. Prevalence studies conducted in South Africa have reported a lifetime prevalence of 7.3 per 1000 in children of a rural district and an estimated prevalence of 7.0 per 1000 in a rural north-east district, respectively [5, 6].
Prescription pattern monitoring studies (PPMS) are a tool for assessing the prescribing, dispensing and distribution of medicines. They promote appropriate use of monitored drugs and reduction of abuse or misuse of monitored drugs and to improve the prescribing practices and thus the standards of medical treatment at all levels of healthcare [7]. Anti-epileptic drugs (AEDs) are increasingly being prescribed to patients of all ages in populations worldwide either as monotherapy or polytherapy [8]. Attempt to control epilepsy is done with mono and polytherapy [2]. The prescribing of first-choice AEDs, in particular, has changed over the last decade, with prescribers tending to prescribe newer AEDs (e.g. gabapentin, lamotrigine, levetiracetam, and pregabalin) to patients due to their improved tolerability [9, 10].
Epilepsy is both a medical diagnosis and a social label because people with epilepsy as an impact on their lifestyle and face many psychosocial challenges (anxiety, social stigma, difficulty in driving, unemployment) and also affects memory, thinking, relationships and emotional well-being. It even leads to depression that can negatively impact the quality of life (QOL)[11, 12]. The measurement of QOL using validated tools such as Quality of Life in Epilepsy Inventory-31, QOLIE -31P, QOLIE-10, QOLCE-55 and short-form 36 health survey are commonly used to evaluate QOL. The evaluation of QOL is a relatively new measure to assess the patient-related outcome of AED treatment for epilepsy. Demographic characteristics, high seizure frequency, and long duration of the disorder have been shown to correlate strongly with poor QOL [13].
Quality of life (QOL) is inferior in epileptic patients than in the general population. QOL of patients with epilepsy depends upon the effect of antiepileptic therapy [14, 15]. The management of epilepsy has traditionally focused on seizure control as the main purpose for successful management [16, 17, 18]. The significance of assessing psychological well-being and quality of life of individuals with epilepsy, particularly in developing countries has traditionally been ignored. In recent years, assessing the quality of life with chronic illnesses has become an important concern [19, 20]. Quality of life is an important health outcome to assess in patients with epilepsy. Although its importance, there is relative lack of research on quality of life among patients with epilepsy. The present study assessed the quality of life of patients with epilepsy using an epilepsy-specific instrument in order to provide a comprehensive management program for patients with epilepsy [21, 22].

2. Methodology
A Prospective Cross-Sectional Study Titled "Assessment of Prescription Pattern And Quality Of Life In Patients With

Epilepsy: A Tertiary Care Hospital Based Prospective Study" was carried out with a minimum of 110 patients for a period of oct.16-July.17 in 500 bedded tertiary care teaching Hospital, Calicut, India. Patients who have been diagnosed with epilepsy were enrolled into the study as per the inclusion criteria and exclusion criteria after getting patient informed consent. After case identification and verification, demographic data and Questionnaire, medical records will be obtained from patients. The QOLIE-31P (39 questions: scales-emotional well-being, social functioning, energy/fatigue, cognitive functioning, seizure worry, medication effects and overall quality of life) and QOLCE-55 (55 questions: cognitive functioning, emotional functioning, social functioning, physical functioning) was selected for the studying the QOL of both young and childhood epilepsy Patients. The scoring procedure converts the answers to items to 0-100 point scores. A Higher score indicates better quality and lower score reflect poor quality of life. The difference in the quality of life according to gender is analyzed using student's t-test. The difference in the quality of life in different age groups is assessed using one way ANOVA. In this detailed study can investigate the assessment of prescription pattern and QOL in patients with epilepsy, documented and presented.

3. Results

A total of 145 cases with epilepsy were reviewed out of which 123 patient details collected using Data Entry Form as per inclusion and exclusion criteria. Out of 123 patients, males (52.8%) are predominant over the female patients (47.2%). And the more no. of patients are included in the adult (19-59yrs) age group. Most of the patients are primary educated and not working. Among the total study population (N=123), newer AEDs are most commonly used about 60.2% (74) and 25.2% of the population treated by the combination of newer and old AEDs, least prescribed the type of drug was old/ conventional drugs about 14.6%.

Table 1: Type of AEDs among the study population (N=123)

Type of AED	Frequency	Percentage
Newer AEDs	74	60.2
Old/conventional AEDs	18	14.6
Combination of old + newer AEDs	31	25.2
Total	123	100

3.1 Prescription Pattern of AEDs

By considering the total study population (123), single drug therapy is most commonly used when compared to the polytherapy. And by analyzing the prescription pattern in the total study population, the levetiracetam (64) is more commonly used the drug as 52%.

Next to levetiracetam (52%), clobazam (21.1%), lacosamide (16.3%), carbamazepine (15.4%), valproic acid (13.8%), oxcarbazepine (13%), phenytoin (10.6%), phenobarbitone (5.7%), lamotrigine (2.4%), gabapentin (1.6%), clonazepam (3.3%), topiramate (3.3%), lorazepam (0.8%), zonisamide (0.8%) and fosphenytoin (0.8%).

Table 2: Prescription Pattern of AEDs among the study population (N=123)

Drug	Frequency	Percentage (%)
Levetiracetam (LEV)	64	52
Lacosamide (LACO)	20	16.3
Oxcarbazepine (OXC)	16	13
Phenytoin (PHT)	13	10.6
Valproic acid (VPA)	17	13.8
Carbamazepine (CBZ)	19	15.4
Phenobarbitone (PHE)	7	5.7
Clobazam (CLB)	26	21.1
Lamotrigine (LTG)	3	2.4
Gabapentin (GBP)	2	1.6
Clonazepam (CLN)	4	3.3
Lorazepam (LORA)	1	0.8
Zonisamide (ZON)	1	0.8
Topiramate (TOPI)	4	3.3
Fosphenytoin (FOSP)	1	0.8
Total	198	100

The graphical representation of the prescribing pattern among the study population as shown below:

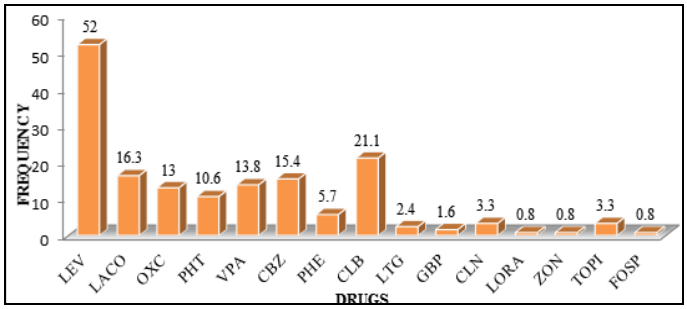

Fig 1: Prescription pattern of AEDs among the study population (N=123)

3.2 Quality Of Life Assessment.

The quality of life of 81 adult patients who participated in the interview was assessed using epilepsy specific questionnaire QOLIE-31-P. The difference in the quality of life in different age groups can be done by using ANOVA. Except for daily activities, medication effects, seizure worry, and overall QOL these values of significance were less than 0.05 this reveals that there is a significant difference in the quality of life when different age groups are considered.

Table 3: Categorization of QOL in adult population according to age group (N=81)

Domains	F	Sig
Energy	3.237	0.044
Mood	4.002	0.022
Daily activities	2.367	0.100
Cognition	4.225	0.018
Medication effects	2.798	0.067
Seizure worry	1.836	0.166
Overall QOL	2.644	0.077
Total score	4.546	0.013

In the case of adult patients, the total score indicates the good quality of life but in case of an adult, seniors indicate the moderate quality of life.

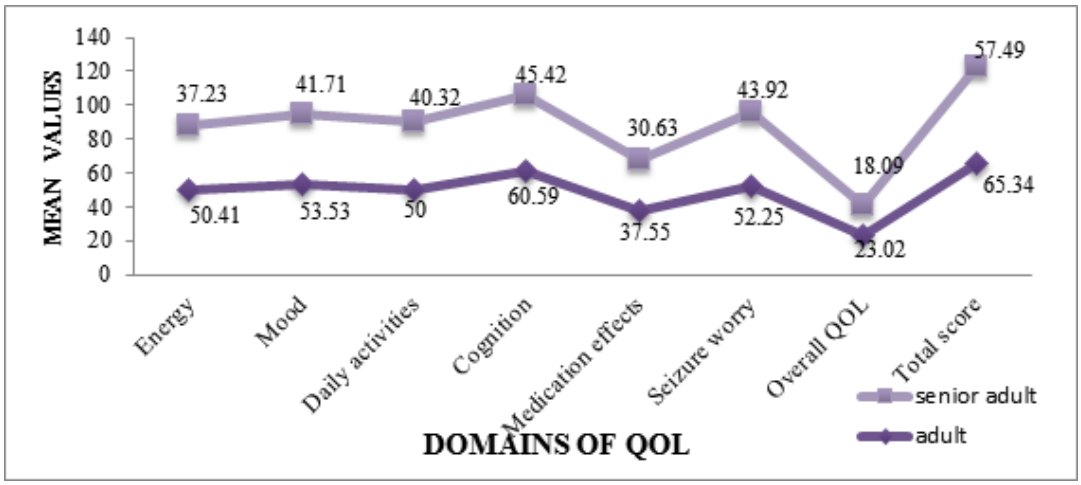

Fig 2: Comparison of QOL among adult and senior adult patients (N=81)

Thus, this indicates that in this age group patients are the most distressed in case of epilepsy. Thus, this leads to poor quality of life in this age group. The results of quality of life studies in males and females were analyzed using t-Test. This was done to find out if there is any significant difference in the quality of life in both genders. If the value of p is less than 0.05 then it means that there is a significant difference among both genders. Thus, the values obtained after t-Test proves that there is no significant difference in quality when both genders are compared.

Table 4: Categorization of QOL in adult population according to gender group (N=81)

Domains	T	Sig
Energy	0.656	0.514
Mood	0.283	0.778
Daily activities	0.514	0.609
Cognition	-0.358	0.721
Medication effects	-0.676	0.501
Seizure worry	0.454	0.651
Overall QOL	0.980	0.330
Total score	0.278	0.782

By considering the QOL of the total study population based on the gender, in both males and females indicates good quality of life. All domains indicate the moderate quality of life except the domains as medication effect and overall quality of life in both genders.

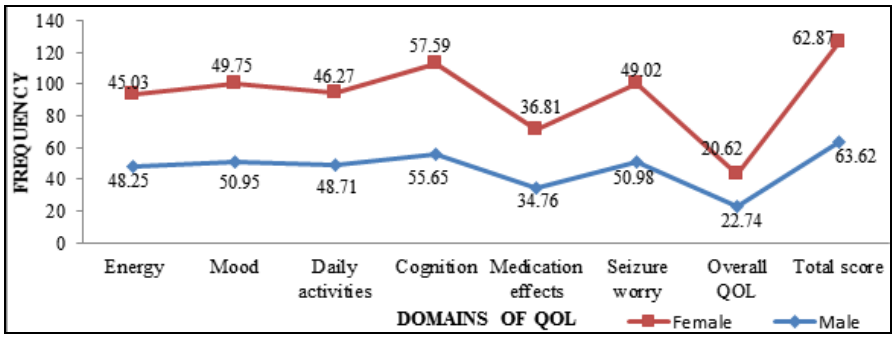

Fig 3: comparison of QOL among male and female patients (N=81)

The quality of life of 34 pediatric study populations who participated in the interview was assessed using epilepsy specific questionnaire QOLCE-55. Using one way ANOVA the result of different age groups was analyzed. There is no significant difference in pediatric and adolescent age groups.

Table 5: Categorization of QOL in pediatric population according to age group (N=34)

DOMAINS	F	Sig.
Cognitive	1.343	0.255
Emotional	2.256	0.143
Social	3.145	0.086
Physical	.150	0.701
Total Score	.840	0.366

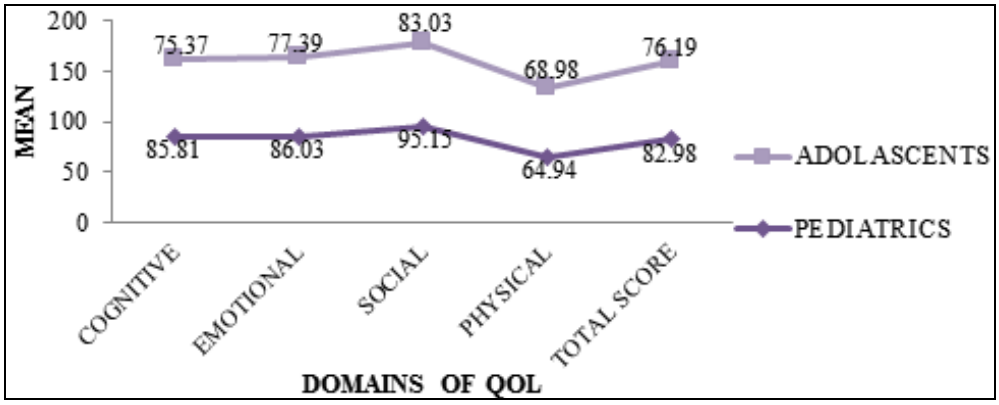

Fig 4: QOL Comparison based on paediatrcs age group

The results of quality of life studies in males and females were analyzed using t-Test. The values obtained after t-Test proves that there is no significant difference in quality when both genders are compared.

Table 6: Categorization of QOL in pediatric population according to gender group (N=34)

Domains	T	Sig.
Cognitive	-1.338	0.191
Emotional	-0.842	0.406
Social	-1.352	0.186
Physical	-1.673	0.104
Total Score	-1.485	0.148

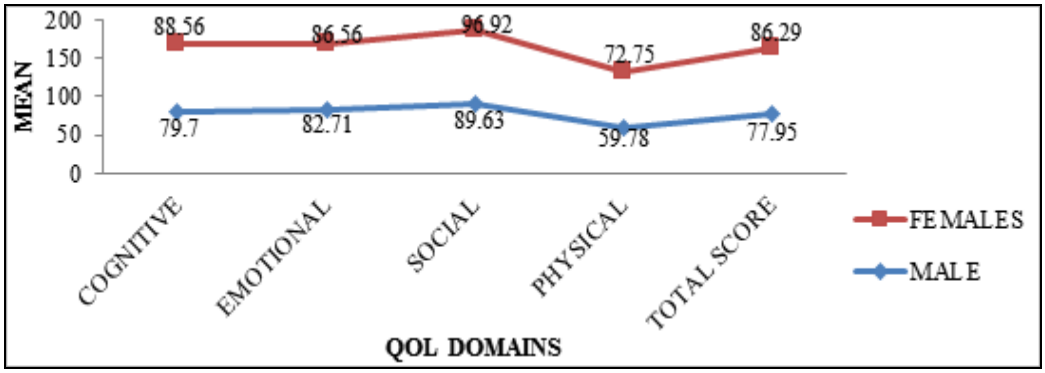

Fig 5: Comparison of QOL among male and female patients in pediatrics

4. Discussion

An epileptic seizure is a transient occurrence of signs and/or symptoms due to abnormal excessive synchronous activity in the brain. In this study, More than half of the patients are male [12]. And the reasons behind this gender differences are not clear, but it supposes that estrogen has a seizure activating the effect, whereas progesterone exerts a seizure protective effect [23]. The age distribution of the study population revealed that maximum numbers of patients are young age group of 19-59 years, followed by pediatric age group of 3-12yr and geriatric age group of above 60 yrs and then the adolescent age group 13-18 Yrs. The young patients are the major age group within the epilepsy patients [24]. Because of the stigma attached to it, it becomes imperative to treat disorder as effectively as possible [25].

In this study, the majority of the populations prescribed or treated by using the single drug therapy 57.7% as compared to that of multiple drug therapy 42.3%. Monotherapy was predominant in our study; because with many advantages such as less interaction and minimal adverse effect when compared to polytherapy. The utilization of new AEDs alone and as the combination was found to be higher (70%), a trend similar to

that seen in European countries [9, 26]. A wide variation has been reported to exist in the use of newer AEDs in different regions and hospital settings in India, ranging from 3% in Eastern India to 40% to 50% in central/southern India. This is in accordance with the updated National Institute for Health and Care Excellence guidelines. The use of these newer AEDs may also be attributed to their improved effectiveness, reduced side effects and ease of use (once a day dosing) [27].

Using one-way ANOVA the result of different age groups was analyzed. This is done to find out if there is any difference in the quality of life with different age groups. In the case of young patients, the total score indicates the good quality of life but in case of Geriatrics indicate the moderate quality of life. It was evident from the study that the quality of life is greatly affected in patients above the age of 60 when compared to other age groups [28]. However, recent data suggest that aging does not exert a negative effect on overall QOL in epileptics.

The results of quality of life studies in males and females were analyzed using t-Test. This was done to find out if there is no significant difference in the quality of life in both genders. Shakarishivilli *et al.* found that females were the major determinant of the QOL in epileptics [29]. Two Indian studies also reported similar findings in a European study on the QOL with epilepsy; female respondents had poorer energy/vitality, physical functioning, mental and general health [30].

5. Conclusion

In our study revealed that the newer AEDs are commonly used when compared to conventional AEDs. In newer AEDs, the most commonly used AED is levetiracetam. The prescribing pattern of AEDs in our study was as per the NICE guidelines. Single-drug therapy was predominant over the multiple drug therapy; the partial seizure was more common than generalized seizure. From the analysis of the QOL according to age and gender, gender as no significant difference in the QOL. But in case of age, pointed that the decreased QOL for the advanced age group. From the study, conclude that there is a significant decrease in the QOL as age group increases in the epileptic patients.

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