ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/25jun117

Understanding How Antiepileptic Drug Side Effects Influence Quality of Life in Epilepsy

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Publication Date: 2025/06/11

Abstract: Antiepileptic drugs (AEDs) are the cornerstone of epilepsy management, yet their adverse effects (AEs) often compromise patient well-being. These AEs range from mild somatic symptoms to severe psychiatric and cognitive disturbances, significantly impacting quality of life (QoL) regardless of seizure control. This review compiles current evidence on the spectrum of AED-related AEs, their influence on QoL, and the differential profiles of older versus newer AEDs. It also examines psychosocial outcomes and strategies to mitigate these impacts—insights essential for personalised treatment planning.

How to Site: Alshada Sharf; G. Vimal Raj; Thomas Jude Rodriguez; S. Jothi Mani; Dr. Arul Prakasam K; (2025) Understanding How Antiepileptic Drug Side Effects Influence Quality of Life in Epilepsy. *International Journal of Innovative Science and Research Technology*, 10(6), 96-97. https://doi.org/10.38124/ijisrt/25jun117

I. INTRODUCTION

Epilepsy affects more than 50 million people worldwide. While seizure reduction is the primary therapeutic goal, drug-related side effects can undermine treatment success. Many patients achieve seizure freedom yet continue to experience debilitating AEs that impair daily life [1]. These effects can lead to non-adherence, social withdrawal, and strained relationships.

Although newer AEDs promise improved tolerability, their real-world impact on QoL compared with traditional drugs remains uncertain. This review explores how AED AEs shape functioning and well-being.

II. COMMON ADVERSE EFFECTS OF AEDS

- *Somatic and Neurological Consequences*

Dose-dependent somatic AEs such as dizziness, fatigue, nausea, and gait imbalance are common, particularly with carbamazepine and phenytoin [2]. Neurological complaints—tremor, blurred vision, and sedation—disrupt everyday activities, especially at high doses or in polytherapy.

- *Cognitive Impacts*

Concentration difficulties, psychomotor slowing, and memory loss are frequently reported. Topiramate and phenobarbital are notable offenders [3], with severity escalating alongside dosage and polytherapy.

- *Psychiatric and Behavioral Impacts*

Mood and behavioural changes include depression, anxiety, irritability, and, rarely, psychosis [4]. Levetiracetam, while widely used, can provoke marked affective instability in susceptible patients [5].

- *Dermatological and Systemic Reactions*

Severe cutaneous adverse reactions such as Stevens–Johnson syndrome (SJS) and toxic epidermal necrolysis (TEN) occur with lamotrigine and carbamazepine, especially in carriers of specific HLA alleles [6]. Older AEDs may also induce hepatotoxicity and haematological abnormalities.

III. IMPACT ON QUALITY OF LIFE (QOL)

- *Beyond Seizure Control*

QoL encompasses physical, emotional, and social domains. Studies indicate that persistent AEs can lower QoL more profoundly than residual seizures [7].

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➢ *Physical and Functional Impairment*

Sedation, dizziness, and cognitive slowing hinder daily tasks—household duties, employment, and driving—fostering dependency and reduced self-esteem [8].

➢ *Emotional and Social Wellbeing*

Mood-related AEs may damage interpersonal relationships and erode self-confidence, particularly among adolescents and young adults already sensitive to stigma [9].

IV. COMPARATIVE PROFILES OF NEW VS OLD AEDS

➢ *Efficacy and Tolerance*

Newer agents (lamotrigine, levetiracetam, lacosamide) are favoured for fewer interactions and improved cognitive-mood profiles. Lamotrigine, for instance, is associated with better cognitive outcomes than phenobarbital or phenytoin [10].

➢ *Polytherapy and Monotherapy*

Polytherapy amplifies cognitive and behavioural toxicity, whereas tailored monotherapy—preferably with a newer AED—optimises seizure control and QoL [11].

➢ *Individualised Response*

Inter-individual variability necessitates personalised regimens based on genetics, comorbidities, and lifestyle to balance efficacy and tolerability [4].

V. PSYCHOSOCIAL AND COGNITIVE EFFECTS

➢ *Educational and Workplace Impact*

Cognitive AEs can impair academic performance in youth and limit career progression in adults, contributing to socioeconomic disadvantage [3].

➢ *Emotional Stigma and Burden*

Visible AEs (e.g., tremor, slurred speech) and internalised stigma exacerbate depression and social withdrawal [9].

➢ *Effect upon Caregivers*

Caregivers experience emotional strain, burnout, and financial burden while managing treatment-related complications [7].

VI. STRATEGIES FOR MINIMISING ADVERSE EFFECTS

➢ *Rational Drug Selection*

Choose agents with favourable AE profiles for vulnerable groups (children, elderly, psychiatric comorbidity).

➢ *Dose Optimisation*

Start low, go slow. Rapid titration of drugs like topiramate or lamotrigine heightens severe AEs [6].

➢ *Daily Monitoring*

Regular review—including laboratory tests and mental-state assessment—detects early toxicity, allowing timely adjustment [2].

➢ *Patient Education and Support*

Empowering patients to recognise and report AEs, and offering counselling or peer support, mitigates distress and enhances adherence [8].

VII. CONCLUSION

AEDs are indispensable, yet their adverse-effect burden can overshadow seizure control. Clinicians must adopt an holistic approach—vigilant AE monitoring, personalised drug choice, and open communication—to optimise long-term outcomes. Future research should prioritise QoL-centred endpoints and the development of therapies with superior safety profiles.

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