SREE CHITRA TIRUNAL INSTITUTE FOR MEDICAL SCIENCES AND TECHNOLOGY

THIRUVANANTHAPURAM, KERALA

DETERMINANTS OF QUALITY OF LIFE AMONG PERSONS WITH EPILEPSY

Dissertation submitted in partial fulfilment of the rules and regulations for

Post- Doctoral Fellowship in Epilepsy

Sree Chitra Tirunal Institute for Medical Sciences and Technology

By

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DECLARATION

I, Dr. Soumya VC, hereby declare that this project was undertaken by me under the supervision of Dr Ashalatha Radhakrishnan, Professor and Head, R. Madhavan Nayar Center for Comprehensive Epilepsy Care, Department of Neurology, Sree Chitra Tirunal Institute for Medical Sciences and Technology.

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Date: 15-12-2021.

Dr. Soumya VC

Forwarded:

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INTRODUCTION

I. INTRODUCTION

Epilepsy is a chronic neurological disorder affecting all age groups. As per International League Against Epilepsy 2014 operational definition, epilepsy refers to at least two unprovoked (or reflex) seizures occurring >24 hours apart or one unprovoked (or reflex) seizure and probability of further seizures similar to general recurrence risk of at least 60% after two unprovoked seizures, over next 10 years[1]. Persons With epilepsy (PWE) have poorer quality of life (QOL) in comparison to general population not only because of seizures, but also associated medical, psychiatric, and psychosocial comorbidities[2]. Impact of epilepsy on QOL is profound due to the adverse social, physical, and psychological consequences of epilepsy and its treatment. Various population-based studies conducted worldwide have identified factors affecting QOL among PWE[3-6]. Of these the major determinants include frequent seizures and polypharmacy[3]. Other identified factors include elderly age group, females[7], low level of education and coexistent anxiety or depression[7, 8].

Several validated scales are available which quantitatively measures the QOL of life in targeted populations with epilepsy. 31-item quality of life in epilepsy (QOLIE-31) inventory is widely used for PWE enrolled in drug trials, assessing well-being in 8 major domains of daily functioning. . The QOLIE-31 inventory has been validated in various languages across various continents[9-11]. However, systematic studies on QOLIE from low and middle-income countries (LMICs) continue to be sparse.

Though there are numerous studies assessing the QOL of people with epilepsy from all over the world. There is disproportionate burden of epilepsy among LMICs accommodating 80% of PWE worldwide[12]. The QOLIE seems to also be lower among PWE residing in LMICs.

A global comparison of QOLIE 31 scores across 194 countries listed by World Health Organisation (WHO) and have found a significant difference with respect to QOL between LMIC and high income countries(HIC)[13]. Mean QOLIE-31 score was 59.8±8.0 globally. On comparison across continents, the mean scores were 57.2±7.8 for African countries, 58.3 ±8.4 for Americas, 59.9±8.2 for Europe, 52.7±0.6 for Eastern Mediterranean, 59.7±8.1 for Southeast Asia and 62.7±6.1 for Western Pacific. A striking paucity was noted with respect to research in this aspect among the LMICs with only 2 hospital based observational studies reported from India[3, 14]. However, none of them have assessed the quality of life in terms of the individual domains contributing to QOL.

Hence, we conducted this study in order to assess the QOL in adult persons with epilepsy in our region using validated QOLIE 31 inventory. We attempted to assess the QOL in adult PWE and to identify the independent predictors of QOL, targeting on individual domains contributing to it. Any intervention to improve QOL among PWE can be targeted only if impairment in each of these domains is correctly identified.

REVIEW OF LITERATURE

II. REVIEW OF LITERATURE

As per World Health Organisation, **Quality of Life (QOL)** refers to a "state of complete physical, mental and social well-being and not merely the absence of disease or infirmity". The main components of QOL are physical health, psychological wellbeing, independence, social relationships, environment and spirituality, religion and personal beliefs. Chronic diseases, of which epilepsy is one among the commonest adversely affect QOL[15].

Anti Seizure Medications(ASMs) form the cornerstone in management of epilepsy and is the primary approach for achieving seizure control. However, seizure control is only one aspect of comprehensive management of PWE. Cognitive, physical and psychological factors have an equal impact on QOL and requires due consideration to improve QOL in PWE. Nearly 20% of PWE develop drug refractory epilepsy, often requiring intensive drug treatment especially if not surgically remediable[16]. Even in surgically remediable epilepsies, the impact of surgery on QOL is not fully evaluated and seizure relief might not always be accompanied by social and psychological improvement[17].

There is heterogeneity with respect to the scales used to assess the QOL among PWE across various studies. As early as 1990s, formal assessment of HR-QOL in epilepsy was provided, with the development of instruments such as Epilepsy Surgery Inventory (ESI-55), Quality of Life in Epilepsy (QOLIE) and the Liverpool HR-QOL Assessment Battery[18].The QOLIE: 31 was developed in effort to assess health related quality of life in drug trials enrolling PWE. Epilepsy Surgery Inventory (ESI- 55) and Short form– 36(SF-36) are used in the cohort of epilepsy surgery patients and for general purpose respectively.

QOLIE-31 is multi-item inventory to assess wellbeing in 7 domains: emotional well-being,

social function, energy-fatigue, cognitive function, seizure worry, medication effect and overall QOL. A weighted average of each of the multi-item scale scores gives the final QOL score. It also has a single item that measures overall health.

QOLIE-31 items were developed drawing 16 items from existing sources and 15 items de novo. The five-item emotional well-being and four-item energy/fatigue scales are identical to scales used in RAND-36 item health survey 1.0[19]. The 36 item measure was adapted from an observational study on variations in physician practice styles and patient outcomes referred to as the Medical Outcomes Study (MOS) [20].The QOLIE cognitive function and social function scales each contain 1 item incorporated from MOS instruments. There is an overall quality of life scale containing 1 item from a study on patient preferences[21] and one Dartmouth COOP chart[22]. One seizure worry item and one cognitive functioning item were originally developed for the epilepsy surgery 17 inventory-55[17]. The item on overall health was adapted from an existing visual analogue scale[23] and added subsequent to field testing of other 30 items.

A systematic review synthesising various observational studies on the QOL in PWE by C.J. Baranowski et al[24] concluded that there was no clear differences for overall QOL between older and younger people with epilepsy. Energy-fatigue was identified as the most negatively impacted factor among QOLIE sub-scores. Seizure frequency was a strong predictor of QOL and associated comorbidity and depression were moderate predictors for a poor quality of life.

Various hospital based observational studies have undermined the effect of polypharmacy on QOL. A prospective observational study of 122 PWE followed up for 12 months at a tertiary care centre in South Kerala has shown that frequent seizures and polypharmacy are the major determinants of poor QOL[3]. In this cohort ,12 patients were drug naïve at the time of

enrolment into study. The mean drug dose expressed as the ratio of prescribed daily dose and defined daily dose was lower at entry when compared to that at final follow up and 16.9% of patients reported adverse drug reactions. Patients who were on monotherapy had higher QOL (70.8 + 14.9) when compared to those who were on polytherapy (60.2 + 16.0) which was statistically significant ($p = 0.002$). A cross-sectional study conducted in a tertiary care teaching hospital from Northern India [14] showed mean total score of QOLIE-31 to be 64.61 with the score of cognitive and medication effect significantly better in carbamazepine group as compared to valproate group. It was concluded that patients on monotherapy had a better QOL as compared to patients receiving polytherapy.

Several recent studies have attempted to examine the relative contribution of anxiety symptoms to reduced QOL in PWE. In a study from Korea, anxiety was the most significant predictor of reduced HRQOL, explaining 27% of the variance compared with 12% for depression and 3% for seizure frequency[5]. Johnson and colleagues also examined the relative contribution of depression and anxiety to HRQOL in patients with temporal lobe epilepsy[25]. Depression and anxiety were independently associated with reduced QOL. The psychiatric co-morbidity explained more variance in QOL than combined groups of clinical seizure or demographic variables. The effect of psychological milieu on QOL among PWE is highlighted recently in a hospital-based cohort by the same authors[8]

Several multicentre studies have attempted to identify the strongest predictor of QOL among the various contributing factors identified. In the MEPSY trial of Korean population enrolling 702 PWE , the strongest predictor of the overall QOLIE-10 score was adverse effect profile of medications ($p < 0.001$), followed by depression ($p < 0.001$), seizure control ($p < 0.001$), household income ($p < 0.001$) and anxiety ($p = 0.005$)[5]. An Italian, multicenter cohort with

pharmacoresistant epilepsy identified adverse effects of AEDs as strongest predictor, followed by depression, pharmacoresistance, age and lack of driving license[26]. The hospital-based, Chinese cohort also reported the adverse effects of AEDs as the strongest predictor, followed by number of AEDs, depression and anxiety symptoms[27]. The hospital-based Russian study also identified seizure frequency to be the stronger predictor of QOL[28].

We propose that in addition to targeting seizure control with appropriate pharmacotherapy or surgical management, treating Physicians and Neurologists should also address the general physical, emotional, social and cognitive well being of PWE for a better QOL.

OBJECTIVES OF THE STUDY

III. OBJECTIVES OF THE STUDY

- To assess the QOL among PWE using validated QOLIE-31 inventory
- To identify the factors affecting QOL among PWE with regard to QOLIE-31 total scores and its sub-scores

MATERIALS AND METHODS

IV. MATERIALS AND METHODS:

A prospective study was conducted after obtaining written informed consent from patients. All consecutive patients aged 18 years or above diagnosed as Epilepsy as per ILAE 2017 definition attending the outpatient epilepsy clinics at R Madhavan Nayar Centre for Comprehensive Epilepsy Care, Sri Chitra Tirunal Institute for Medical Sciences and Technology, Thiruvananthapuram satisfying the inclusion and exclusion criteria were included in the study.

Inclusion criteria

All consecutive patients irrespective of gender socioeconomic or educational strata, aged 18 years or more, attending outpatient clinics satisfying the following were included in the study.

a) Refractory or non-refractory seizures

b) All types of epilepsy (focal or generalized)

c) On monotherapy or polytherapy

d) On AEDs irrespective of number

Exclusion criteria:

Following patients were excluded from the study.

1.Known major psychiatric illness with or without treatment

2.Any coexisting neurological or non-neurological illness which can contribute to neurosis or psychosis.

3.Patients with mental sub-normality with an Intelligent Quotient (IQ) less than 70

4. Pregnant women

Methodology

Patients were selected irrespective of the type of seizure, treatment received or response to medications. Baseline IQ assessment was done in them prior to enrolment.

Basic demographic data, clinical data including history, neurological examination, EEG, imaging (1.5T/3T MRI) findings, psychosocial data, medication details including compliance were obtained using structured questionnaire. The QOL was assessed measuring standardized QOLIE 31 inventory. QOLIE:31 has one visual analogue scale of overall QOL and 30 questions pertaining to 7 diverse aspects of epilepsy: a. Seizure worry (5,0-8) ,b. Overall QOL (2,0-14) c. Emotional well being (5,0-15) d. Energy or fatigue (4,0-12) e. Cognitive functioning (6,0-27) f. Medication effect (3,0-3) and g. Social function (5 ,0-21) The total score for 31 questions ranged from 0-100 with higher score indicating better QOL. The QOL was graded as bad (≤60), regular (61-70), good (71-80), very good (81-90) and excellent (91-100)

Statistical methods

The data was entered on to a spreadsheet and was analysed with SPSS version 25 software (SPSS Inc,Illinois,Chicago). Numerical variables were summarized as means and standard deviations. Independent t test and ANOVA were undertaken to examine relationship of various factors with QOL. A p value less than 0.05 was considered statistically significant. Multivariate logistic regression was used to evaluate the independent effect of the variable of interest on the outcome.

Ethical considerations

This registry has the approval of the Institutional Ethics Committee and informed consent was obtained from the patient or caregiver.

RESULTS

V. RESULTS

This hospital based prospective cohort study included 255 (145 males,110 females) PWE attending outpatient clinics at our centre. Of them 146 were seizure free and 109 were not seizure free. Majority of patients belonged to lower socioeconomic strata (143/255; 56.08%) . 214 patients had no antecedents prior to onset of epilepsy. Among the antecedents identified in the rest 41 patients, neonatal seizures were present in 10 (24.39%) followed by febrile seizures in 8(20%). The mean age at seizure onset was 18.50± 16.60 and the mean duration of epilepsy was 14.82±11.86 years with the mean seizure free duration being 2.68±3.99years. MRI was normal in 128 of the 203 patients in whom MRI was available for review. The mean number of antiseizure medications (ASM) in the study cohort was 2.13±1.15. The mean final QOLIE-31 scores in the study population is 61.85±19.34 which is in the regular QOL range. Majority (106/255,41.6%) had bad QOL in our study population. Table 1 shows the baseline characteristics of the study population

Figure 1: Distribution of Quality of Life categories in the study cohort

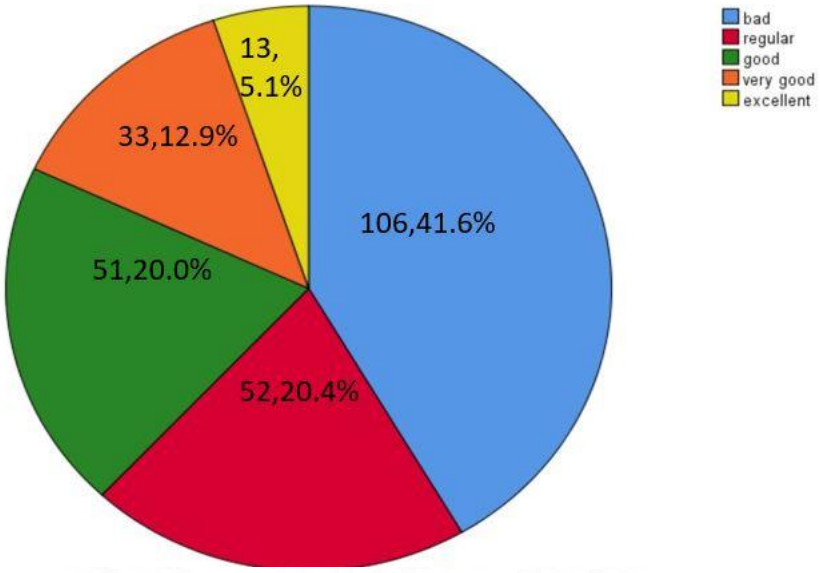


Table 1 : Baseline characteristics of the study population

Variable	Mean± SD / Number(%) (N=255)
Mean Age (in years)	33.65±13.83
Mean age at seizure onset (in years)	18.50±16.60
Mean duration of epilepsy (in years)	14.82±11.86
Mean number of ASMs	2.13±1.15
Male gender	145(56.86%)
Socioeconomic strata	
Upper class	2(0.78%)
Upper middle class	46(18.04%)
Lower middle class	64(25.10%)
Upper lower	140(54.90%)
Lower	3(1.18%)
Educational status	
Profession or Honors	5(1.96%)
Graduate	54(21.18%)
Intermediate or diploma	49(19.21%)
High school certificate	128(50.20%)
Middle school certificate	4(1.57%)
Primary school certificate	15(5.88%)
Illiterate	0(0.00%)
Occupational status	
Legislators, Senior Officials & Managers	32(12.55%)
Professionals	12(4.70%)
Technicians and Associate Professionals	4(1.57%)
Clerks	11(4.31%)
Skilled Workers and Shop & Market Sales Workers	49(19.22%)
Skilled Agricultural & Fishery Workers	11(4.31%)
Craft & Related Trade Workers	6(2.35%)
Plant & Machine Operators and Assemblers	23(9.02%)
Elementary Occupation	78(30.69%)
Unemployed	29(11.37%)
Income status	
≥123,322	1(0.39%)
61,663-123,321	1(0.39%)
46129-61,662	2(0.78%)
30,831-46,128	3(1.17%)
18,497-30,830	20(7.84%)
6,175-18,496	38(14.90%)
≤ 6174	190(74.51%)

Variable	Mean± SD / Number(%) (N=255)
Antecedents	
No	214(83.92%)
Congenital CNS malformation	8(3.14%)
Perinatal distress	5(1.96%)
Neonatal seizures	10(3.92%)
Febrile seizures	8(3.14%)
Encephalitis	5(1.96%)
Meningitis	3(1.17%)
Trauma	2(0.78%)
Type of Epilepsy	
Focal	174(68.24%)
Generalised	71(27.84%)
Focal and Generalised	10(3.92%)
MRI	
Normal	128(50.19%)
Abnormal	75(29.42%)
Not available	52(20.39%)
Seizure freedom	
Yes	146(57.25%)
No	109(42.75%)
Surgery	
Yes	25(9.80%)
No	230(90.20%)
QOLIE scores	
Mean seizure worry subscore	5.07±2.33
Mean overall QOL subscore	8.53±3.22
Mean emotional subscore	9.06±3.34
Mean energy-fatigue subscore	7.25±2.87
Mean cognitive function subscore	16.75±7.00
Mean medication effect subscore	1.62±0.85
Mean social function subscore	13.57±5.44
Mean final QOLIE 31 score	61.85±19.34

Univariate regression analysis found higher educational and occupational status, socioeconomic scale of lower middle class or above, focal epilepsy, no antecedents, ≤3 ASMs and seizure freedom irrespective of medical or surgical management were significantly associated with a higher final QOLIE-31scores.

Following this multivariate logistic regression analysis was performed using antecedents, occupation, education, socioeconomic status, type of epilepsy, imaging findings, seizure freedom and number of antiepileptic medications as independent variables and gender, surgical management, duration of epilepsy as covariates. We found that absence of antecedents , longer seizure free duration and use of <3 ASMs were significantly associated with a better final QOL (Table 2).

Table 2: Analysis of factors affecting final QOLIE

Variable	Mean final QOLIE 31 ± Standard Deviation (n=255)	Univariate analysis p value	Multivariate analysis p value
Gender			
Male	59.93±19.28	0.069	0.084
Female	64.37±19.21		
Education			
Graduate	68.37±16.62		
High school and diploma	61.71±19.00	<0.001	0.134
Primary and Middle School	44.18±19.20		
Occupation			
Legislators, Senior Officials, Professionals	67.52±15.22		
Clerks and Skilled workers	63.30±20.49	0.022	0.493
Elementary occupation	58.77±18.78		
Unemployed	55.73±20.51		
Socioeconomic strata			
Upper class	51.28±24.80		
Upper middle class	68.26±16.01		
Lower middle class	65.95±19.66	<0.001	0.418
Upper lower	58.84±18.83		
Lower	23.59±13.55		

Antecedents			
Yes	49.42±22.00	<0.001	**<0.001**
No	64.23±17.88		
Type of Epilepsy			
Focal	63.89±18.42		
Generalised	58.25±20.75	0.029	0.143
Focal and Generalised	51.87±19.74		
MRI			
Normal	63.80±19.14	0.061	0.608
Abnormal	58.46±20.07		
Number of ASMs			
0	64.02±14.00		
1	70.59±15.09		
2	62.55±19.83	<0.001	**<0.001**
3	53.93±18.30		
4 or more	49.72±20.29		
Seizure freedom			
Yes	64.28±18.15	0.020	0.317
No	58.60±20.46		
Surgery			
Yes	64.16±20.74	0.531	0.851
No	61.60±19.21		

We also attempted to identify the factors associated with QOL in relation to each of the 7 domains contributing to final QOL. Table 3 shows results of analysis of factors affecting seizure worry among PWE. Absence of antecedents, less than 3 antiepileptic medications and seizure freedom were the independent predictors of a better seizure worry sub-score.

Table 3: Analysis of factors affecting seizure worry

Variable	Mean final QOLIE 31 score ± Standard Deviation (n=255)	Univariate analysis p value	Multivariate analysis p value
Gender			
Male	5.00±2.24	0.458	0.464
Female	5.16±2.44		
Education			
Graduate	5.88±1.72		
High school and diploma	4.90±2.40	0.546	0.067
Primary and Middle School	4.18±2.67		
Occupation			
Legislators, Senior Officials &	5.63±1.77		
Professionals Clerks and Skilled	5.08±2.36	0.177	0.902
workers	4.86±2.46		
Elementary occupation	4.62±2.56		
Unemployed			
Socioeconomic strata			
Upper class	4.11±3.85		
Upper middle class	5.70±1.81		
Lower middle class	5.39±2.30	0.209	0.409
Upper lower	4.80±2.40		
Lower	1.40±1.88		
Antecedents			
Yes	5.31±2.21	0.231	**0.001**
No	3.80±2.56		
Type of Epilepsy			
Focal	5.19±2.30		
Generalised	4.85±2.35	0.044	0.570
Focal and Generalised	4.43±2.71		
MRI			
Normal	5.44±2.26	0.050	0.059
Abnormal	4.38±2.38		
Number of ASMs			
0	6.07±2.08		
1	5.99±1.96	0.246	**0.005**
2	5.16±1.92		
3	4.23±2.71		
4 or more	3.65±2.36		

Seizure freedom Yes No	 5.51±2.20 4.46±2.36	0.128	**0.018**
Surgery Yes No	 5.03±2.48 5.07±2.31	0.587	0.850

Focal epilepsy and less than 3 ASMs were the significant predictors of a better overall QOL

Table 4: Analysis of factors affecting overall QOL

Variable	**Mean final QOLIE 31 score ± Standard Deviation (n=255)**	**Univariate analysis p value**	**Multivariate analysis p value**
Gender Male Female	 8.12±3.24 9.08±3.14	0.217	0.054
Education Graduate High school and diploma Primary and Middle School	 9.19±3.01 8.55±3.10 6.46±4.09	0.033	0.175
Occupation Legislators, Senior Officials & Professionals Clerks and Skilled workers Elementary occupation Unemployed	 8.82±3.16 9.05±3.03 7.92±3.08 7.92±4.04	0.219	0.194
Socioeconomic strata Upper class Upper middle class Lower middle class Upper lower Lower	 9.27±2.23 9.01±3.28 9.12±3.10 8.19±3.18 3.73±3.23	0.311	0.159
Antecedents Yes No	 7.52±3.49 8.73±3.14	0.173	0.177
Type of Epilepsy Focal Generalised Focal and Generalised	 8.86±3.11 8.16±3.21 5.60±3.81	0.196	**0.005**
MRI Normal Abnormal	 8.54±3.46 8.61±2.99	0.051	0.185

Number of ASMs			
0	8.23±1.93		
1	9.23±3.02		
2	8.53±3.18	0.347	**0.050**
3	7.95±3.22		
4 or more	7.71±3.87		
Seizure freedom			
Yes	8.74±3.21	0.495	0.489
No	8.25±3.24		
Surgery			
Yes	8.87±3.35	0.707	0.363
No	8.50±3.22		

The major determinants of emotional function were absence of antecedents and < 3 ASMs.

Table 5: Analysis of factors affecting emotional function

Variable	**Mean final QOLIE 31 score ± Standard Deviation (n=255)**	**Univariate analysis p value**	**Multivariate analysis p value**
Gender			
Male	8.63±3.41	0.410	0.074
Female	9.62±3.18		
Education			
Graduate	9.69±2.95		
High school and diploma	9.19±3.34	0.013	0.142
Primary and Middle School	6.06±2.95		
Occupation			
Legislators, Senior	9.32±3.01		
Officials & Professionals	9.48±3.41	0.033	0.924
Clerks and Skilled workers	8.46±3.11		
Elementary occupation	8.80±4.10		
Unemployed			
Socioeconomic strata			
Upper class	7.50±0.43		
Upper middle class	9.48±2.82		
Lower middle class	9.86±3.58	0.094	0.769
Upper lower	8.70±3.27		
Lower	3.40±2.61		
Antecedents			
Yes	7.29±3.52	0.001	**<0.001**
No	9.40±3.21		
Type of Epilepsy			

Focal Generalised Focal and Generalised	9.35±3.26 8.43±3.52 8.43±3.07	0.520	0.304
MRI Normal Abnormal	 9.38±3.27 8.57±3.27	0.426	0.549
Number of ASMs 0 1 2 3 4 or more	 10.35±2.77 9.92±3.15 9.41±3.41 7.87±3.12 7.83±3.38	0.076	**0.033**
Seizure freedom Yes No	 9.37±3.15 8.64±3.55	0.546	0.229
Surgery Yes No	 9.65±3.35 9.00±3.34	0.637	0.587

PWE who belonged to middle class of socioeconomic strata, had an educational status of high school and above, had more than elementary occupation, had no antecedents and on less than 3 ASMs had a better energy-fatigue sub-score on univariate analysis. However none of these factors retained statistical significance on multivariate analysis (Table 6).

Table 6: Analysis of factors affecting energy-fatigue

Variable	**Mean final QOLIE 31 score ± Standard Deviation (n=255)**	**Univariate analysis p value**	**Multivariate analysis p value**
Gender Male Female	 7.28±3.21 7.20±2.37	0.486	0.420
Education Graduate High school and diploma Primary and Middle School	 7.68±2.14 7.28±3.05 5.69±2.61	0.036	0.190

Occupation			
Legislators, Senior Officials, Professionals	8.23±4.15	0.043	0.420
Clerks and Skilled workers	7.40±2.54		
Elementary occupation	6.76±2.28		
Unemployed	6.35±2.36		
Socioeconomic strata			
Upper class	5.10±1.27		
Upper middle class	8.34±4.21		
Lower middle class	7.93±2.46	0.001	0.420
Upper lower	6.68±2.26		
Lower	3.33±2.89		
Antecedents			
Yes	6.29±2.69	0.009	0.069
No	7.43±2.88		
Type of Epilepsy			
Focal	7.49±3.06		
Generalised	6.76±2.27	0.122	0.465
Focal and Generalised	6.36±2.91		
MRI			
Normal	7.23±2.33	0.639	0.920
Abnormal	7.19±3.83		
Number of ASMs			
0	7.95±1.24		
1	8.03±3.39		
2	7.49±2.52	0.029	0.072
3	6.32±2.33		
4 or more	6.03±2.49		
Seizure freedom			
Yes	7.43±2.09	0.157	0.645
No	6.99±3.66		
Surgery			
Yes	7.83±2.05	0.863	0.537
No	7.18±2.94		

Univariate analysis of factors affecting cognitive function among PWE showed that higher than elementary occupation, focal epilepsy, normal MRI and absence of antecedents were

associated with a better QOL in them. Absence of antecedents and less than 3 ASMs were independent predictors of better cognitive function on multivariate analysis (Table 7).

Table 7: Analysis of factors affecting cognitive function

Variable	Mean final QOLIE 31 score ± Standard Deviation (n=255)	Univariate analysis p value	Multivariate analysis p value
Gender			
Male	16.16±7.13	0.450	0.094
Female	17.52±6.77		
Education			
Graduate	18.24±6.04		
High school and diploma	16.92±6.96	0.204	0.227
Primary and Middle School	10.89±7.32		
Occupation			
Legislators, Senior Officials &	18.48±6.14		
Professionals Clerks and Skilled	16.86±7.34	0.052	0.387
workers	16.32±7.02		
Elementary occupation	14.62±6.67		
Unemployed			
Socioeconomic strata			
Upper class	13.91±2.62		
Upper middle class	19.57±5.70		
Lower middle class	17.06±7.07	0.288	0.616
Upper lower	14.32±7.04		
Lower	12.76±7.25		
Antecedents			
Yes	12.92±7.32	0.001	**<0.001**
No	17.48±6.70		
Type of Epilepsy			
Focal	17.48±6.62		
Generalised	15.40±7.74	0.011	0.272
Focal and Generalised	13.58±6.14		
MRI			
Normal	17.22±7.01	0.015	0.979
Abnormal	15.78±7.51		

Number of ASMs 0 1 2 3 4 or more	 13.91±2.62 19.58±5.70 17.06±7.07 14.32±7.05 12.76±7.25	0.185	**0.010**
Seizure freedom Yes No	 17.24±7.02 16.09±6.93	0.359	0.571
Surgery Yes No	 17.29±6.53 16.69±7.05	0.591	0.891

None among gender, antecedents, socioeconomic status, epilepsy type, imaging features, seizure freedom, surgical management or number of ASMs were found to significantly affect the medication effect scores in our study population.

Table 8: Analysis of factors affecting medication effect

Variable	**Mean final QOLIE 31 score ± Standard Deviation (n=255)**	**Univariate analysis p value**	**Multivariate analysis p value**
Gender Male Female	 1.62±0.84 1.64±0.85	0.201	0.462
Education Graduate High school and diploma Primary and Middle School	 1.84±0.84 1.58±0.84 1.43±0.87	0.144	0.616
Occupation Legislators, Senior Officials & Professionals Clerks and Skilled workers Elementary occupation Unemployed	 1.89±0.81 1.56±0.83 1.62±0.86 1.46±0.89	0.308	0.621

Socioeconomic strata			
Upper class	1.13±0.88		
Upper middle class	1.90±0.85		
Lower middle class	1.66±0.82	0.078	0.704
Upper lower	1.55±0.86		
Lower	0.44±0.42		
Antecedents			
Yes	1.32±0.86	0.239	0.102
No	1.68±0.83		
Type of Epilepsy			
Focal	1.66±0.84		
Generalised	1.59±0.87	0.418	0.805
Focal and Generalised	1.39±0.83		
MRI			
Normal	1.66±0.84	0.867	0.937
Abnormal	1.56±0.84		
Number of ASMs			
0	1.29±1.17		
1	1.91±0.80		
2	1.58±0.79	0.062	0.138
3	1.37±0.91		
4 or more	1.49±0.74		
Seizure freedom			
Yes	1.70±0.84	0.088	0.899
No	1.52±0.85		
Surgery			
Yes	1.63±0.83	0.960	0.482
No	1.64±0.96		

On analysing the factors associated with social function among persons with epilepsy, we found that presence of antecedents, higher educational status and being on monotherapy / off ASMs were significant on univariate analysis and absence of antecedents and less than 3 ASMs on multivariate analysis (Table 9).

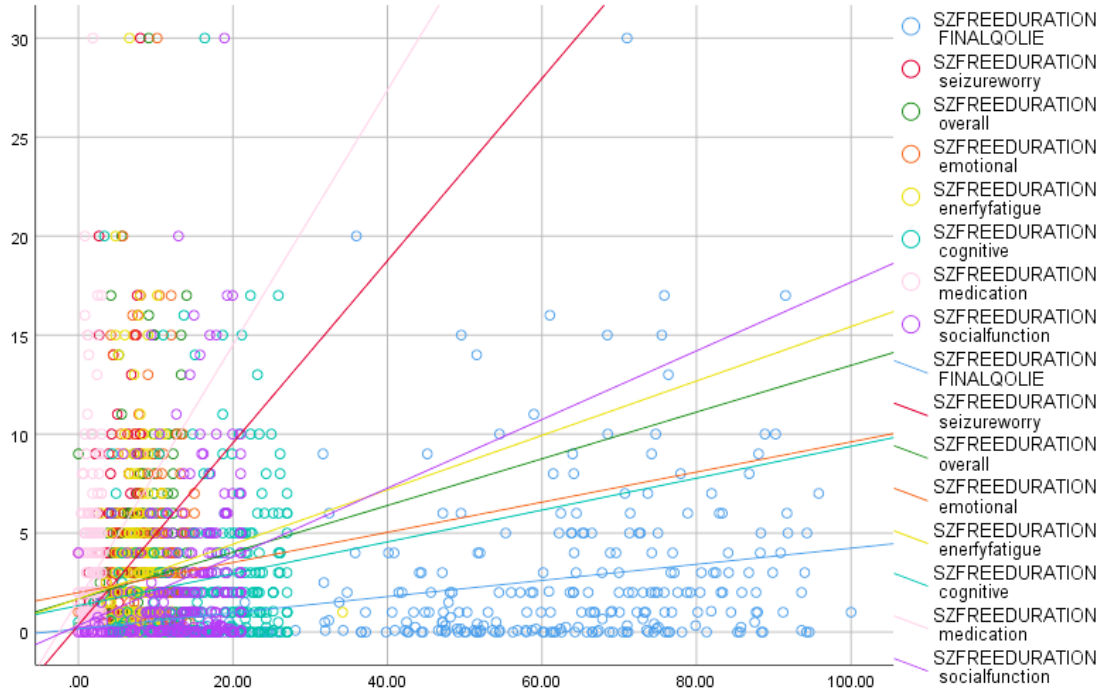
Table 9: Analysis of factors affecting social function

Variable	Mean final QOLIE 31 score ± Standard Deviation (n=255)	Univariate analysis p value	Multivariate analysis p value
Gender			
Male	13.12±5.48	0.876	0.298
Female	14.15±5.37		
Education			
Graduate	15.84±4.76		
High school and diploma	13.29±5.30	0.026	0.154
Primary and Middle School	9.46±5.84		
Illiterate			
Occupation			
Legislators, Senior Officials &	15.14±5.02		
Professionals Clerks and Skilled	13.87±5.68	0.426	0.677
workers	12.81±5.36		
Elementary occupation	11.95±4.94		
Unemployed			
Socioeconomic strata			
Upper class	10.08±10.08		
Upper middle class	15.12±5.46		
Lower middle class	14.72±5.25	0.340	0.677
Upper lower	12.70±5.29		
Lower	7.89±4.59		
Antecedents			
Yes	10.27±6.14	0.005	**<0.001**
No	14.20±5.08		
Type of Epilepsy			
Focal	13.86±5.27		
Generalised	13.07±5.87	0.110	0.819
Focal and Generalised	12.07±5.33		
MRI			
Normal	14.34±5.12	0.416	0.145
Abnormal	12.37±6.02		
Number of ASMs			
0	16.21±5.05		
1	15.93±4.44		
2	13.32±5.19	0.004	**0.001**
3	11.86±5.74		
4 or more	10.24±5.42		

Seizure freedom Yes No	 14.26±5.12 12.63±5.74	 0.255	 0.573
Surgery Yes No	 13.54±5.38 13.84±6.13	 0.999	 0.585

Also longer seizure free duration was associated with a better QOL (r= 0.197, p=0.002). We found that neither age of onset of epilepsy (r=0.025, p=0.695) nor duration of epilepsy(r=-0.55,p=0.386) had any bearing on QOL among PWE. The figure 2 given below depicts the correlation of seizure- free duration on QOLIE-31 and its components.

Figure 2 : Correlation plot of seizure free duration on QOLIE-31 and its components



Longer seizure free duration was significantly correlated with a better QOL with respect to seizure worry, cognitive function, medication effects and social function as shown in Table 10.

Table 10: Correlation between seizure free duration and QOLIE-31 and its subscores

QOLIE	Correlation coefficient	p value
Final QOLIE-31	0.197	**0.002**
Seizure worry subscore	0.268	**<0.001**
Overall QOL subscore	0.095	0.130
Emotional subscore	0.064	0.312
Energy fatigue subscore	0.099	0.116
Cognitive function subscore	0.141	**0.025**
Medication subscore	0.136	**0.030**
Social function subscore	0.236	**<0.001**

DISCUSSION

VI. DISCUSSION

We allocated 255 PWE attending the outpatient epilepsy clinic of our center and assessed their QOL using the questionnaire-based survey. This is the largest cohort from a single tertiary care referral center available in literature till date. All enrolled patients were permanent residents of Kerala and had Malayalam language as their mother tongue. Majority (56.86%) of patients were males. A sizeable 57.25% have attained seizure freedom at the time of assessment which reflects the standard of epilepsy care available in this part of Kerala. However, the mean QOL scores among PWE were only in the regular QOL range with 41.60% having a bad QOL which clearly reflects the unaddressed factors which adversely affects QOL despite having a fairly good control of seizures.

The mean final QOLIE-31 scores in the study population is 61.85±19.34 which is in the regular QOL range. Majority (106/255,41.6%) had bad QOL in our study population. The worst affected sub-score in this study population was medication effect. We found that the mean QOL in our cohort was higher than the global mean of 59.8 ± 8.0[13].The QOLIE-31 scores were superior to African (57.2±7.8), American (58.35±8.4), European (59.9±8.2) and for Southeast Asian (59.7±8.1) average[13].This is explained by better understanding of the disease and reduced social stigma among this subgroup of population which is well reflected by their higher level of education[29]. A striking finding in our cohort was that all PWE had a minimum of Primary School education and none were illiterate. A recently published systematic review of 10 studies (8 cross-sectional, 1 follow-up and 1 RCT) on elderly PWE found that energy-fatigue is the most adversely affected sub-score unlike found in our cohort[24] .This may be attributed to the heterogeneity of the studies analysed and the age group of patients who were assessed.

We assessed the factors determining the QOL among PWE in our cohort. Though univariate analysis found association of higher educational and occupational status, socioeconomic scale of lower middle class or above, focal epilepsy, absence of antecedents, ≤3 ASMs and seizure freedom to be strongly associated with a better QOL, only absence of antecedents, ≤3 ASMs retained statistical significance on multivariate analysis. Also, longer duration of seizure freedom were positively correlated with a better QOL. An observational study on 150 adolescents with epilepsy aged 13–19 years in Andhra Pradesh evaluated for QOL using the Quality of Life in Epilepsy Inventory for Adolescents (QOLIE) AD-48 questionnaire found seizure control, monotherapy, high school education to be associated with a better QOL[6].Another South Indian study on 68 PWE found that QOL was impaired in women, elderly, those with simple partial seizures and those with a recent seizure[30].A previous study from the same centre on 112 adults with epilepsy attempted to assess the effect of medications on QOL[3]. It was concluded that those on monotherapy had higher QOL (70.8 + 14.9) compared to those on polytherapy (60.2 + 16.0). Also, having a high seizure burden of 1 or more seizures per month was significantly associated with a poorer QOL. We found that age, gender, type of epilepsy, imaging findings, surgical management or duration of epilepsy have no bearing on QOL in our cohort.

On analyzing the predictors of QOL based on the component subscores, the strongest predictors of a better QOL identified were absence of antecedents and less than 3 ASMs. These 2 factors strongly predicted a superior QOL with respect to all domains except energy-fatigue and medication effect which are the 2 most negatively impacted components in our cohort. In addition, seizure freedom was associated with a superior seizure worry score and focal epilepsy with a better overall QOL. Longer duration of seizure freedom was significantly associated with a better social worry, cognitive function, medication effect and

social function sub-score. However, there is paucity of published literature on factors affecting individual domains of QOL.

The most important and the neglected aspect of epilepsy is the psychological milieu of PWE of which anxiety and depression are commonly associated with a poorer self-esteem and poorer QOL. The MEPSY study on 702 PWE assessed for QOL using QOLIE 10 inventory have brought forth the complex associations between depression, anxiety, seizure control, and adverse effects of AEDs in determining QOL[5].

The major highlight of this study is that this is the largest data available from South India on QOL among PWE. Unlike available studies, we have attempted to assess each component of QOL in detail so that targeting the domain where the patient is deficient helps in comprehensive management of PWE.

The limitation of this study is that it is a cross sectional study and there is no control group to compare the QOL and its various aspects. The psychological status of PWE, which is a major determinant of QOL is not addressed in this study.

CONCLUSIONS

VII. CONCLUSIONS

- Our study provides a comprehensive analysis of QOL among PWE using a multi-dimensional validated QOLIE-31 inventory.
- The mean QOL in our study population is higher than that of other LMIC which is attributable to a higher educational status in this part of the country.
- Medication effect was the most negatively impacted factor among the QOLIE-31 sub-scores
- Absence of antecedents, ≤3 ASMs and longer duration of seizure freedom are the most significant predictors of a better QOL.
- Among them, antecedents, ≤3 ASMs were the strongest predictors of all component domains of QOL except for energy-fatigue and medication effect.
- This study highlights the need for a multidisciplinary approach for PWE ,compared to a seizure reduction based approach to improve QOL.

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APPENDIX

a) ABBREVIATIONS

ILAE - International League Against Epilepsy

PWE – Persons with epilepsy

QOL – Quality Of Life

QOLIE – Quality Of Life In Epilepsy

HIC – High Income Countries

LMIC – Low-Middle Income Countries

SES-Socio-Economic Statua

ASM – Anti Seizure Medication

MRI - Magnetic resonance imaging

EEG – Electroencephalogram

b) QOLIE 31 QUESTIONNAIRE (English)

EPILEPSY CLINIC DEPARTMENT OF NEUROLOGY SREE CHITRA TIRUNAL INSTITUTE FOR MEDICAL SCIENCES AND TECHNOLOGY, TRIVANDRUM, 695011, INDIA	QUALITY OF LIFE IN EPILEPSY QOLIE: 31 VERSION 1.0 PATIENT INVENTORY
DATE	NAME H. NO. AGE:.....MALE/FEMALE

This questionnaire is about your health and daily routine. State your opinion by drawing a circle round the number of suitable answer.

If you do not know the correct answer to a question, you may select most appropriate answer and give an explanatory note.

You can take a helper to read out and fill up this questionnaire.

1. How much is the general quality of life of yours?
(Mark in this index)

10 9 8 7 6 5 4 3 2 1 0

[Excellent

Very poor
(Dying is better)

2. How long you were energetic?

1. Always
2. Most of the time
3. Frequently
4. Sometimes
5. Rarely

3. Are you anxious in matters regarding yourself?
1. Always
2. Most of the time
3. Frequently
4. Sometimes
5. Rarely
6. Never

4. Are you in the pit of despair? Is it that nothing could make you pleasant?
1. Always
2. Most of the time
3. Frequently
4. Sometimes
5. Rarely
6. Never

5. Do you feel peace and calmness?
1. Always
2. Most of the time
3. Frequently
4. Sometimes
5. Rarely
6. Never

6. Were you enthusiastic?
1. Always
2. Most of the time
3. Frequently
4. Sometimes
5. Rarely
6. Never

7. Did you feel much dejected and sad?
1. Always
2. Most of the time
3. Frequently
4. Sometimes
5. Rarely
6. Never

8. Did you feel much tiredness?
1. Always
2. Most of the time
3. Frequently
4. Sometimes
5. Rarely
6. Never

9. Were you so happy?
1. Always
2. Most of the time
3. Frequently
4. Sometimes
5. Rarely
6. Never

10. Were you feeling fatigue?
1. Always
2. Most of the time
3. Frequently
4. Sometimes
5. Rarely
6. Never

11. Did the thought of recurring fits trouble you?
1. Always
2. Most of the time
3. Frequently
4. Sometimes
5. Rarely
6. Never

12. Do you have problem in issue analysis and decision making? (that is to know new things and take decision or plans)
1. Always
2. Most of the time
3. Frequently
4. Sometimes
5. Rarely
6. Never

13. Had your health affected your social relations? (Visiting, relatives, marriages etc.)
1. Always
2. Most of the time
3. Frequently
4. Sometimes
5. Rarely
6. Never

14. Last one month how much fine was your life? (Generally how things went?)
1. Excellent, nothing can be more better
2. Fine
3. Equally good and bad
4. Difficult
5. Very difficult, nothing can be more worse

The questions below are related to memory ?

15. Last four weeks, did you face any problem due to deficiency of memory?
1. Yes, lot of problems
2. Yes, some
3. Few
4. No, nothing happened

Last four weeks, how many times you had memory loss? or indicate in below table, how lack of memory affect your normal life?

16. Is it difficult to store in memory things told by others?
1. Always
2. Most of the time
3. Frequently
4. Sometimes
5. Rarely
6. Never

Below given questions deal with your difficulty in attending or understanding matters. Mark in the index how far these difficulties affected you in daily life.

17. Is their difficulty to read with concentration?
1. Always
2. Most of the time
3. Frequently
4. Sometimes
5. Rarely
6. Never

18. Is their hindrance to doing things with deep attention?
1. Always
2. Most of the time
3. Frequently
4. Sometimes
5. Rarely
6. Never

Following questions are on obstacles you face on doing work, due to epilepsy and due to medicines?

19. How much block was faced while engaging in entertainment?
1. So much hindrance
2. Much hindrance
3. Some what
4. Small amount
5. Never

20. Driving, or travelling alone?
1. So much hindrance
2. Much hindrance
3. Some what
4. Small amount
5. Never

Following are questions on how do you feel yourself about epilepsy?

21. How far the thought that epilepsy will come within next month is troubling you?
1. Extremely fearing
2. Somewhat fearing
3. Small amount of fear
4. Never afraid

22. Are you afraid that your body will collapse on epileptic attack?
1. Much afraid
2. Some times
3. Least afraid

23. Recently (within one month) do you anticipate an epileptic fit, and some social issues following that?
Extremely fearing
2. Somewhat fearing
3. Small amount of fear
4. Never afraid

24. Are you afraid that long term use of your medicine will affect your body adversely?
Extremely fearing
2. Somewhat fearing
3. Small amount of fear
4. Never afraid

	Never disturbs				Extremely Disturbs
25. Epilepsy	1	2	3	4	5
26. Memory lapse	1	2	3	4	5
27. Hindrance to work	1	2	3	4	5
28. Social block	1	2	3	4	5
29. Physical side effect of medicines	1	2	3	4	5
30 Psychic side effect of medicines	1	2	3	4	5

QOLIE 31 QUESTIONNAIRE (Malayalam)

EPILEPSY CLINIC

DEPARTMENT OF NEUROLOGY

SREE CHITRA TIRUNAL INSTITUTE FOR MEDICAL SCIENCE AND TECHNOLOGY, TRIVANDRUM – 695 011. INDIA

QUALITY OF LIFE IN EPILEPSY

QOLIE: 31 VERSION: 1.0

PATIENT INVENTORY

DATE:

NAME :

H.NO. :

AGE : **MALE/FEMALE**

ഈ ചോദ്യാവലി നിങ്ങളുടെ ആരോഗ്യത്തെയും ദിനചര്യയെയും സംബന്ധിച്ചുള്ളതാണ്. അനുയോജ്യമായ ഉത്തരത്തിന്റെ നമ്പർ ഒരു വൃത്തം വരച്ച് നിങ്ങളുടെ അഭിപ്രായം രേഖപ്പെടുത്തുക.

ഒരു ചോദ്യത്തിന്റെ തക്കതായ ഉത്തരം രേഖപ്പെടുത്തുവാൻ അറിയില്ലെങ്കിൽ ഏറ്റവും യോജിച്ച ഉത്തരം രേഖപ്പെടുത്തിയിട്ട് ഒരു വിശദീകരണക്കുറിപ്പായി നൽകാവുന്നതാണ്.

ഈ ചോദ്യാവലി വായിച്ചുതരുന്നതിനും പൂരിപ്പിക്കുന്നതിനും ഒരു സഹായിയെ ഉപയോഗിക്കാവുന്നതാണ്.

1. നിങ്ങളുടെ ജീവിതത്തിന്റെ പൊതുവായ മേന്മ എത്രമാത്രമുണ്ട്?
എന്ന് ഈ സൂചികയിൽ അടയാളപ്പെടുത്തുക.

10 9 8 7 6 5 4 3 2 1 0

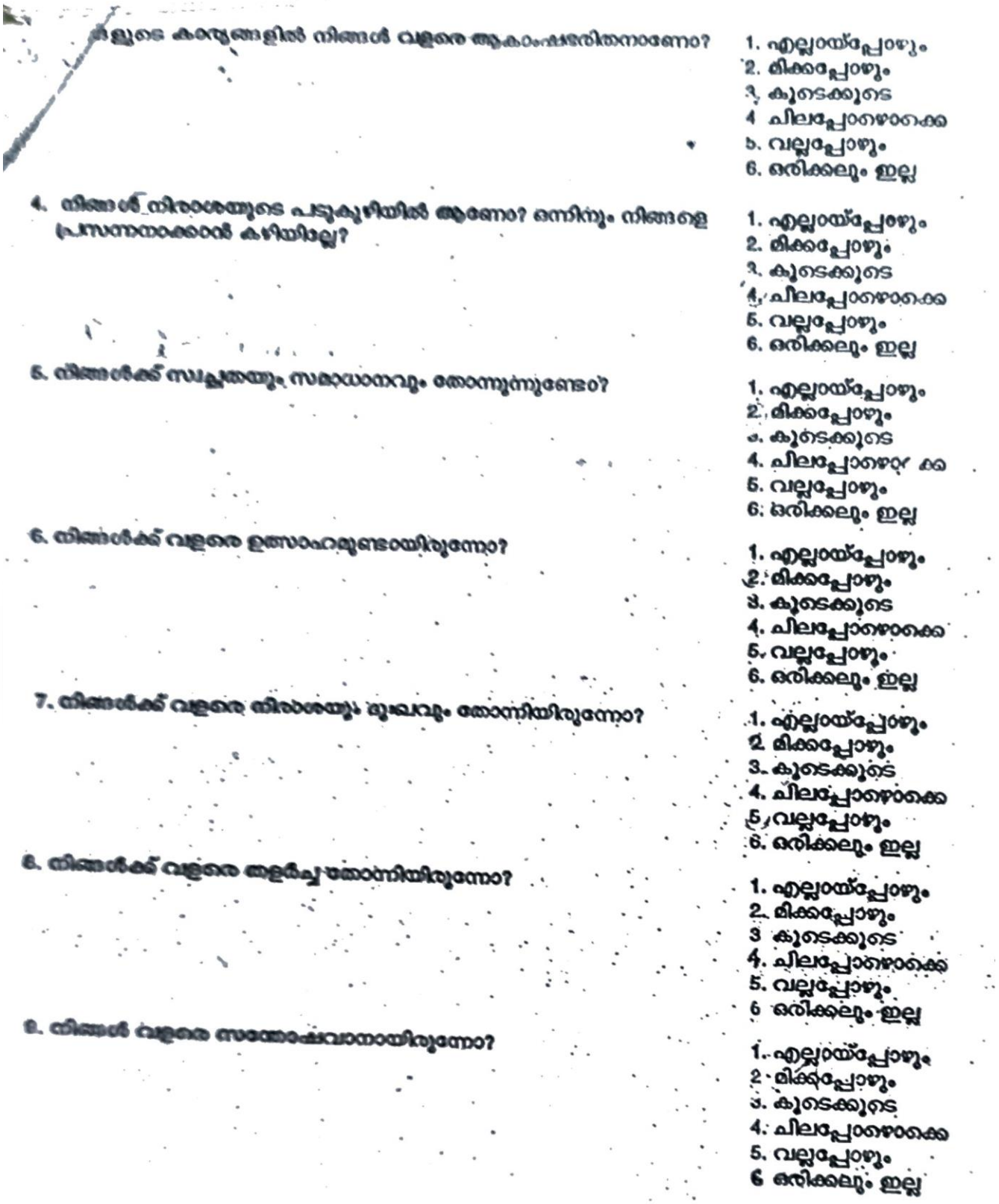
ഏറ്റവും മെച്ചമാണ് — വളരെ കഷ്ടമാണ് (മരിക്കുന്നതാണ് ഇതിലും ഭേദം)

കഴിഞ്ഞ ഒരു മാസം ജീവിതം നിങ്ങൾക്കെങ്ങനെ ഉണ്ടായിരുന്നു. ഇപ്പോൾ നിങ്ങൾക്കെങ്ങനെ തോന്നുന്നു. എന്നതിനെ സംബന്ധിച്ച കാര്യങ്ങളാണ് താഴെയുള്ള ചോദ്യങ്ങൾ.

2. എത്ര സമയം നിങ്ങൾ ഉന്മേഷവാനായിരുന്നു?

1. എല്ലായ്പ്പോഴും
2. മിക്കപ്പോഴും
3. കൂടെക്കൂടെ
4. ചിലപ്പോഴൊക്കെ
5. വല്ലപ്പോഴും

[Type text]



ളുടെ കാര്യങ്ങളിൽ നിങ്ങൾ വളരെ ആകാംക്ഷയുള്ളവനാണോ?
1. എല്ലായ്പ്പോഴും
2. മിക്കപ്പോഴും
3. കൂടെക്കൂടെ
4 ചിലപ്പോഴൊക്കെ
5. വല്ലപ്പോഴും
6. ഒരിക്കലും ഇല്ല

4. നിങ്ങൾ നിരാശയുടെ പടുകുഴിയിൽ ആണോ? ഒന്നിനും നിങ്ങളെ പ്രസന്നനാക്കാൻ കഴിയില്ല?
1. എല്ലായ്പ്പോഴും
2. മിക്കപ്പോഴും
3. കൂടെക്കൂടെ
4. ചിലപ്പോഴൊക്കെ
5. വല്ലപ്പോഴും
6. ഒരിക്കലും ഇല്ല

5. നിങ്ങൾക്ക് സ്വച്ഛതയും, സമാധാനവും തോന്നുന്നുണ്ടോ?
1. എല്ലായ്പ്പോഴും
2. മിക്കപ്പോഴും
3. കൂടെക്കൂടെ
4. ചിലപ്പോഴൊക്കെ
5. വല്ലപ്പോഴും
6. ഒരിക്കലും ഇല്ല

6. നിങ്ങൾക്ക് വളരെ ഉത്സാഹമുണ്ടായിരുന്നോ?
1. എല്ലായ്പ്പോഴും
2. മിക്കപ്പോഴും
3. കൂടെക്കൂടെ
4. ചിലപ്പോഴൊക്കെ
5. വല്ലപ്പോഴും
6. ഒരിക്കലും ഇല്ല

7. നിങ്ങൾക്ക് വളരെ നിരാശയും, മുഷിവും തോന്നിയിരുന്നോ?
1. എല്ലായ്പ്പോഴും
2. മിക്കപ്പോഴും
3. കൂടെക്കൂടെ
4. ചിലപ്പോഴൊക്കെ
5. വല്ലപ്പോഴും
6. ഒരിക്കലും ഇല്ല

8. നിങ്ങൾക്ക് വളരെ തളർച്ച തോന്നിയിരുന്നോ?
1. എല്ലായ്പ്പോഴും
2. മിക്കപ്പോഴും
3 കൂടെക്കൂടെ
4. ചിലപ്പോഴൊക്കെ
5. വല്ലപ്പോഴും
6 ഒരിക്കലും ഇല്ല

9. നിങ്ങൾ വളരെ സന്തോഷവാനായിരുന്നോ?
1. എല്ലായ്പ്പോഴും
2 മിക്കപ്പോഴും
3. കൂടെക്കൂടെ
4. ചിലപ്പോഴൊക്കെ
5. വല്ലപ്പോഴും
6 ഒരിക്കലും ഇല്ല

10. നിങ്ങൾക്ക് ക്ഷീണമുണ്ടായിരുന്നോ?

1. എല്ലായ്പ്പോഴും
2. മിക്കപ്പോഴും
3. കൂടെക്കൂടെ
4. ചിലപ്പോഴൊക്കെ
5. വല്ലപ്പോഴും
6. ഒരിക്കലും ഇല്ല

11. ഇനിയും ഒരു സന്നിയുണ്ടാകും എന്ന ചിന്ത നിങ്ങളെ അലട്ടിയിരുന്നോ?

1. എല്ലായ്പ്പോഴും
2. മിക്കപ്പോഴും
3. കൂടെക്കൂടെ
4. ചിലപ്പോഴൊക്കെ
5. വല്ലപ്പോഴും
6. ഒരിക്കലും ഇല്ല

12. പ്രശ്നങ്ങൾ അപഗ്രഥിച്ച് അനുയോജ്യമായ തീരുമാനങ്ങൾ എടുക്കുന്നതിന് നിങ്ങൾക്ക് പ്രയാസമുണ്ടോ?
(അതായത് പുതിയ കാര്യങ്ങൾ മനസ്സിലാക്കുക. തീരുമാനങ്ങൾ എടുക്കുക. രൂപരേഖയുണ്ടാക്കുക ഇങ്ങനെ)

1. എല്ലായ്പ്പോഴും
2. മിക്കപ്പോഴും
3. കൂടെക്കൂടെ
4. ചിലപ്പോഴൊക്കെ
5. വല്ലപ്പോഴും
6. ഒരിക്കലും ഇല്ല

13. നിങ്ങളുടെ ആരോഗ്യം നിങ്ങളുടെ സാമൂഹിക ബന്ധങ്ങളെ ബാധിച്ചിട്ടുണ്ടോ? (ബന്ധുക്കളെ സന്ദർശിക്കുക, വിവാഹങ്ങളിലും മറ്റും പങ്കെടുക്കുക)

1. എല്ലായ്പ്പോഴും
2. മിക്കപ്പോഴും
3. കൂടെക്കൂടെ
4. ചിലപ്പോഴൊക്കെ
5. വല്ലപ്പോഴും
6. ഒരിക്കലും ഇല്ല

14. കഴിഞ്ഞ ഒരു മാസം നിങ്ങളുടെ ജീവിതം എത്രമാത്രം കേമമായിരുന്നു?
(അതായത് പൊതുവെ കാര്യങ്ങൾ എങ്ങിനെയുണ്ടായിരുന്നു?)

1. വളരെ നന്നായിരുന്ന് ഇതിലും കേമമാകാനില്ല
2. കേമമായിരുന്നു.
3. നല്ലതും ചീത്തയും ഏതാണ്ട് സമാസമം
4. കഷ്ടമായിരുന്നു
5. തീരെ കഷ്ടമായിരുന്നു ഇതിലും മോശമാകാനില്ല

താഴെയുള്ളചോദ്യങ്ങൾ ഓർമ്മയെ സംബന്ധിച്ചുള്ളതാണ്

15. കഴിഞ്ഞ നാല് ആഴ്ച നിങ്ങൾക്ക് ഓർമ്മക്കുറവ്കൊണ്ട് എന്തെങ്കിലും പ്രശ്നങ്ങളുണ്ടായോ?

1. ഉവ്വ്, വളരെ പ്രശ്നങ്ങളുണ്ടായി
2. ഉവ്വ്, കുറെയൊക്കെ
3. അല്പമാകെ
4. ഇല്ല, അശേഷം ഉണ്ടായില്ല

കഴിഞ്ഞ നാല് ആഴ്ചകളിൽ എത്രപ്രാവശ്യം നിങ്ങൾക്ക് ഓർമ്മക്കുറവ് ഉണ്ടായി?

അഥവാ ഓർമ്മക്കുറവ് നിങ്ങളുടെ സാധാരണ ജീവിതത്തെ എങ്ങനെ ബാധിച്ചു എന്ന് താഴെ കൊടുത്തിരിക്കുന്ന സൂചികയിൽ അടയാളപ്പെടുത്തുക.

ുള്ളവർ പറയുന്ന കാര്യങ്ങൾ ഓർമ്മയിൽ വയ്ക്കുന്നതിന് ത്യാസമുണ്ടോ?

1. എല്ലായ്പ്പോഴും
2. മിക്കപ്പോഴും
3 കൂടെക്കൂടെ
4. ചിലപ്പോഴൊക്കെ
5 വല്ലപ്പോഴും.
6. ഒരിക്കലും ഇല്ല

താഴെയുള്ള ചോദ്യങ്ങൾ നിങ്ങൾക്ക് കാര്യങ്ങൾ ശ്രദ്ധിച്ച് ഗ്രഹിക്കുന്നതിന് അഥവാ മനസ്സിലാക്കുന്നതിനുള്ള പ്രയാസത്തോട് ബന്ധപ്പെട്ടുള്ളതാണ്. ദൈനംദിന ജീവിതത്തിൽ ഈ ബുദ്ധിമുട്ടുകൾ നിങ്ങളെ എത്രമാത്രം ബാധിച്ചു എന്ന് താഴെ കൊടുത്തിരിക്കുന്ന സൂചികയിൽ രേഖപ്പെടുത്തുക.

17. ശ്രദ്ധകേന്ദ്രികരിച്ച് വായിക്കുന്നതിന് തടസ്സമുണ്ടോ?

1. എല്ലായ്പ്പോഴും
2. മിക്കപ്പോഴും
3. കൂടെക്കൂടെ
4. ചിലപ്പോഴൊക്കെ
5. വല്ലപ്പോഴും
6 ഒരിക്കലും ഇല്ല

18. കാര്യങ്ങൾ ഏകാഗ്രതയോടെ ചെയ്യുന്നതിന് തടസ്സമുണ്ടോ?

1. എല്ലായ്പ്പോഴും
2. മിക്കപ്പോഴും
3. കൂടെക്കൂടെ
4. ചിലപ്പോഴൊക്കെ
5. വല്ലപ്പോഴും
6. ഒരിക്കലും ഇല്ല

ചില പ്രവർത്തികളിൽ ഏർപ്പെടുന്നതിന് അപസ്മാരവും അതിനുള്ള മരുന്നുകളും മൂലം നിങ്ങൾക്കുണ്ടായിട്ടുള്ള തടസ്സങ്ങളെ സംബന്ധിച്ചുള്ള ചോദ്യങ്ങളാണ് താഴെ കൊടുത്തിരിക്കുന്നത്.

19. ഉല്ലാസ പ്രവർത്തികളിൽ ഏർപ്പെടുന്നതിന് എത്രത്തോളം വിഘാതം ഉണ്ടാക്കിയിട്ടുണ്ട്?

1 വളരെയധികം തടസ്സമായി
2. വളരെ തടസ്സമായി
3. കുറെയൊക്കെ
4. കുറച്ചുമാത്രം
5. നിശേഷം തടസ്സമായില്ല.

20. ഡ്രൈവിംഗ് അഥവാ ഒറ്റയ്ക്ക് യാത്ര ചെയ്യുന്നതിന്?

1. വളരെയധികം തടസ്സമായി
2. വളരെ തടസ്സമായി
3. കുറെയൊക്കെ
4. കുറച്ചുമാത്രം
5. നിശേഷം തടസ്സമായില്ല.

താഴെയുള്ള ചോദ്യങ്ങൾ നിങ്ങളുടെ സന്നി നിങ്ങൾക്ക് എങ്ങനെ തോന്നുന്നു എന്നതിനെക്കുറിച്ചാണ്:

21. അടുത്ത ഒരു മാസത്തിനുള്ളിൽ വീണ്ടും സന്നിയുണ്ടാകും എന്ന ചിന്ത നിങ്ങളെ എത്രത്തോളം അലട്ടുന്നുണ്ട്?

1. വളരെയധികം ഭയമുണ്ട്
2. കുറെയാക്കെ ഭയമുണ്ട്
3 അല്പം ഭയമുണ്ട്
4. അശേഷം ഭയമില്ല

22. സന്നിയുണ്ടാകുമ്പോൾ നിങ്ങൾക്ക് ശരീരഹാനിവരുത്തുമെന്നു ഭയമുണ്ടോ?
1. വളരെ ഭയമുണ്ട്
2. ചിലപ്പോഴൊക്കെ ഭയമുണ്ട്
3. തെല്ലും ഭയമില്ല

23. അടുത്തൂർന്ന (ഒരു മാസത്തിനുള്ളിൽ) ഒരു സന്നിയുണ്ടായിട്ട് എന്തെങ്കിലും സാമൂഹിക പ്രശ്നങ്ങൾ അല്ലെങ്കിൽ മറ്റ് ബുദ്ധിമുട്ടുകൾ ഉണ്ടാകും എന്ന ചിന്തയുണ്ടോ?
1. വളരെ ഭയമുണ്ട്
2. കുറെയൊക്കെ ഭയമുണ്ട്
3. അത്രയ്ക്ക് ഭയമില്ല
4 അശേഷം ഭയമില്ല

24. നിങ്ങളുടെ മരുന്നുകൾ ദീർഘകാലം ഉപയോഗിക്കുമ്പോൾ ശരീരത്തിന് ഹാനികരമാകുമെന്ന് ഭയമുണ്ടോ?
1. വളരെ ഭയമുണ്ട്
2. കുറെയൊക്കെ ഭയമുണ്ട്
3. അത്രയ്ക്ക് ഭയമില്ല
4. അശേഷം ഭയമില്ല

താഴെക്കൊടുത്തിരിക്കുന്ന പ്രശ്നങ്ങൾ നിങ്ങളെ എത്രമാത്രം അലട്ടുന്നു എന്ന് ഒപ്പം കൊടുത്തിരിക്കുന്ന സൂചികയിൽ അടയാളപ്പെടുത്തുക:

	അശേഷം അലട്ടുന്നില്ല			വളരെയധികം അലട്ടുന്നു	
25. സന്നി	1	2	4	4	5
26. ഓർമക്കുറവ്	1	2	4	4	5
27. ജോലിക്കുള്ള തടസ്സം	1	2	4	4	5
28. സാമൂഹിക തടസ്സം	1	2	4	4	5
29. മരുന്നിന്റെ ശാരീരിക പാർശ്വഫലം	1	2	4	4	5
30. മരുന്നിന്റെ മാനസിക പാർശ്വഫലം	1	2	4	4	5

c) ETHICS COMMITTEE CLEARANCE LETTER

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Institutional Ethics Committee
(IEC Regn No. ECR/189/Inst/KL/2013/RR-16)

SCT/IEC/1186/JUNE-2018 29.06.2018

Dr. Soumya VC
Senior Resident
Department of Neurology
SCTIMST, Thiruvananthapuram

Dear Dr. Soumya,

The Institutional Ethics Committee reviewed and discussed your application to conduct the study entitled "EFFECT OF SEIZURE VIEWING ON PSYCHOLOGICAL OUTCOME AMONG PATIENTS WITH EPILEPSY" (IEC/1186)" on 16th June, 2018.

The following documents were reviewed:

Original submission

1. *Covering letter addressed to the Member Secretary, IEC, SCTIMST dated 21.05.2018 with check list*
2. *TAC Approval Letter*
3. *IEC Application Form*
4. *Project Proposal*
5. *Proforma*
6. *Questionnaires*
7. *Patient Information Sheet and Consent Form in English and Malayalam*
8. *CV of Principal Investigator and Co-Principal Investigators*

Revised submission

1. *Covering letter addressed to the Mala Ramanathan, Member Secretary, IEC, SCTIMST dated 27.06.2018*
2. *TAC Approval Letter*
3. *IEC Application Form*
4. *Project Proposal*
5. *Proforma*
6. *Questionnaires*
7. *Patient Information Sheet and Consent Form in English and Malayalam*
8. *CV of Principal Investigator and Co-Principal Investigators*

The following members of the Ethics Committee were present at the meeting held on 16th June, 2018 at Noshir H Wadia Conference Hall, AMCHSS, SCTIMST

SL No	Member Name	Highest Degree	Gender	Scientific /Non Scientific	Affiliation with Institution(s)
1.	Dr. R V G Menon	M Tech, PhD	Male	Lay Person (Chairman)	No
2.	Dr. Rema M. N	MD	Female	Basic Medical Scientist	No
3.	Dr. Kala Kesavan. P	MBBS, MD	Female	Basic Medical Scientist	No
4.	Dr. K R S Krishnan	M.E., Ph.D.	Male	Medical Technology	Yes
5.	Dr. S S Giri Sankar	LL.M. Ph.D.	Male	Legal Expert	No
6.	Dr. Aneesh V Pillai	BA. LLB (Hons.), LL.M, Ph. D, SET (Law)	Male	Legal Expert	No
7.	Mr. Satheesh Chandran	MSW, PGDPM	Male	Lay person/ NGO/ Social Scientist	No
8.	Dr. Harikrishna Varma PR	Ph.D(Materials Science)	Male	Medical Technology	Yes
9.	Dr. P. Manickam	BSMS, MSc (Epid).,PhD	Male	Health Science Expert/ Social Scientist	No
10.	Smt. Sathi Nair	MA (English Literature)	Female	Lay Person	No
11.	Dr. Christina George	MD Psychiatry	Female	Clinician	No
12.	Dr. Harikrishnan S	MD, DM (Cardiology) DNB (Cardiology)	Male	Clinician	Yes
13.	Dr. Anand Kumar A	MD, DM	Male	Clinician	No
14.	Dr. V. Raman Kutty	M D, M Phil, M P H	Male	Health Sciences Expert/Clinician	Yes
15.	Dr. Mala Ramanathan	PhD	Female	Social Scientist (Member Secretary)	Yes

IEC Decision

The IEC approved the conduct of the study in the present form.

Remarks:
The Institutional Ethics Committee expects to be informed about the progress of the study, any SAE occurring in the course of the study, any changes in the protocol and patient information/informed consent and asks to be provided a copy of the final report.

There was no member of the study team who participated in voting / decision making process. The ethics committee is organized and operated according to the requirements of Good Clinical Practice and the requirements of the Indian Council of Medical Research (ICMR).

Sincerely,

Mala Ramanathan
Member Secretary, IEC

d) PLAGIARISM CHECK REPORT

PLAGIARISM SCAN REPORT

Words	427	Date	December 15, 2021
Characters	2959	Excluded URL	

0%	100%	0	21
Plagiarism	Unique	Plagiarized Sentences	Unique Sentences

Content Checked For Plagiarism

Epilepsy is a chronic neurological disorder affecting all age groups. As per International League Against Epilepsy 2014 operational definition, epilepsy refers to at least two unprovoked (or reflex) seizures occurring >24 hours apart or one unprovoked (or reflex) seizure 1. Persons With epilepsy (PWE) have poorer quality of life (QOL) in comparison to general population not only because of seizures, but also associated medical, psychiatric, and psychosocial comorbidities2. Impact of epilepsy on QOL is profound due to the adverse social, physical, and psychological consequences of epilepsy and its treatment. Various population-based studies conducted worldwide have identified factors affecting QOL among PWE3-6. Of these the major determinants include frequent seizures and polypharmacy3. Other identified factors include elderly age group, females7, low level of education and coexistent anxiety or depression7, 8.

Several validated scales are available which quantitatively measures the QOL of life in targeted populations with epilepsy. 31-item quality of life in epilepsy (QOLIE-31) inventory is widely used for PWE enrolled in drug trials, assessing well-being in 8 major domains of daily functioning. . The QOLIE-31 inventory has been validated in various languages across various continents9-11. However, systematic studies on QOLIE from low and middle-income countries (LMICs) continue to be sparse.

Though there are numerous studies assessing the QOL of people with epilepsy from all over the world. There is disproportionate burden of epilepsy among LMICs accommodating 80% of PWE worldwide12. The QOLIE seems to also be lower among PWE residing in LMICs.

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A global comparison of QOLIE 31 scores across 194 countries listed by World Health Organisation (WHO) and have found a significant difference with respect to QOL between LMIC and high income countries(HIC)13. Mean QOLIE-31 score was 59.8Â±8.0 globally. On comparison across continents, the mean scores were 57.2Â±7.8 for African countries, 58.3 Â±8.4 for Americas, 59.9Â±8.2 for Europe, 52.7Â±0.6 for Eastern Mediterranean, 59.7Â±8.1 for Southeast Asia and 62.7Â±6.1 for Western Pacific. A striking paucity was noted with respect to research in this aspect among the LMICs with only 2 hospital based observational studies reported from India3, 14. However, none of them have assessed the quality of life in terms of the individual domains contributing to QOL.

Hence, we conducted this study in order to assess the QOL in adult persons with epilepsy in our region using validated QOLIE 31 inventory. We attempted to assess the QOL in adult PWE and to identify the independent predictors of QOL, targeting on individual domains contributing to it. Any intervention to improve QOL among PWE can be targeted only if impairment in each of these domains is correctly identified.

PLAGIARISM SCAN REPORT

Words	979	Date	December 15, 2021
Characters	6824	Excluded URL	

10%	90%	5	45
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As per World Health Organisation, Quality of Life (QOL) refers to a â€œstate of complete physical, mental and social well-being and not merely the absence of disease or infirmityâ€. The main components of QOL are physical health, psychological wellbeing, independence, social relationships, environment and spirituality, religion and personal beliefs. Chronic diseases, of which epilepsy is one among the commonest adversely affect QOL15.

Anti Seizure Medications(ASMs) form the cornerstone in management of epilepsy and is the primary approach for achieving seizure control. However, seizure control is only one aspect of comprehensive management of PWE. Cognitive, physical and psychological factors have an equal impact on QOL and requires due consideration to improve QOL in PWE. Nearly 20% of PWE develop drug refractory epilepsy, often requiring intensive drug treatment especially if not surgically remediable16. Even in surgically remediable epilepsies, the impact of surgery on QOL is not fully evaluated and seizure relief might not always be accompanied by social and psychological improvement17.

There is heterogeneity with respect to the scales used to assess the QOL among PWE across various studies. As early as 1990s, formal assessment of HR-QOL in epilepsy was provided, with the development of instruments such as Epilepsy Surgery Inventory (ESI-55), Quality of Life in Epilepsy (QOLIE) and the Liverpool HR-QOL Assessment Battery18.The QOLIE: 31 was developed in effort to assess health related quality of life in drug trials enrolling PWE. Epilepsy Surgery Inventory (ESI- 55) and Short formâ€“ 36(SF-36) are used in the cohort of epilepsy surgery patients and for general purpose respectively.

QOLIE-31 is multi-item inventory to assess wellbeing in 7 domains: emotional well-being,

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social function, energy-fatigue, cognitive function, seizure worry, medication effect and overall QOL. A weighted average of each of these multi-item scale scores gives the final QOLIE. It also has a single item that measures overall health.

QOLIE-31 items were developed drawing 16 items from existing sources and 15 items de novo. The five-item emotional well-being and four-item energy/fatigue scales are identical to scales used in RAND-36 item health survey 1.019. The 36 item measure was adapted from an observational study on variations in physician practice styles and patient outcomes referred to as the Medical Outcomes Study (MOS) 20.The QOLIE cognitive function and social function scales each contain 1 item incorporated from MOS instruments. There is an overall quality of life scale containing 1 item from a study on patient preferences21 and one Dartmouth COOP chart22. One seizure worry item and one cognitive functioning item were originally developed for the epilepsy surgery 17 inventory-5517. The item on overall health was adapted from an existing visual analogue scale23 and added subsequent to field testing of other 30 items.

A systematic review synthesising various observational studies on the QOL in PWE by C.J. Baranowski et al24 concluded that there was no clear differences for overall QOL between older and younger people with epilepsy. Energy-fatigue was identified as the most negatively impacted factor among QOLIE sub-scores. Seizure frequency was a strong predictor of QOL and associated comorbidity and depression were moderate predictors for a poor quality of life.

Various hospital based observational studies have undermined the effect of polypharmacy on QOL. A prospective observational study of 122 PWE followed up for 12 months at a tertiary care centre in South Kerala has shown that frequent seizures and polypharmacy are the major determinants of poor QOL3. In this cohort ,12 patients were drug naÃ¯ve at the time of

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enrolment into study. The mean drug dose expressed as the ratio of prescribed daily dose and defined daily dose was lower at entry when compared to that at final follow up and 16.9% of patients reported adverse drug reactions. Patients who were on monotherapy had higher QOL (70.8 + 14.9) when compared to those who were on polytherapy (60.2 + 16.0) which was statistically significant (p = 0.002). A cross-sectional study conducted in a tertiary care teaching hospital from Northern India 14 showed mean total score of QOLIE-31 to be 64.61 with the score of cognitive and medication effect significantly better in carbamazepine group as

compared to valproate group. It was concluded that patients on monotherapy had a better QOL as compared to patients receiving polytherapy.

Several recent studies have attempted to examine the relative contribution of anxiety symptoms to reduced QOL in PWE. In a study from Korea, anxiety was the most significant predictor of reduced HRQOL, explaining 27% of the variance compared with 12% for depression and 3% for seizure frequency5. Johnson and colleagues also examined the relative contribution of depression and anxiety to HRQOL in patients with temporal lobe epilepsy25. Depression and anxiety were independently associated with reduced QOL. The psychiatric co-morbidity explained more variance in QOL than combined groups of clinical seizure or demographic variables. The effect of psychological milieu on QOL among PWE is highlighted recently in a hospital-based cohort by the same authors8

Several multicentre studies have attempted to identify the strongest predictor of QOL among the various contributing factors identified. In the MEPSY trial of Korean population enrolling 702 PWE , the strongest predictor of the overall QOLIE-10 score was adverse effect profile of medications ($p < 0.001$), followed by depression ($p < 0.001$), seizure control ($p < 0.001$), household income ($p < 0.001$) and anxiety ($p = 0.005$)5. An Italian, multicenter cohort with

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pharmacoresistant epilepsy identified adverse effects of AEDs as strongest predictor, followed by depression, pharmacoresistance age and lack of driving license26. The hospital-based, Chinese cohort also reported the adverse effects of AEDs as the strongest predictor, followed by number of AEDs, depression and anxiety symptoms27. The hospital-based Russian study also identified seizure frequency to be the stronger predictor of QOL28.

We propose that in addition to targeting seizure control with appropriate pharmacotherapy or surgical management, treating Physicians and Neurologists should also address the general physical, emotional, social and cognitive well being of PWE for a better QOL.

PLAGIARISM SCAN REPORT

Words	360	Date	December 15, 2021
Characters	2729	Excluded URL	

6%	94%	1	17
Plagiarism	Unique	Plagiarized Sentences	Unique Sentences

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A prospective study was conducted after obtaining written informed consent from patients. All consecutive patients aged 18 years or above diagnosed as Epilepsy as per ILAE 2017 definition attending the outpatient epilepsy clinicssatisfying the inclusion and exclusion criteria were included in the study.

Inclusion criteria

All consecutive patients irrespective of gender socioeconomic or educational strata, aged 18 years or more, attending outpatient clinics satisfying the following were included in the study.

a) Refractory or non-refractory seizures

b) All types of epilepsy (focal or generalized)

c) On monotherapy or polytherapy

d) On AEDs irrespective of number

Exclusion criteria:

Following patients were excluded from the study.

1.Known major psychiatric illness with or without treatment

2.Any coexisting neurological or non-neurological illness which can contribute to neurosis or psychosis.

3.Patients with mental sub-normality with an Intelligent Quotient (IQ) less than 70

4. Pregnant women

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Methodology

Patients were selected irrespective of the type of seizure, treatment received or response to medications. Baseline IQ assessment was done in them prior to enrolment.

Basic demographic data, clinical data including history, neurological examination, EEG, imaging (1.5T/3T MRI) findings, psychosocial data, medication details including compliance were obtained using structured questionnaire. The QOL was assessed measuring standardized QOLIE 31 inventory. QOLIE:31 has one visual analogue scale of overall QOL and 30 questions pertaining to 7 diverse aspects of epilepsy: a. Seizure worry (5,0-8) ,b. Overall QOL (2,0-14) c. Emotional well being (5,0-15) d. Energy or fatigue (4,0-12) e. Cognitive functioning (6,0-27) f. Medication effect (3,0-3) and g. Social function (5 ,0-21) The total score for 31 questions ranged from 0-100 with higher score indicating better QOL. The QOL was graded as bad (â‰¤60), regular (61-70), good (71-80), very good (81-90) and excellent (91-100)

Statistical methods

The data was entered on to a spreadsheet and was analysed with SPSS version 25 software (SPSS Inc,Illinois,Chicago). Independent t test and ANOVA were undertaken to examine relationship of various factors with QOL. Multivariate logistic regression was used to evaluate the independent effect of the variable of interest on the outcome.

Ethical considerations

This registry has the approval of the Institutional Ethics Committee and informed consent was obtained from the patient or caregiver.

PLAGIARISM SCAN REPORT

Words	797	Date	December 15, 2021
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0%	100%	0	37
Plagiarism	Unique	Plagiarized Sentences	Unique Sentences

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We allocated 255 PWE attending the outpatient epilepsy clinic of our center and assessed their QOL using the questionnaire-based survey. This is the largest cohort from a single tertiary care referral center available in literature till date. All enrolled patients were permanent residents of Kerala and had Malayalam language as their mother tongue. Majority (56.86%) of patients were males. A sizeable 57.25% have attained seizure freedom at the time of assessment which reflects the standard of epilepsy care available in this part of Kerala. However, the mean QOL scores among PWE were only in the regular QOL range with 41.60% having a bad QOL which clearly reflects the unaddressed factors which adversely affects QOL despite having a fairly good control of seizures.

The mean final QOLIE-31 scores in the study population is 61.85Â±19.34 which is in the regular QOL range. Majority (106/255,41.6%) had bad QOL in our study population. The worst affected sub-score in this study population was medication effect. We found that the mean QOL in our cohort was higher than the global mean of 59.8 Â± 8.013.The QOLIE-31 scores were superior to African (57.2Â±7.8), American (58.35Â±8.4), European (59.9Â±8.2) and for Southeast Asian (59.7Â±8.1) average13.This is explained by better understanding of the disease and reduced social stigma among this subgroup of population which is well reflected by their higher level of education29. A striking finding in our cohort was that all PWE had a minimum of Primary School education and none were illiterate. A recently published systematic review of 10 studies (8 cross-sectional, 1 follow-up and 1 RCT) on elderly PWE found that energy-fatigue is the most adversely affected sub-score unlike found in our cohort24 .This may be attributed to the heterogeneity of the studies analysed and the age group of patients who were assessed.
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We assessed the factors determining the QOL among PWE in our cohort. Though univariate analysis found association of higher educational and occupational status, socioeconomic scale of lower middle class or above, focal epilepsy, absence of antecedents, â‰¤3 ASMs and seizure freedom to be strongly associated with a better QOL, only absence of antecedents, â‰¤3 ASMs retained statistical significance on multivariate analysis. Also, longer duration of seizure freedom were positively correlated with a better QOL. An observational study on 150 adolescents with epilepsy aged 13â€“19 years in Andhra Pradesh evaluated for QOL using the

Quality of Life in Epilepsy Inventory for Adolescents (QOLIE) ADâ€‘48 questionnaire found seizure control, monotherapy, high school education to be associated with a better QOL6.Another South Indian study on 68 PWE found that QOL was impaired in women, elderly, those with simple partial seizures and those with a recent seizure30.A previous study from the same centre on 112 adults with epilepsy attempted to assess the effect of medications on QOL3. It was concluded that those on monotherapy had higher QOL (70.8 + 14.9) compared to those on polytherapy (60.2 + 16.0). Also, having a high seizure burden of 1 or more seizures per month was significantly associated with a poorer QOL. We found that age, gender, type of epilepsy, imaging findings, surgical management or duration of epilepsy have no bearing on QOL in our cohort.

On analyzing the predictors of QOL based on the component subscores, the strongest predictors of a better QOL identified were absence of antecedents and less than 3 ASMs. These 2 factors strongly predicted a superior QOL with respect to all domains except energy-

fatigue and medication effect which are the 2 most negatively impacted components in our cohort. In addition, seizure freedom was associated with a superior seizure worry score and focal epilepsy with a better overall QOL. Longer duration of seizure freedom was

significantly associated with a better social worry, cognitive function, medication effect and

social function sub-score. However, there is paucity of published literature on factors affecting individual domains of QOL.

The most important and the neglected aspect of epilepsy is the psychological milieu of PWE of which anxiety and depression are commonly associated with a poorer self-esteem and poorer QOL. The MEPSY study on 702 PWE assessed for QOL using QOLIE 10 inventory have brought forth the complex associations between depression, anxiety, seizure control, and adverse effects of AEDs in determining QOL5.

The major highlight of this study is that this is the largest data available from South India on QOL among PWE. Unlike available studies, we have attempted to assess each component of QOL in detail so that targeting the domain where the patient is deficient helps in comprehensive management of PWE.

The limitation of this study is that it is a cross sectional study and there is no control group to compare the QOL and its various aspects. The psychological status of PWE, which is a major determinant of QOL is not addressed in this study.