RESEARCH PAPER

Evaluating The Role Of Pharmacist-Led Care In Enhancing Quality Of Life By Patient Counselling In Emerging Adult Epilepsy Patients.

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ABSTRACT

Objective: Epilepsy is the chronic disease which affects mainly the neurological functions, which can be characterized by unpredictable seizures. In India the epilepsy is affected the whole population which can be estimated in the range between 3-11 per 1000 population. The primary objective of current study to analyze the challenges faced by the emerging adult with epilepsy. The secondary objective is to evaluate the impact of patient counselling in quality of life of epileptic patients.

Patients and Methods: Prospective interventional study conducted in neurology department of tertiary care hospital in Kerala during May 2024 to October 2024. A total of 140 epileptic Patients who are on AED therapy in the age group of 18-25 were included. Patient counselling was provided and the effect of patient counselling were determining by assessing the quality of life.

Result: This study examined 140 participants, with most aged 18–20 years (45%) and 21–23 years (43.57%), averaging 20.8 ± 1.94 years. The majority had a disease duration of 1–5 years (74.29%) and experienced partial seizures (48.57%). Most participants were on long-term medication (71.43%) with polytherapy (73.57%) and combination AEDs (54.29%). The effect of Patient counselling shows by improving the quality of life mean score from 20.29 ± 2.018 at baseline to 37.82 ± 3.492 at the second follow-up, the p-value (<0.001).

Conclusion: The present study shows that pharmacist-led interventions produce significant improvements in quality of life among patients with seizure disorders, with greater gains seen over successive follow-ups. Medical and psychosocial support are essential for improving the patient well-being.

Keywords: Epilepsy, Anti epileptic Medications, Quality of life, Patient Counselling

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INTRODUCTION

Epilepsy is a chronic neurological disorder caused by abnormal electrical activity in the brain, affecting around 50 million people globally (1). Patients often experience mental health issues, social isolation, and reduced educational and employment opportunities, negatively impacting quality of life. In India, prevalence ranges from 3–11 per 1000 population.Emerging adulthood (18–29 years) is a critical developmental stage with added challenges for epilepsy patients due to treatment adherence issues, stigma, and psychosocial stress (2). Although anti epileptic drugs (AEDs) are the main treatment, adverse effects and poor adherence can limit outcomes (3).Quality of life can be assessed using tools like QOLIE scales (4), emphasizing the need for comprehensive management including counselling and adherence support. Pharmacist interventions improve medication adherence, reduce drug interactions, and enhance patient understanding, leading to better outcomes (5).This study evaluates the role of pharmacist-led interventions in improving quality of life and addressing challenges in young adults with epilepsy (6).

Patients and methods

A prospective observational study was conducted among 140 epileptic patients aged 18–26 in a tertiary care hospital in Kerala. Sample size was calculated using prevalence data (70.8%). Patients with similar neurobiological conditions or non-epileptic seizures were excluded.

Data were collected using a validated questionnaire covering demographics, clinical details, quality of life, and medication adherence. Quality of life was assessed using a 10-item scale, and adherence was categorised as poor, moderate, or good.

Patients received counselling (oral and leaflet-based) at each visit over six months. Follow-ups were conducted at 3 and 6 months to reassess quality of life. Neuropsychological side effects, treatment patterns, and adherence (70%) were monitored to evaluate the impact of counselling.

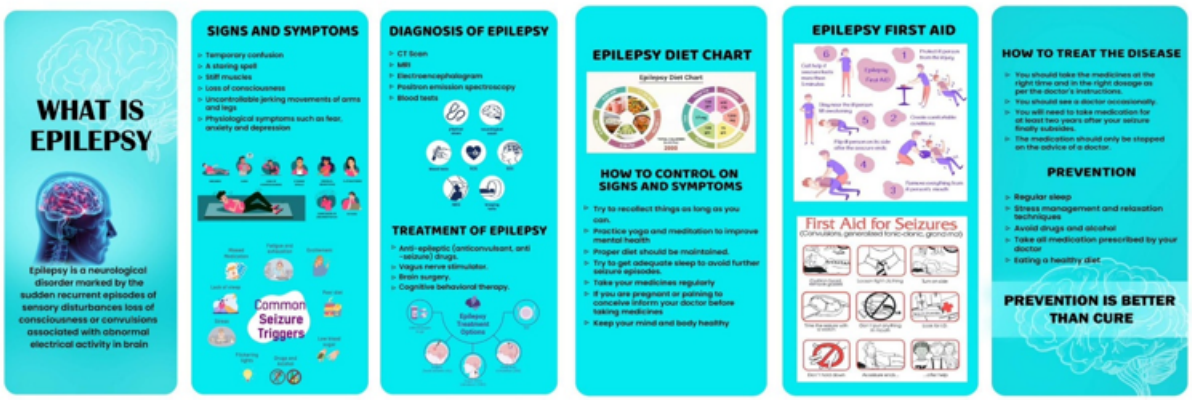

Figure 1: Leaflet

Ethical Considerations

Ethical approval for the study was obtained from the Institutional Human Ethical Committee of PKDAS Institute of Medical Sciences, Palakkad, Kerala (REF: IEC/11/95/24).

Statistical Analysis

Data were analyzed using SPSS version 21. ANOVA was used to assess effectiveness over time, and Pearson correlation was applied to determine relationships. A p-value < 0.05 was considered statistically significant.

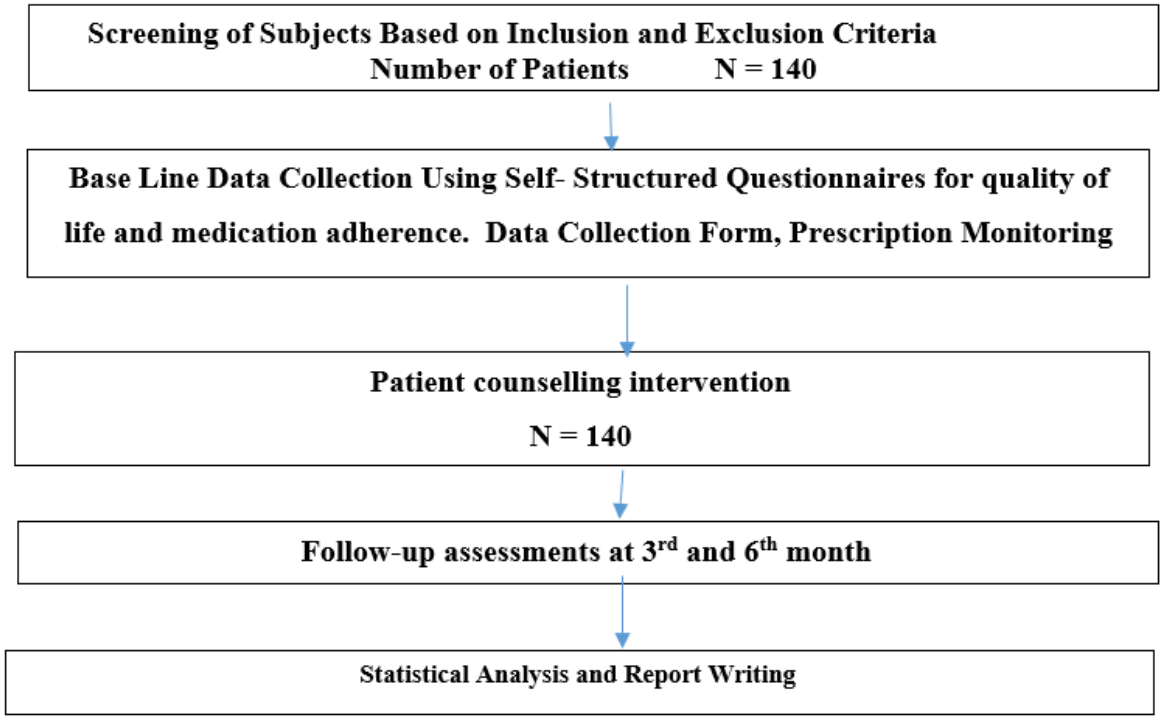

Figure 2: Flow chart showing plan of work

RESULTS

Socio-Demographic Characteristics are Among 140 participants, most were aged 18–20 years (45%) and 21–23 years (43.57%), with a mean age of 20.8 ± 1.94 years. Females (58.57%) outnumbered males (41.43%). A majority were unemployed (58.57%) and from rural areas (65%).

Most participants had no family history of epilepsy (63.57%), did not smoke (90.71%), and did not consume alcohol (93.57%). Physical inactivity was common (69.29%). The majority were unmarried (90.71%), with most reporting no academic (86.43%) or employment challenges (64.29%).

Table 1: Descriptive report (Mean, SD and Median, IQR) on quality of life and Adherence

	Quality of Life		Adherence	
	Mean±SD	**Median (IQR)**	**Mean±SD**	**Median (IQR)**
Pre test	**35.06±3.25**	**35(37-33)**	**5.06±0.931**	**5(6-4)**
1st follow up	**38.71±3.75**	**40(41-36)**	**6.24±1.46**	**6(7-6)**
2nd follow up	**40.31±4.97**	**41(42.75-38)**	**8.44±1.12**	**9(9-8)**

Table 2 : Friedman test on level of Quality of life & Adherence

Friedman test on level of Quality of life			
	Quality of Life		**Friedman test**
	Mean±SD	**Median (IQR)**	**χ2 value , P-value**
Pre test	**35.06±3.25**	**35(37-33)**	**χ2=94.286**
1st follow up	**38.71±3.75**	**40(41-36)**	**p<0.001*** **
2nd follow up	**40.31±4.97**	**41(42.75-38)**	**HS**
Friedman test on level of Adherence			
	Adherence		**Friedman test**
	Mean±SD	**Median (IQR)**	**χ2 value , P-value**
Pre test	**5.06±0.931**	**5(6-4)**	**χ2=212.83**
1st follow up	**6.24±1.46**	**6(7-6)**	**p<0.001*** **
2nd follow up	**8.44±1.12**	**9(9-8)**	**HS**

HS- Highly significant

Table 2 shows improvements in quality of life and adherence among participants. Quality of life scores increased from 35.06±3.25 (median 35, IQR 37–33) at pre-test to 38.71±3.75 (median 40, IQR 41–36) at first follow-up and 40.31±4.97 (median 41, IQR 42.75–38) at second follow-up. Adherence scores also improved from 5.06±0.93 (median 5, IQR 6–4) to 6.24±1.46 (median 6, IQR 7–6) and 8.44±1.12 (median 9, IQR 9–8). Friedman test showed significant improvements in quality of life (χ^2=94.286, p<0.001) and adherence (χ^2=212.83, p<0.001) over time.

Table 3: Association between level of quality of life, Adherence in pre test with their demographic variables

			Quality of life		Adherence			
Age Wise Distribution								
Age	Mean±SD	Median	**z/χ2**	**p-value**	Mean±SD	Median	**z/χ2**	**p-value**
18-20	35.25±3.11	35	χ2=0.543	0.762 NS	4.97±1.01	5	χ2=3.074	0.215
21-23	34.9±3.58	35			5.11±0.87	5		
23-26	34.88±2.5	36			5.25±0.77	5		
Gender Wise Distribution								
Female	35.3±3.42	35	Z=0.906	0.365 NS	5.24±0.89	5	2.740	p=0.006** HS
Male	34.67±2.98	35			4.81±0.92	5		
Occupational Status								
Unemployed	35.01±3.2	35	Z=0.145	0.885 NS	4.94±0.95	5	Z=2.237	0.025* S
Employed	35.12±3.33	35			5.24±0.89	5		
Residence								
Rural	34.93±3.3	35	Z=0.209	0.835 NS	5.29±0.93	5	Z=3.961	p<0.001*** HS
Urban	35.29±3.16	35			4.65±0.77	5		
Family History								
No	35.31±3.36	35	Z=1.550	0.121 NS	5.01±0.91	5	Z=0.462	0.644 NS
Yes	34.61±3.03	34			5.16±0.97	5		
Smoking Habit								
No	35.0±3.25	35	Z=0.300	0.765 NS	5.06±0.95	5	Z=0.145	0.885 NS
Yes	35.62±3.33	35			5.08±0.64	5		
Alcohol Habits								
No	35.0±3.31	35	Z=0.846	0.395 NS	5.06±0.93	5	Z=0.275	0.783 NS
Yes	35.89±2.36	36			5.11±0.92	5		
Physical Activity								
No	34.97±3.27	35	Z=0.615	0.538 NS	5.05±0.96	5	Z=0.504	0.615 NS
Yes	35.26±3.23	35			5.09±0.86	5		
Marital status								

No	35.13±3.32	35	Z=1.065	0.287 NS	5.05±0.92	5	Z=0.694	0.488 NS
Yes	34.38±2.50	35			5.23±1.01	5		
Academic Difficulties 22								
No	35.07±3.42	35	Z=0.260	0.795 NS	5.07±0.94	5	Z=0.430	0.668 NS
Yes	34.95±1.87	35			5±0.88	5		
Employment challenges 23								
No	35.04±3.04	35	Z=0.007	0.995 NS	5.10±0.9	5	Z=0.478	0.633 NS
Yes	35.08±3.63	35			5.0±0.81	5		

z-Mann Whitney 'U' test and χ2-kruskal Wallis test: HS-Highly significant

Table 3 shows the association between baseline quality of life, adherence, and demographic variables. No significant associations were found between quality of life and any demographic factors, including age, gender, occupation, residence, family history, lifestyle habits, marital status, or academic and employment challenges, indicating baseline quality of life was unaffected.In contrast, adherence showed significant associations with gender (p=0.006), occupational status (p=0.025), and residence (p<0.001), with better adherence observed among males, employed participants, and rural residents. No significant associations were found with other variables. Overall, adherence was selectively associated with certain demographics, while quality of life showed no associations.

Table 4: Association between level of quality of life, Adherence in pre test with their clinical variables

Duration of Disease			**Quality of life**		**Adherence**			
	Mean±SD	Median	**z/χ2**	**p-value**	Mean±SD	Median	**z/χ2**	**p-value**
1-5 Year	34.73±3.19	35	χ2=4.992	0.082 NS	5.07±0.91	5	χ2=0.027	0.987 NS
5-10 Year	35.91±3.19	36			5.06±1.05	5		
>10 Year	36.75±4.42	37			5±0.82	5		
Types Of Epilepsy								
Generalized Seizures	35.33±3.46	35	χ2=1.515	0.469 NS	5.20±0.95	5	χ2=1.913	0.384 NS
Partial Seizures	34.93±2.98	35			5.01±.0.92	5		
Status Epilepticus	34.72±3.67	34.5			4.83±0.78	5		
On Current Medication								
Emergency medicines	35.25±3.16	35.5	Z=0.501	0.617 NS	5.07±1.07	5	Z=0.421	0.674 NS
Long term	34.98±3.30	35			5.06±0.87	5		
Monopoly								

Polytherapy	34.85±3.43	35	Z=0.990	0.322	5.03±0.97	5	Z=0.916	0.360
Monotherapy	35.62±2.63	35		NS	5.16±0.8	5		NS
No.of AED								
1 AED	35.62±2.63	35	Z=0.990	0.322	5.16±0.8	5	Z=0.916	0.360
>1 AED	34.85±3.43	35		NS	5.03±0.97	5		NS
AED Drugs								
Brivarecetam	32.5±2.64	33			5±0	5		
Carbamazepine	34.10±1.45	33.5			5.30±0.67	5		
Clobazam	37.0±2.91	37			4.60±0.55	5		
Levitiracetam	35.44±4.20	35	$\chi2$=7.496	0.186	5.00±0.8	5	$\chi2$=3.988	0.551
Lobazam	35.36±2.50	36		NS	5.36±0.92	5		NS
>1 or combination	34.97±3.03	35			5.05±1.02	5		
Side effects								
No side effects	35.2±3.19	34			5.22±1.06	5		
Headache	35.0±2.16	34.5			4.80±0.78	5		
Dizziness	36.0±2.83	36			5.44±0.72	6		
Drowsiness	35±4.58	36	$\chi2$=4.169	0.654	4.84±0.76	5	$\chi2$=11.759	0.068
Slurred Speech	34.0±2.41	34		NS	5±1.09	5		NS
Fatigue	34.71±3.04	35			5.11±0.83	5		
Weakness	36.43±3.78	37			4.29±0.48	4		
STIGMA 18								
No	35.19±3.51	35	Z=0.399	0.690	5±0.775	5	Z=0.197	0.844
Yes	35.02±3.19	35		NS	5.08±0.97	5		NS
Family support and over protection								
No	34.41±3.93	35	Z=1.114	0.265	5.05±1.02	5	Z=0.530	0.596
Yes	35.32±2.91	35		NS	5.07±0.89	5		NS
Peer relation ship and INTIMACY								
No	35.53±3.19	35	Z=1.335	0.182	5.06±0.87	5	Z=0.024	0.981

Yes	34.66±3.27	35		NS	5.07±0.98	5		NS

z-Mann Whitney 'U' test and χ2-kruskal Wallis test: HS-Highly significant

Table 4 shows the association between baseline quality of life, adherence, and clinical variables. No significant associations were found between quality of life and clinical factors such as disease duration, type of epilepsy, medication, therapy type, number and type of AEDs, side effects, stigma, family support, or intimacy, indicating no clinical influence at baseline.Similarly, adherence showed no significant association with any clinical variables, including disease duration, epilepsy type, medication, therapy type, AED usage, side effects, or psychosocial factors.Overall, neither quality of life nor adherence at baseline was significantly associated with any clinical characteristics.

The Spearman rank correlation between quality of life and adherence at three time points. In the pre-test, there was no significant correlation between quality of life and adherence (ƒ=0.028, p=0.739). However, at the first follow-up, a moderate positive correlation was observed (ƒ=0.342, p<0.001), which remained positive and significant at the second follow-up (ƒ=0.292, p<0.001). These results indicate that as adherence improved over time, it was significantly associated with better quality of life among participants.

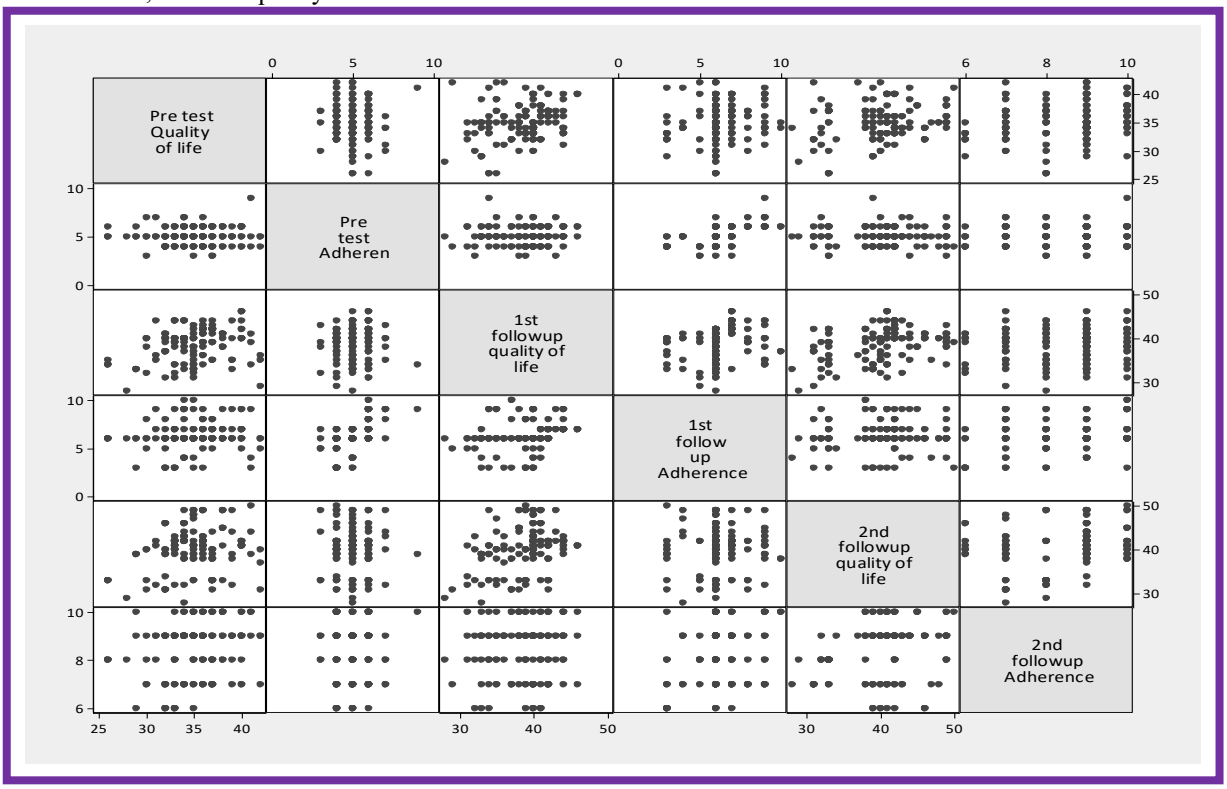

Figure 3: Flow chart showing plan of work

Table no 5 : Quintile regression for impact on QOL with their demographic variables.

		Coef.	Std.Error	T	p-value	[95%Conf.Interval]	
q25	Age	1.20	1.41	0.85	0.40	-1.60	4.00
	Gender	0.20	1.75	0.11	0.91	-3.26	3.66
	Occupation	-0.40	1.73	-0.23	0.82	-3.83	3.03
	Residence	-0.20	1.55	-0.13	0.90	-3.27	2.87

	Family History	1.20	2.37	0.51	0.61	-3.49	5.89
	Smoking	1.00	1.67	0.60	0.55	-2.31	4.31
	Alcohol	1.00	2.15	0.46	0.64	-3.26	5.26
	Physical Activity	-0.60	2.18	-0.28	0.78	-4.91	3.71
	Marital status	1.20	2.31	0.52	0.60	-3.37	5.77
	Academic Difficulties	0.00	3.11	0.00	1.00	-6.16	6.16
	Employment challenges	1.60	1.56	1.02	0.31	-1.49	4.69
	_cons	35.60	4.71	7.56	0.00	26.28	44.92
q50	Age	0.43	0.53	0.81	0.42	-0.62	1.48
	Gender	0.86	0.84	1.02	0.31	-0.81	2.52
	Occupation	0.14	0.73	0.19	0.85	-1.31	1.60
	Residence	-0.48	0.84	-0.57	0.57	-2.13	1.18
	Family History	-0.67	0.84	-0.79	0.43	-2.33	1.00
	Smoking	0.24	1.85	0.13	0.90	-3.43	3.91
	Alcohol	-0.81	2.15	-0.38	0.71	-5.07	3.45
	Physical Activity	-0.67	0.95	-0.70	0.49	-2.55	1.22
	Marital status	0.90	1.04	0.87	0.39	-1.16	2.97
	Academic Difficulties	1.05	1.29	0.81	0.42	-1.50	3.60
	Employment challenges	1.48	1.00	1.47	0.14	-0.51	3.46
	_cons	39.19	2.18	17.94	0.00	34.87	43.51
q75	Age	-0.33	0.91	-0.37	0.72	-2.13	1.47
	Gender	0.67	1.43	0.47	0.64	-2.16	3.49
	Occupation	0.33	1.40	0.24	0.81	-2.44	3.10
	Residence	-1.33	1.40	-0.95	0.34	-4.10	1.44
	Family History	-0.67	1.27	-0.53	0.60	-3.18	1.85
	Smoking	0.33	2.02	0.16	0.87	-3.67	4.34
	Alcohol	-2.00	2.14	-0.93	0.35	-6.24	2.24
	Physical Activity	-1.33	1.55	-0.86	0.39	-4.39	1.73
	Marital status	1.67	1.10	1.52	0.13	-0.50	3.83

	Academic Difficulties	2.33	1.56	1.50	0.14	-0.75	5.42
	Employment challenges	1.67	1.54	1.08	0.28	-1.38	4.71
	_cons	43.33	3.34	12.96	0.00	36.72	49.95

Pseudo R2 (q1=0.057,q2=0.04,q3=0.069)

Table 5 presents quintile regression analysis of demographic factors on quality of life at the 25th, 50th, and 75th percentiles. No demographic variables, including age, gender, occupation, residence, family history, lifestyle habits, marital status, or academic and employment challenges, showed significant effects (all $p>0.05$). Low pseudo R^2 values (q25=0.057, q50=0.04, q75=0.069) indicate minimal contribution of these factors.Overall, quality of life was not significantly influenced by demographic characteristics.

Table no 6: Quintile regression for impact on QOL with their Clinical variables.

		Coef.	Std.Error	T	p-value	[95%Conf.Interval]	
q25	Duration	1.85	1.16	1.60	0.11	-0.44	4.15
	Types Of Epilepsy	-0.83	0.73	-1.13	0.26	-2.27	0.62
	On Current Medication	-1.65	1.57	-1.05	0.30	-4.76	1.46
	Monopoly	1.44	1.48	0.97	0.34	-1.50	4.37
	AED Drugs	-0.07	0.38	-0.19	0.85	-0.82	0.68
	Side effects	0.11	0.39	0.28	0.78	-0.65	0.87
	STIGMA	2.23	1.93	1.16	0.25	-1.58	6.05
	Family support amp Ovrptn	-0.35	2.34	-0.15	0.88	-4.98	4.29
	PRRESHPampINTIMACY	-1.73	1.81	-0.95	0.34	-5.31	1.85
	_cons	37.68	5.10	7.39	0.00	27.59	47.77
q50	Duration	1.31	0.53	2.49	0.01	0.27	2.36
	Types Of Epilepsy	-1.01	0.48	-2.11	0.04	-1.95	-0.06
	On Current Medication	-0.71	0.89	-0.79	0.43	-2.48	1.06
	Monopoly	0.89	0.80	1.11	0.27	-0.70	2.48
	AED Drugs	-0.26	0.28	-0.92	0.36	-0.82	0.30
	Side effects	0.12	0.20	0.59	0.56	-0.28	0.51
	STIGMA	-0.11	0.89	-0.12	0.90	-1.86	1.64
	Family support amp Ovrptn	-1.19	0.72	-1.64	0.10	-2.62	0.25
	INTIMACY	-0.52	1.00	-0.52	0.61	-2.50	1.46
	_cons	42.90	4.43	9.68	0.00	34.13	51.66
q75	Duration	1.00	0.89	1.13	0.26	-0.76	2.76

	Types Of Epilepsy	-0.50	0.91	-0.55	0.58	-2.30	1.30
	On Current Medication	-1.50	1.35	-1.11	0.27	-4.17	1.17
	Monopoly	-0.67	1.29	-0.52	0.61	-3.21	1.88
	AED Drugs	-0.17	0.31	-0.54	0.59	-0.78	0.45
	Side effects	0.00	0.24	0.00	1.00	-0.48	0.48
	STIGMA	-0.67	2.00	-0.33	0.74	-4.63	3.29
	Family support amp Ovrptn	-1.00	1.72	-0.58	0.56	-4.41	2.41
	PRRESHPampINTIMACY	-1.00	1.57	-0.64	0.53	-4.11	2.11
	_cons	48.33	5.33	9.07	0.00	37.79	58.87

Pseudo R2 (q1=0.09, q2=0.06, q3=0.06)

Table 6 presents quintile regression analysis of clinical variables on quality of life. At the 50th percentile, duration of disease (Coef.=1.31, p=0.01) and type of epilepsy (Coef.=−1.01, p=0.04) showed significant effects, with longer duration associated with higher scores and generalized/other epilepsy types with lower scores.No other clinical variables showed significant influence across quintiles. Low pseudo R^2 values (q25=0.09, q50=0.06, q75=0.06) indicate limited explanatory power.Overall, only disease duration and epilepsy type significantly affected quality of life.

Table no 7: Quintile regression for impact on adherence with their demographic variables.

		Coef.	Std.Error	t	p-value	[95%Conf.Interval]	
q25	Age	0.14	0.22	0.66	0.51	-0.28	0.57
	Gender	0.14	0.34	0.42	0.67	-0.52	0.81
	Occupation	0.71	0.52	1.36	0.18	-0.32	1.75
	Residence	0.71	0.39	1.84	0.07	-0.05	1.48
	Family History	-0.43	0.33	-1.32	0.19	-1.07	0.22
	Smoking	-0.43	0.73	-0.59	0.56	-1.87	1.01
	Alcohol	0.00	1.19	0.00	1.00	-2.35	2.35
	Physical Activity	0.29	0.40	0.72	0.47	-0.50	1.07
	Marital status	0.14	0.51	0.28	0.78	-0.87	1.15
	Academic Difficulties	0.14	0.42	0.34	0.73	-0.68	0.97
	Employment challenges	0.14	0.57	0.25	0.80	-0.98	1.26
	_cons	5.29	0.97	5.47	0.00	3.37	7.20
q50	Age	0.20	0.20	1.02	0.31	-0.19	0.59
	Gender	-0.20	0.24	-0.82	0.41	-0.68	0.28
	Occupation	0.40	0.34	1.19	0.24	-0.26	1.06

	Residence	0.40	0.29	1.36	0.18	-0.18	0.98
	Family History	0.00	0.38	0.00	1.00	-0.75	0.75
	Smoking	-0.40	0.56	-0.71	0.48	-1.51	0.71
	Alcohol	0.40	0.75	0.54	0.59	-1.08	1.88
	Physical Activity	0.20	0.29	0.70	0.49	-0.37	0.77
	Marital status	0.00	0.36	0.00	1.00	-0.71	0.71
	Academic Difficulties	0.00	0.29	0.00	1.00	-0.57	0.57
	Employment challenges	0.20	0.37	0.54	0.59	-0.53	0.93
	_cons	7.40	0.70	10.58	0.00	6.02	8.78
q75	Age	0.00	0.11	0.00	1.00	-0.22	0.22
	Gender	0.00	0.12	0.00	1.00	-0.23	0.23
	Occupation	0.00	0.41	0.00	1.00	-0.81	0.81
	Residence	0.00	0.23	0.00	1.00	-0.46	0.46
	Family History	0.00	0.17	0.00	1.00	-0.34	0.34
	Smoking	0.00	0.46	0.00	1.00	-0.92	0.92
	Alcohol	1.00	0.76	1.32	0.19	-0.50	2.50
	Physical Activity	0.00	0.17	0.00	1.00	-0.34	0.34
	Marital status	0.00	0.53	0.00	1.00	-1.04	1.04
	Academic Difficulties	0.00	0.46	0.00	1.00	-0.91	0.91
	Employment challenges	0.00	0.17	0.00	1.00	-0.34	0.34
	_cons	9.00	0.56	16.13	0.00	7.90	10.10

Pseudo R2 (q1=0.14, q2=0.01, q3=0.02)

Table 7 presents quintile regression analysis of demographic variables on adherence at the 25th, 50th, and 75th percentiles. No demographic factors, including age, gender, occupation, residence, family history, lifestyle habits, marital status, or academic and employment challenges, showed significant effects (all p>0.05).Low pseudo R^2 values (q25=0.14, q50=0.01, q75=0.02) indicate minimal contribution of these variables.Overall, adherence was not significantly influenced by demographic characteristics.

Table no 8: Quintile regression for impact on adherence with their Clinical variables.

		Coef.	Std.Error	T	p-value	[95%Conf.Interval]	
q25	Duration	0.63	0.38	1.67	0.10	-0.12	1.38
	Types Of Epilepsy	0.38	0.30	1.27	0.21	-0.21	0.98
	On Current Medication	0.17	0.36	0.46	0.65	-0.55	0.88

	Monopoly	0.17	0.31	0.53	0.60	-0.45	0.79
	AED Drugs	-0.08	0.14	-0.58	0.56	-0.37	0.20
	Side effects	0.03	0.09	0.38	0.71	-0.14	0.21
	STIGMA	-0.30	0.35	-0.85	0.40	-1.00	0.40
	Family support amp Ovrptn	-0.12	0.43	-0.27	0.79	-0.96	0.73
	PRRESHPampINTIMACY	-0.15	0.28	-0.54	0.59	-0.70	0.40
	_cons	6.38	1.37	4.65	0.00	3.67	9.10
q50	Duration	0.00	0.22	0.00	1.00	-0.44	0.44
	Types Of Epilepsy	0.00	0.23	0.00	1.00	-0.45	0.45
	On Current Medication	0.00	0.35	0.00	1.00	-0.69	0.69
	Monopoly	0.00	0.25	0.00	1.00	-0.49	0.49
	AED Drugs	0.00	0.12	0.00	1.00	-0.24	0.24
	Side effects	0.00	0.06	0.00	1.00	-0.13	0.13
	STIGMA	0.00	0.23	0.00	1.00	-0.46	0.46
	Family support amp Ovrptn	0.00	0.36	0.00	1.00	-0.71	0.71
	PRRESHPampINTIMACY	0.00	0.39	0.00	1.00	-0.76	0.76
	_cons	9.00	1.21	7.41	0.00	6.60	11.40
q75	Duration	0.00	0.18	0.00	1.00	-0.36	0.36
	Types Of Epilepsy	0.00	0.11	0.00	1.00	-0.22	0.22
	On Current Medication	0.00	0.16	0.00	1.00	-0.32	0.32
	Monopoly	0.00	0.22	0.00	1.00	-0.43	0.43
	AED Drugs	0.00	0.05	0.00	1.00	-0.09	0.09
	Side effects	0.00	0.03	0.00	1.00	-0.07	0.07
	STIGMA	0.00	0.13	0.00	1.00	-0.26	0.26
	Family support amp Ovrptn	0.00	0.26	0.00	1.00	-0.52	0.52
	PRRESHPampINTIMACY	0.00	0.36	0.00	1.00	-0.70	0.70
	_cons	9.00	0.58	15.65	0.00	7.86	10.14

Pseudo R2 (q1=0.08, q2=0.01, q3=0.01)

Table 8 presents quintile regression analysis of clinical variables on adherence at the 25th, 50th, and 75th percentiles. No clinical factors, including disease duration, epilepsy type, medication, therapy type, AED use, side effects, stigma, family support, or intimacy, showed significant effects (all $p>0.05$). Low pseudo R^2 values (q25=0.08, q50=0.01, q75=0.01) indicate minimal

contribution of these variables. Overall, adherence was not significantly influenced by clinical characteristics.

DISCUSSION

This study included 140 participants, predominantly aged 18–20 (45%) and 21–23 years (43.57%), with a mean age of 20.8 ± 1.94 years, representing early emerging adulthood. This stage involves significant psychological, social, and academic transitions affecting wellbeing (7). Females (58.57%) outnumbered males (41.43%), consistent with findings by Ibrahim et al. **(8)**.Most participants were unemployed (58.57%), likely due to student status, aligning with Mortier et al.**(9)**, who noted employment patterns influencing stress and mental health. A majority (65%) were from rural areas, which can impact healthcare access and behaviors**(10).**

Family history was absent in 63.57%, though it remains an important determinant of disease perception and vulnerability **(11)**.

Lifestyle habits showed low smoking (90.71%) and alcohol use (93.57%), similar to findings by Peltzer et al. **(12)**. However, 69.29% were physically inactive, consistent with studies linking inactivity to academic workload **(13)**. Most participants were unmarried (90.71%), typical of this age group **(14)**. Academic (13.57%) and employment challenges (35.71%) reflected common stressors among young adults.

Clinically, 74.29% had epilepsy for 1–5 years, indicating early-stage cases, consistent with Beghi et al. **(15)**. Partial seizures (48.57%) were most common, aligning with Fisher et al. **(16)**. Most participants (71.43%) were on long-term AED therapy **(17)**, with polytherapy (73.57%) more common than monotherapy, reflecting treatment complexity in refractory epilepsy **(18).**

Levetiracetam (24.29%) was the most commonly used AED, followed by carbamazepine and others, with 54.29% receiving combination therapy. Its widespread use is due to efficacy and safety **(19)**. Adverse effects included fatigue (25%), drowsiness (13.57%), and others, common in long-term AED use.

Psychosocially, 77.86% experienced stigma, which affects self-esteem and social integration, while 70.71% reported family support, aiding coping and adherence **(20)**. Relationship and intimacy issues were reported by 54.29%, reflecting the broader social impact of epilepsy.

The study showed progressive improvement in quality of life (QoL) and medication adherence over time. QoL scores increased significantly across follow-ups, likely due to improved disease understanding and continuous support, consistent with previous findings **(21)**.

Table 2 demonstrated significant improvement in QoL across three time points ($\chi^2 = 94.286$, $p < 0.001$), with mean scores increasing from 35.06±3.25 to 40.31±4.97. This highlights the effectiveness of sustained interventions and follow-up in enhancing patient outcomes **(22,23).**

Table 2 also showed a significant improvement in adherence ($\chi^2 = 212.83$, $p < 0.001$), with scores rising from 5.06±0.93 to 8.44±1.12. These findings suggest that patient education, counseling, and regular monitoring improve adherence, supported by previous studies **(24,25)**.

Table 3 analysed the link between baseline quality of life (QOL), medication adherence, and demographics using Mann–Whitney U and Kruskal–Wallis tests. Most demographic variables showed no significant association with QOL or adherence at pre-test, apart from a few notable exceptions. Age, family history, lifestyle factors, marital status, academic difficulties, and employment challenges were not significantly related to either QOL or adherence. Gender, occupational status, and residential status were significantly associated with adherence: females, employed, and rural participants had slightly higher adherence scores. These results align with previous studies showing similar patterns among young adults.**(26)**

Table 4

The study assessed the association between baseline quality of life (QoL), medication adherence, and clinical variables, finding no statistically significant relationships with disease duration, epilepsy type, medication factors, side effects, stigma, family support, or intimacy. This indicates that baseline QoL and adherence were independent of clinical characteristics.

This contrasts with studies such as Gilliam FG et al. **(27)**, which reported that longer disease duration and poor seizure control reduced QoL. The lack of association in this study may reflect stable disease conditions or effective treatment minimizing clinical impact.

Figure no 3

Spearman correlation showed no significant relationship between QoL and adherence at pre-test ($r = 0.028$, $p = 0.739$). However, significant moderate positive correlations were observed at first ($r = 0.342$, $p < 0.001$) and second follow-ups ($r = 0.292$, $p < 0.001$), indicating improved adherence was associated with better QoL.

The absence of baseline correlation may be due to uniform initial levels. Follow-up improvements likely reflect increased awareness and disease management. These findings align with studies from AIIMS Bhopal **(28)** and Chung-Ying Lin et al. **(29)**, which reported strong positive relationships between adherence and QoL. Other factors such as psychosocial well-being and stigma also influence QoL **(30)**.

Table 5: Quantile regression analysis showed no significant effect of demographic variables on QoL across the 25th, 50th, and 75th percentiles, with low pseudo R^2 values (q25 = 0.057, q50 = 0.04, q75 = 0.069). This indicates QoL is largely independent of demographic characteristics.

These findings are consistent with S Hamedi-Shahraki et al., who reported weak associations between demographics and QoL. The use of quantile regression strengthens this result by showing no variation across QoL levels, suggesting that clinical and psychosocial factors are more influential **(31)**.

Table 6: Quantile regression revealed that only disease duration and type of epilepsy were significantly associated with QoL. Longer disease duration showed a positive association, possibly due to adaptation and improved coping over time, supported by previous studies.

Type of epilepsy showed a negative association with QoL, consistent with literature indicating that generalized or complex seizures are linked to greater burden and lower QoL. S Hamedi-Shahraki et al. also reported similar findings (32).

Table 7 presents quantile regression analysis of demographic variables on medication adherence across the 25th, 50th, and 75th quantiles. No demographic variables showed significant effects on adherence ($p>0.05$), although residence showed a borderline trend at q25 ($p=0.07$). Low pseudo R^2 values indicate minimal contribution of demographic factors.

These findings suggest that adherence is influenced more by clinical, educational, and psychosocial factors than demographics. Previous studies support this, highlighting patient beliefs, treatment complexity, seizure control, and healthcare system factors as stronger predictors. Interventions such as patient counselling, simplified regimens, and enhanced support systems are recommended to improve adherence **(33,34,35)**.

Table 14:

Table 8 presents quantile regression analysis of clinical variables on medication adherence. No clinical variables showed significant associations across all quantiles ($p>0.05$). At q25, disease duration showed a non-significant positive trend (Coef = 0.63, p = 0.10), while at q50 and q75, coefficients were negligible, indicating no predictive value.

Low pseudo R^2 values (q1 = 0.08, q2 = 0.01, q3 = 0.01) suggest clinical variables explain minimal variation in adherence. These results indicate that adherence is more strongly influenced by factors such as education, health literacy, beliefs, access to care, and communication.

These findings are consistent with studies by Faught E and Jones RM, which emphasize patient-related and psychological factors over clinical characteristics. Broader research also highlights the role of social, behavioral, and healthcare system influences, underscoring the need for patient-centered interventions **(36,37,38,39,40,41)**.

CONCLUSION

The study demonstrates that pharmacist-led interventions significantly improve quality of life in patients with epilepsy, with greater improvements observed over time. Duration of treatment also influenced outcomes, with longer treatment associated with lower quality of life.

Overall, these findings highlight the importance of tailored interventions, early and consistent treatment, and integrated medical and psychosocial support to enhance patient well-being.

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Ethical Approval

The research study was approved by the Institutional human ethical committee of PKDAS Institute of Medical Sciences, Vaniyamkulam, Palakkad, Kerala. (REF: IEC/11/95/24)

Informed Consent

Informed consent was taken from all the participants in written format.

Data Availability

The data that support the findings of this study are available from the corresponding author, upon reasonable request.

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Authors Contribution

Vineetha.S contributed Data curation, Formal Analysis, Funding acquisition, Investigation Project administration, Resources, Software, Visualization. Dr.S.Hemalatha contributed to the study of Conceptualization, Methodology Visualization, Supervision, Validation, Writing – original draft / Writing – review & editing .Dr. Davis Manuel A contributed to the study by making Methodology, Investigation, Supervision, Project administration, Validation

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