

Research Article



Impact of Quality of Life in Epileptic Patients with Pharmacist Assisted Patient Counselling

Thejus Salomy Thomas*, Adhin John Varghese, Merin Mathew, Rohini S Kumar, Rajeswari Ramasamy, Muralimohan K
Department of Pharmacy Practice, Krupanidhi College of Pharmacy, Carmelaram, Bangalore, India.

*Corresponding author's E-mail: thejusthmz@gmail.com

Received: 04-04-2018; Revised: 28-04-2018; Accepted: 09-05-2018.

ABSTRACT

The objective of the study is to study the impact of pharmacist assisted patient counseling for improving Quality Of Life (QOL) in epileptic patients. An educational interventional study was conducted among epileptic patients between the age of 18-60 years and those patients who were taking antiepileptic drugs for at least 3 months were included in the study. The baseline value, first follow-up and second follow-up value were assessed using QOLIE-31 scale. Patients who enrolled for the study received counseling during their first visit, and also during the follow-ups for the next two months. The change in the QOL was analyzed. The impact of pharmacist assisted patient counseling was assessed. A total of 123 patients received the patient counseling, and observed that there was a statistically significant improvement on QOL in all domains from the baseline QOL score. In QOL the overall T score mean of sample population was found to be 34.04 ± 7.40 before counseling and after counseling the first follow up overall T score mean was found to be 49.67 ± 11.459 , second follow up overall T score mean was found to be 55.70 ± 9.87 . The study demonstrates that patient counseling plays a major role in improving QOL.

Keywords: QOL, Patient counseling, Epilepsy, QOL IE-31.

INTRODUCTION

Epilepsy is one of the most common neurological disorders affecting people of all ages and socioeconomic classes worldwide; it results from abnormal, excessive or hyper synchronous neuronal activity in the brain¹. Epilepsy is the second most common chronic neurological condition seen by neurologists². There are 70 million people living with epilepsy worldwide, and most of them reside in developing countries.

Epilepsy has been shown to have significant effects on social, behavioral, physical, and psychological well-being³. Individuals with epilepsy have a higher rate of suicide, anxiety, depression, sudden unexplained death and accidental death. Prolonged seizures may cause physical injury, neuronal death leading to cognitive impairment, and can be fatal⁴. In many parts of the world; epilepsy continues to be viewed as witchcraft, contagious, and possession by devils. Indian study reported that 15% of respondents believed epilepsy to be insanity, 40% believed that the child with epilepsy should not go to school or their children should not play with them and 66% objected in their children marrying someone who had epilepsy. Similar observations were found in a study from Taiwan which also reported that 31% of respondents believed that people with epilepsy should not be employed in jobs⁵. Quality of life (QOL) is recognized as an important outcome in epilepsy treatment. QOL of patients with epilepsy (PWE) has been adversely affected due to many factors related to the life either directly or indirectly.

Lack of understanding about epilepsy is a leading cause of discrimination in the workplace and in schools. Stigmatization, co-morbidities, socioeconomic status, seizure severity, and frequency are the most common factors that come across in the life of epileptic as a big hurdle to lead quality life.⁶ The concept of QOL is a multifactorial construction that describes an individual's perceptions of their physical, psychological, social functioning, and wellbeing. Research assessing the QOL associated with successful treatment of epilepsy is far behind that of other chronic conditions such as cancer, diabetes, and cardiovascular disease. Far-reaching and life-long consequences can be substantial with the impact of epilepsy on quality of life.

Key areas of quality of life influenced by epilepsy include: education, employment, independence, social isolation. Often children with epilepsy receive inadequate schooling.

Unemployment levels are highly out of proportion approximately two to three times greater than the general population and greater than in people living with other disabilities. Limitations to independence caused by physical disability are experienced by many people with epilepsy. Ineffective treatment, cognitive consequences of epilepsy and treatment as well fear of having a seizure, also hinder independence. An inability to obtain or retain a driver's license due to uncontrolled or breakthrough seizures adds to limitations and restrictions experienced by people with epilepsy throughout their life. Social isolation and self-esteem leading to feeling of helplessness depression are also experienced as a result of hiding the condition from others.



Patients with epilepsy endure driving restrictions, social stigma, marriage delay, fear of next seizure, and are exposed to adverse effects. This can contribute to impaired health-related QOL; it is composed of physical, emotional, social, spiritual, occupational and economic dimensions, as well as health-related aspects pertaining to a specific disease. Strategies to enhance QOL originate from different perspectives. Imparting knowledge, modifying patient beliefs, patient communication, leaving the bias can help in improving the quality of life. Lack of knowledge and misperceptions about the disease and treatment are the main factors for poor QOL. To manage the fears and unnecessary anxiety associated with epilepsy, patient and their families need complete and accurate information about the disease, the risk associated with epilepsy including sudden unexpected death in epilepsy patients (SUDEP), seizure related injuries, safety precautions (avoidance of triggers of epilepsy and first aid measures). Adherence to treatment may decrease the seizure frequency which in turn improves QOL in patients. Frequent counseling about the importance of adherence to drug regimen and about the possible ADRs helps in improving adherence. Epilepsy has been shown to have significant effects on patient's lives. Patients with epilepsy endure driving restrictions, social stigma, marriage delay, fear of next seizure, and are exposed to adverse effects, which contribute to impaired QOL. Stigmatization, attitude of society, co-morbidities, socioeconomic status, seizure severity, and frequency are the most common factors that come across in the life of epileptic as a big hurdle to lead quality life. QOL is recognized as an important outcome in epilepsy treatment and can be improved through patient counseling about the disease. Our study aims to assess the impact of patient counseling on QOL in epileptic patients.

MATERIALS AND METHODS

Medical records of the A Prospective Educational – Interventional Study conducted from September-2016 – April 2017 (8 months). The study was performed in the Department of General Medicine, MVJ Medical College and Research Hospital, Bangalore and Department of Neurology, Spandana Institute of Mental Health And Neurology (SIMHANS) Bangalore 560010. Human ethical clearance was obtained for carrying out the research work from Ethical Committee of MVJ Medical College & Research Hospital, Hoskote, and Bangalore after the submission of complete protocol.

All epileptic patients of either gender including pregnancy population, between 18-60 years old, with history of antiepileptic drug use for at least recent 3 months were included in the study. Those patients with pseudo epileptic seizures, newly diagnosed seizures and patients with mental deficit were excluded from the study.

All patients who were presented in the General Medicine, of the study site (MVJ Medical College and Research Hospital and Spandana Institute of Mental Health And

Neurology) were screened for suitability. All patients who met the inclusion criteria were enrolled in the study after taking Informed Consent (IC) before commencing the study. The basic demographics, medical and medication related details, family details were collected by the researchers personally using the Case Report Form (CRF). Baseline QOL of the enrolled patients was accessed using Quality Of Life in Epileptic Patients-31(QOLIE-31) Scale for quality of life patients of age 18 years and above. The QOLIE-31 questionnaire comprises of 31 questions under 7 domains and the scoring value ranges from 0-100 as per Table 1. Educational intervention / patient centered counseling were given using various counseling/educational tools, on their first visit. A pamphlet consist of general information on epilepsy and first aid measures were given and also condition and patient specific counseling were also given with the help of attainer at hospital. The contact number and address were taken from each subject after the counseling for follow-up purpose. The QOL was measured and a comparison was done to figure out any improvements on patient attitude.

QOL measurement method

Based on overall T-score of QOLIE-31, the QOL was divided into 4 groups; Very low (≤ 35), Low (36-45), Medium (46-55), High (>55). Higher QOLIE-31 scores reflect a better QOL and the lower score reflects worse QOL. T score can be determined for each domain from 0 to 100 point scale. These T scores represent linear transformations of the scores that produce a mean of 50 and SD of 10. Thus a person with T score of 50 has a score equal to the higher T scores reflect a more favorable QOL.

Follow up methodology

Patients were reminded on adhering to medications and lifestyle suggested by phone calls every week. Follow up for QOL was done through telephone calls with a frequency of one month from the date of first baseline measurement for at least two times. The follow up scores obtained for QOL would have been compared with the baseline value. The results were analyzed using appropriate Statistical techniques.

Statistical Analysis

Data collected was analyzed using Statistical Package for Social Science version 18 (SPSS). Descriptive statistics were given as mean and SD for continuous data or as percentage for frequency. The impact of patient counseling on QOL was assessed by the means of QOLIE-31 before and after counseling and was compared with paired t test

RESULTS AND DISCUSSION

In our study, we have observed that the incidence of epilepsy in various age groups.



Table 1: Patient Characteristics (N=123) were collected using case report form.

Patient Characteristics	Number (Percentage)
Age Distribution	
Youth	1 (0.81%)
Young Adulthood	41 (33.33%)
Middle Adulthood	54 (43.92%)
Older Adulthood	27 (21.95%)
Gender	
Male	74 (60.16%)
Female	49 (39.83%)
Marital Status	
Married	87 (29.26%)
Unmarried	36 (70.73%)
Occupational Status	
Self-Employed	20 (16.26%)
Salaried	35 (28.45%)
Student	31 (25.20%)
Housewife	29 (23.57%)
Retired	8 (6.50%)
Educational Qualification	
Post-Graduate	4 (3.25%)
Graduate	54 (43.90%)
Pre-University	27 (21.95%)
10 th or Less	35 (28.45%)
Illiterate	3 (2.34%)
Types of Seizure	
GTCS	100 (81.30%)
Atonic Seizure	1 (0.008%)
Status Epilepticus	2 (1.62%)
Simple Partial Seizure	10 (8.13%)
Complex Partial Seizure	3 (2.43%)
Simple Absence Seizure	6 (4.87%)
Frequency of Seizure	
0-5 Attacks/Year	88 (71.54%)
6-10 Attacks/Year	28 (22.76%)
More than 10 Attacks/Year	7 (5.69%)
Trigger	
Alcohol	8 (6.5%)
Missed Medication	33(26.82%)
Lack of Sleep	9(7.31%)
Poor Follow up	9 (7.31%)
Stress	41 (33.33%)
Special Time	9 (7.31%)
Unknown	14 (11.38%)

Therapy	
Monotherapy	65 (52.84%)
Polytherapy	58 (47.15%)
AED used in Monotherapy	
Phenytoin	41 (63.07%)
Levetiracetam	10 (15.38%)
Phenobarbitone	3 (4.61%)
Divalproate Sodium	4 (6.15%)
Carbamazepine	3 (4.61%)
Valproic Acid	3 (4.61%)
Lamotrigine	1 (1.53%)
Side Effects	
Gastric Irritation	1 (0.81%)
Headache	4 (4.06%)
Hypersensitivity	2 (1.62%)
Joint Pain	1 (0.81%)
Memory Deficit	1 (0.81%)
Nystagmus	1 (0.81%)
Rashes	2 (1.62%)
Weight Gain	2 (1.62%)
Weakness	19(15.44%)
No Side Effects	90(71.54%)

Mean age of population was 33 years and was highest among middle adulthood. This is comparable with study done by Emanuela BB et al⁸ who reported that the median of age of the study population was 33 years without significant differences in patient age based on gender. The most affected gender were males (60%) and females (40%). This result is correspondent with Hiwot G et al⁹, the study shows that 59.4% were males and 40.6% females. The counseling method and approach was titrated according to the demography of patients. Marital status and literacy were major concerns in epilepsy patients. In our study 71% of study populations were married. More than half of the population were literate and only 2% were illiterate. However many other studies reveal that high percentage of patients were illiterate.

Among all the type of epilepsy Generalized Tonic Clonic Seizure (GTCS) was found to be pre-dominant in our study. Eighty one percentages of the patients had generalized type of epilepsy. Study conducted by Shakirullah et al¹⁰, shows that GTCS type of epilepsy is common among other type of epilepsy.

During our study we observed that control of seizure attack is the main objective in management of epilepsy. There was a variation in the number of seizure attacks in enrolled study patients. The majority of patients reported 0-5 attacks per year. Based on our data seizure can be triggered by various factors which includes stress 33% , missed medication 27%, lack of sleep 7%, alcohol consumption 7%, special time 7% , poor follow-up 7% and

unknown factors 12%, a study conducted by E. Balamurugan et al.¹¹ supports our data.

In our study we observed the pattern of AED treatment given to PWE. Monotherapy which is the gold standard of managing epilepsy, 53% of patients were administered antiepileptic monotherapy. However patients who do not respond to monotherapy were prescribed poly therapy (two or more drugs) with the aim of controlling seizure. In this study 47% of PWE were given poly-therapy. Nuruluni A et al¹ got similar result. In monotherapy most widely used drugs were Phenytoin 63%, Levetiracetam 15% , Divalproex sodium 6%, Phenobarbital 5%, Carbamazepine 5% ,Valproic acid 5% and Lamotrigine 1% .In poly-therapy most commonly prescribed combination was phenytoin with phenobarbital. This is supported by study conducted by Sanjeev V.T et al¹². Major side effects related to therapy reported by the subjects include weakness, headache gastric irritation, joint pain, hypersensitivity reaction, rashes, weight gain, memory deficit and nystagmus. Out of this weakness was the major side effect experienced by the patients. Martin H.H et al¹³ observed drowsiness as the major side effect related to AED therapy.

QOL is an important parameter in epilepsy management which can be improved by proper education given to the patients about the disease, treatment duration, side effects and need of adherence. The overall T score mean of sample population was found to be 34.04±7.40 before counseling and after counseling the first follow up overall

T score mean was found to be 49.67±11.459, second follow up overall T score mean was found to be 55.70±9.87. Statistical analysis of QOL reveals a significant result ($p<0.05$) from baseline to second follow up. The study conducted by Kanitpong P et al.¹⁴ shows similar significance ($p<0.05$). Thus through our study we were able to see that patient counseling had a significant impact on QOL.

Most of the epilepsy study was concentrated on QOL which is a multi-factorial construction that describe an individual perception of their physical, psychological, social functioning and wellbeing. The QOLIE-31 scale consists of 7 domains (seizure worry, overall QOL, energy/fatigue, emotional well-being, medication effects, cognitive function and social function) and allows to assess QOL in epilepsy patients based on these domains. In this study the overall baseline T score is found to be 34.04± 7.40. Low T scores are obtained for subscales overall QOL 32.20±10.66, emotional wellbeing 35.15±7.81, seizure worry 35.42±7.15, social function 7.32±7.12, energy/fatigue 39.20±7.38, medication effects 44.42±7.58, and cognitive function 45.42±9.59. Ayswarya P et al¹⁶ reported that social function, emotional wellbeing, were the most affected domains of QOL in people with epilepsy. QOLIE-31 includes 7 domains among which overall QOL was more affected. There was a statistically significant improvement in overall QOL after the counseling ($p<0.0001$)

Table 2: Paired Sample Statistics (QOL)

Paired sample statistics of overall T score obtained during baseline, 1st follow up and 2nd follow up.

		Paired Differences		t	df	Sig. (2-tailed)
		Mean	Std.Deviation			
Pair 1	Baseline Overall T Score	-15.634	10.871	-15.949	123	.000
	1 st Follow Up Overall T Score					
Pair 2	1 st Follow Up Overall T Score	-6.024	8.434	-7.922	123	.000
	2 nd Follow Up Overall T Score					
Pair 3	Baseline Total Score	-21.659	11.324	-21.213	123	.000
	2 nd Follow Up Overall T Score					

Table 3: (i) Paired Sample Statistics (QOL Domain)

Paired sample statistics of T score of domains obtained during baseline with 1st follow up.

		Mean	N	Std. Deviation
Pair 1	Seizure Worry T Score Baseline	35.42	123	7.174
	Seizure Worry T Score 1 st Follow Up	47.2803	123	9.76246
Pair 2	Overall QOL T Score Baseline	32.20	123	10.662
	Overall QOL T Score 1 st Follow Up	46.693	123	11.7369
Pair 3	Emotional Well Being T Score Baseline	35.15	123	7.810



	Emotional Well Being T Score 1 st Follow Up	46.34	123	10.740
Pair 4	Energy/Fatigue T Score Baseline	39.20	123	7.383
	Energy/Fatigue T Score 1 st Follow Up	50.53	123	11.404
Pair 5	Cognitive Functioning T Score Baseline	45.42	123	9.593
	Cognitive Functioning T Score 1 st Follow Up	53.80	123	9.125
Pair 6	Medication Effects T Score Baseline	44.42	123	7.581
	Medication Effects T Score 1 st Follow Up	53.76	123	7.561
Pair 7	Social Functioning T Score Baseline	37.32	123	7.121
	Social Functioning T Score 1 st Follow Up	47.86	123	8.279

Table 4: (ii) Paired Sample Statistics (QOL Domain)

Paired sample statistics of T score of domains obtained during baseline with 1st follow up.

		Paired Differences		T	df	Sig. (2-tailed)
		Mean	Std.Deviation			
Pair 1	Seizure Worry T Score Baseline	-11.86	9.72	-13.530	122	.000
	Seizure Worry T Score 1 st Follow Up					
Pair 2	Overall QOL T Score Baseline	-14.49	11.62	-13.833	122	.000
	Overall QOL T Score 1st Follow Up					
Pair 3	Emotional Well Being T Score Baseline	-11.19	11.04	-11.239	122	.000
	Emotional Well Being T Score 1 st Follow Up					
Pair 4	Energy/Fatigue T Score Baseline	-11.33	10.73	-11.705	122	.000
	Energy/Fatigue T Score 1 st Follow Up					
Pair 5	Cognitive Functioning T Score Baseline	-8.38	9.97	-9.322	122	.000
	Cognitive Functioning T Score 1 st Follow Up					
Pair 6	Medication Effects T Score Baseline	-9.34	9.72	-10.656	122	.000
	Medication Effects T Score 1 st Follow Up					
Pair 7	Social Functioning T Score Baseline	-10.54	8.39	-13.942	122	.000
	Social Functioning T Score 1 st Follow Up					

Table 5: (iii) Paired Sample Statistics (QOL Domain)Paired sample statistics of T score of domains obtained during 1st follow up and 2nd follow up.

		Mean	N	Std. Deviation
Pair 1	Seizure Worry T Score 1 st Follow Up	47.2803	123	9.76246
	Seizure Worry T Score 2 nd Follow Up	51.92	123	9.095
Pair 2	Overall QOL T Score 1 st Follow Up	46.693	123	11.7369
	Overall QOL T Score 2 nd Follow Up	52.59	123	10.444
Pair 3	Emotional Well Being T Score 1 st Follow Up	46.34	123	10.740
	Emotional Well Being T Score 2 nd Follow Up	49.96	123	9.971
Pair 4	Energy/Fatigue T Score 1 st Follow Up	50.53	123	11.404
	Energy/Fatigue T Score 2 nd Follow Up	54.36	123	9.779
Pair 5	Cognitive Functioning T Score 1 st Follow Up	53.80	123	9.125
	Cognitive Functioning T Score 2 nd Follow Up	57.22	123	7.427
Pair 6	Medication Effects T Score 1 st Follow Up	53.76	123	7.561
	Medication Effects T Score 2 nd Follow Up	56.13	123	6.758
Pair 7	Social Functioning T Score 1 st Follow Up	47.86	123	8.279
	Social Functioning T Score 2 nd Follow Up	51.20	123	6.657

Table 6: (iv) Paired Sample Statistics (QOL Domain)Paired sample statistics of T score of domains obtained during 1st follow up and 2nd follow up.

		Paired Differences		T	df	Sig. (2-tailed)
		Mean	Std.Deviation			
Pair 1	Seizure Worry T Score 1 st Follow Up	-4.63837	8.90190	-5.779	122	.000
	Seizure Worry T Score 2 nd Follow Up					
Pair 2	Overall QOL T Score 1 st Follow Up	-5.9000	8.7662	-7.464	122	.000



	Overall QOL T Score 2 nd Follow Up					
Pair 3	Emotional Well Being T Score 1 st Follow Up Emotional Well Being T Score 2 nd Follow Up	-3.618	9.158	-4.381	122	.000
Pair 4	Energy/Fatigue T Score 1 st Follow Up Energy/Fatigue T Score 2 nd Follow Up	-3.829	8.947	-4.747	122	.000
Pair 5	Cognitive Functioning T Score 1 st Follow Up Cognitive Functioning T Score 2 nd Follow Up	-3.415	7.541	-5.022	122	.000
Pair 6	Medication Effects T Score 1 st Follow Up Medication Effects T Score 2 nd Follow Up	-2.371	6.927	-3.796	122	.000
Pair 7	Social Functioning T Score 1 st Follow Up Social Functioning T Score 2 nd Follow Up	-3.341	7.567	-4.897	122	.000

Table 7 : (v) Paired Sample Statistics (QOL Domain)

Paired sample statistics of T score of domains obtained during baseline with 2nd follow up.

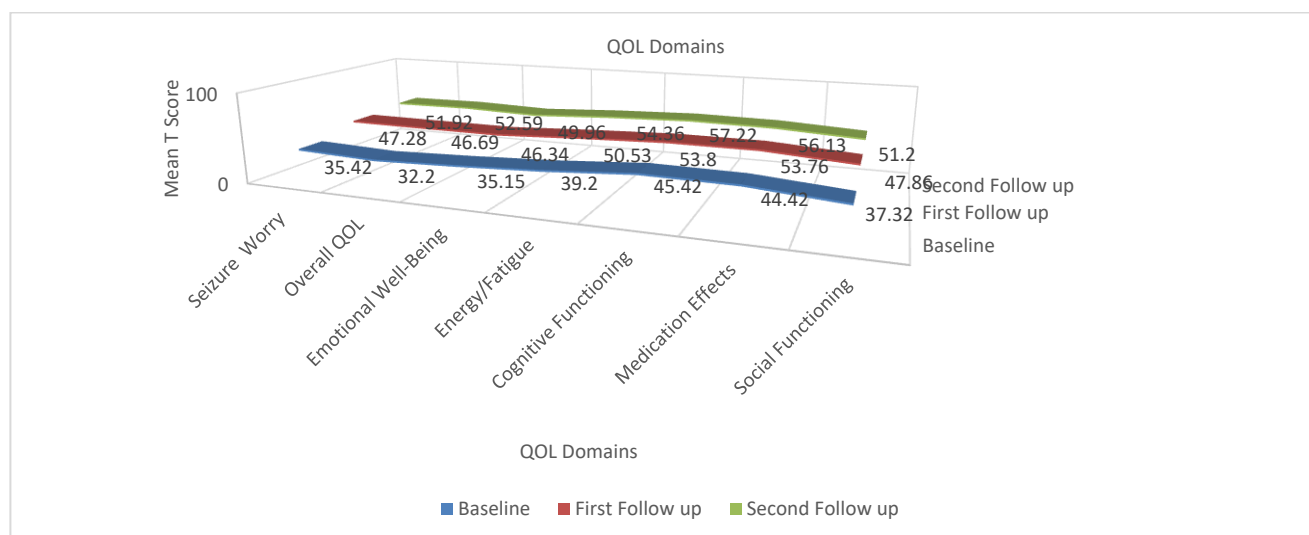
		Mean	N	Std. Deviation
Pair 1	Seizure Worry T Score Baseline Seizure Worry T Score 2 nd Follow Up	35.42 51.92	123 123	7.174 9.095
Pair 2	Overall QOL T Score Baseline Overall QOL T Score 2 nd Follow Up	32.20 52.59	123 123	10.662 10.444
Pair 3	Emotional Well Being T Score Baseline Emotional Well Being T Score 2 nd Follow Up	35.15 49.96	123 123	7.810 9.971
Pair 4	Energy/Fatigue T Score Baseline Energy/Fatigue T Score 2 nd Follow Up	39.20 54.36	123 123	7.383 9.779
Pair 5	Cognitive Functioning T Score Baseline Cognitive Functioning T Score 2 nd Follow Up	45.42 57.22	123 123	9.593 7.427
Pair 6	Medication Effects T Score Baseline Medication Effects T Score 2 nd Follow Up	44.42 56.13	123 123	7.581 6.758
Pair 7	Social Functioning T Score Baseline Social Functioning T Score 2 nd Follow Up	37.32 51.20	123 123	7.121 6.657



Table 8: (vi) Paired Sample Statistics (QOL Domain)

Paired sample statistics of T score of domains obtained during baseline with 2nd follow up.

		Paired Differences		T	df	Sig. (2-tailed)
		Mean	Std.Deviation			
Pair 1	Seizure Worry T Score Baseline	-16.496	10.980	-16.662	122	.000
	Seizure Worry T Score 2 nd Follow Up					
Pair 2	Overall QOL T Score Baseline	-20.390	12.279	-18.416	122	.000
	Overall QOL T Score 2 nd Follow Up					
Pair 3	Emotional Well Being T Score Baseline	-14.805	11.095	-14.798	122	.000
	Emotional Well Being T Score 2 nd Follow Up					
Pair 4	Energy/Fatigue T Score Baseline	-15.154	10.802	-15.559	122	.000
	Energy/Fatigue T Score 2 nd Follow Up					
Pair 5	Cognitive Functioning T Score Baseline	-11.797	9.847	-13.286	122	.000
	Cognitive Functioning T Score 2 nd Follow Up					
Pair 6	Medication Effects T Score Baseline	-11.707	9.308	-13.950	122	.000
	Medication Effects T Score 2 nd Follow Up					
Pair 7	Social Functioning T Score Baseline	-13.886	8.609	-17.888	122	.000
	Social Functioning T Score 2 nd Follow Up					

Table 9: (viii) T score graph of QOL domains

This study highlights the importance of patient counseling in improving QOL in epilepsy patients. The study concluded that epilepsy patients had poor QOL. The measurement of QOL in epilepsy patients is essential to have an in-depth understanding of the effect of disease on various dimensions of health. Therefore, adherence intention should be monitored to provide appropriate support in improving quality of life in epilepsy patients. Assessing QOL and providing patient education should be a routine part of the epilepsy management.

Acknowledgement: The authors would like to thank our college for providing us the needful help and as well the SIMHANS hospital for giving us an opportunity to do this project and for giving all their support.

REFERENCES

- Nurulumi A., Nurul Io., Farida I. "Medication Adherence and Quality Of Life in Epilepsy Patients". International Journal of Pharmacy and Pharmaceutical Sciences .ISSN- 0975-1491 Vol 5, Suppl 2, 2013
- Sridharan R. "Epidemiology of epilepsy". Current 664 Science, Vol. 82, No. 6, 25 March 2002.
- Anne M N., Joseph KBM. Fred W., Rhoda K W. and Fredrick M. "Health-related quality of life in epilepsy patients receiving anti-epileptic drugs at National Referral Hospitals in Uganda: a cross-sectional study". Health and Quality of Life Outcomes 12, 2014, 49.
- Jones RM, Butler JA, Thomas VA, Peveler RC, Prevett M. "Adherence to treatment in patients with epilepsy: Associations with seizure control and illness beliefs", Seizure 15, 2006, 504-508.
- Pushparaj HS, Ravishankar KN, Saroja AO, Punith K. "Quality of life in patients with epilepsy in India". Journal of Neurosciences in Rural Practice.2011 Jan -Jun, page no:33-38.
- Durugkar S, Gujjarlamudi HB, Sewliker N. "Quality of life in epileptic patients in doctor's perspective". International Journal of Nutrition, Pharmacology, Neurological Diseases Vol 4 Issue 1, 2014, 53-57.
- Sachchidanand P., Lalit S., Tanuja S., Sharma SK. "Prescribing Patterns of Anti-Epileptic Drug In Different Age Group in India". Journal of Drug Discovery and Therapeutics 1 (7), 2013, 69-75.
- Emanuela B., Camelia AC., Anca DB., Lacramioara P. "Assessment of quality of life in patients with epilepsy". International Journal of Bioflux Society. Volume 5 Issue 3, 2013.
- Hiwot G., Nezif HD., Sofia SA., Alinur AA., Mohammed AM. "Medication adherence in epilepsy and potential risk factors associated with non adherence in tertiary care teaching hospital in southwest Ethiopia". Gaziantep Medical Journal. 20(1), 2014, 59-65
- Shakirullah, Niaz A., Aslam k., Muhammad N. "The Prevalence, Incidence and Etiology of Epilepsy". International Journal of Clinical and Experimental Neurology, Vol. 2, No. 2, 2014, 29-39.
- Balamurugan E., Meena A., Anurag L., Nitika D., Manjari T. "Perceived trigger factors of seizures in persons with epilepsy". Seizure 22, 2013, 743-747.
- Sanjeev VT.,Samuel K.,Sudhakaran Nair CR., Shankara PS. "Frequent Seizures and Polytherapy can impair Quality of Life in Epilepsy Patients". Neurology India March vol 53 Issue 1, 2005, 45-50.
- Martins HH, Alonso BN, Guilho FF, Guaranha BS, Yacubian TM. Adherence to treatment in patients with juvenile myoclonic epilepsy: Correlation with QOL and ADR of medication. Journal of Epilepsy Clinical Neurophysiology 15(4), 2009, 192-6.
- Kanitpong P.,Alan G., Kitti L., Pornchai S., Suwanna S. "Quality of Life in Epileptic Patients in Southern Thailand". Journal of the Medical Association of Thailand. 92 (6), 2009, 762-9
- Chapman SCE.,Horne R., Chater A., Hukins D., Smithson W.H., "Patients' perspectives on antiepileptic medication: Relationships between beliefs about medicines and adherence among patients with epilepsy in UK primary care" S.C.E. Chapman et al. / Epilepsy & Behavior 31, 2014, 312-320.
- Ayswarya P., Sathesh K S., "A Prospective Study on Impact of Patient Counselling On Quality Of Life and Medication Adherence in Epileptic Patients". Asian Journal of Pharmaceutical and clinical Research. Vol 10, Issue 1, 2017.
- Vineetha. J. R., "A Study to Determine the Drug Compliance Among People with Epilepsy Attending the Follow up Clinic of SCTIMST" November(2011), page no:1-86.

Source of Support: Nil, **Conflict of Interest:** None.

