



ADVERSE EFFECTS OF ANTIEPILEPTIC DRUGS AND QUALITY OF LIFE IN EPILEPSY PATIENTS: A CLINICAL OBSERVATIONAL STUDY

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Abstract: *Long-term antiepileptic therapy remains the primary foundation for seizure control in patients with epilepsy; however, treatment-induced adverse drug reactions continue to represent a severe clinical challenge globally. Beyond their immediate neurological manifestations, medication-related side effects deeply impair long-term emotional well-being, higher cognitive performance, and subjective social functioning. The present study systematically evaluated the prevalence of chronic adverse effects associated with diverse antiepileptic drugs (AEDs) and comprehensively analyzed their direct influence on health-related quality of life in adult patients with epilepsy.*

A single-center clinical observational study was conducted among 35 adult patients diagnosed with various forms of epilepsy who had been receiving stable antiepileptic treatment regimens for at least six consecutive months. The thorough clinical assessment protocol included a detailed neurological examination, structured evaluation of treatment-related subjective adverse effects, and quality-of-life analysis utilizing the validated Quality of Life in Epilepsy Inventory (QOLIE-31).

At least one prominent adverse effect directly associated with long-term AED therapy was actively reported by 74.2% of the total study participants. The most commonly identified clinical complaints among the patient cohort were chronic fatigue, debilitating daytime somnolence, systemic dizziness,



objective cognitive slowing, and persistent mood instability. Furthermore, patients receiving combined antiepileptic therapy or polytherapy demonstrated substantially poorer drug tolerability and lower overall quality-of-life indicators than those successfully treated with tailored monotherapy.

The findings of this observational study strongly suggest that the adverse effects of modern AEDs significantly affect psychosocial adaptation, vocational efficiency, and everyday autonomous functioning in epilepsy patients. Strategic optimization of antiepileptic therapy with meticulous attention to individual treatment tolerability profiles may significantly improve long-term clinical outcomes, medication adherence, and global patient quality of life.

Keywords: *epilepsy, antiepileptic drugs, adverse reactions, quality of life, polytherapy, neurological disorders, QOLIE-31.*

Introduction

Epilepsy is recognized as one of the most prevalent and debilitating chronic neurological conditions worldwide, characterized by recurrent, unprovoked epileptic seizures resulting from paroxysmal, abnormal neuronal discharges within the cerebral cortex. According to global epidemiological data indexed in PubMed and World Health Organization reports, epilepsy affects over fifty million people globally, imposing an immense socioeconomic and psychological burden on individuals, families, and healthcare systems. Although substantial technological and pharmacological progress has been achieved in modern epileptology over the past decades, long-term or lifelong pharmacotherapy remains absolutely necessary for the vast majority of diagnosed patients to suppress seizure activity and prevent status epilepticus.

The primary objective of antiepileptic drugs is highly effective in reducing seizure frequency, maintaining clinical remission, and improving overall disease control. Nevertheless, prolonged and continuous AED administration frequently leads to a wide array of systemic and neurocognitive



adverse reactions that negatively influence both physical health and psychosocial functioning. In many clinical scenarios, these treatment-related complications become the chief limiting factor preventing optimal therapeutic adherence, causing voluntary drug discontinuation, and driving overall patient dissatisfaction with specialized medical care. Literature indicates that nearly one-third of patients struggle with severe side effects that are often perceived as more disruptive to daily life than the underlying seizures themselves. The clinical spectrum of adverse effects associated with long-term AED therapy is exceptionally broad. It encompasses central nervous system symptoms such as chronic fatigue, ataxia, chronic dizziness, severe cognitive impairment, and emotional disturbances including anxiety and clinical depression. It also includes gastrointestinal complaints, daytime sleepiness, metabolic changes, and behavioral alterations. These complex manifestations may develop regardless of whether complete seizure control has been successfully achieved, and they often become progressively more pronounced during long-term maintenance treatment or when multidrug polytherapy regimens are required.

Neurocognitive adverse effects deserve particular clinical attention from practicing neurologists because they directly interfere with educational activities, professional performance, and interpersonal social interactions. The underlying pathophysiological mechanisms often involve the non-selective suppression of excitation or enhancement of inhibition within healthy cortical networks, which inadvertently slows down mental processing speed. Emotional instability, irritability, and chronic fatigue may additionally worsen the premorbid anxiety and depressive symptoms that are frequently observed as comorbidities in epilepsy patients due to chronic psychosocial stigma. Modern management guidelines in contemporary neurology increasingly emphasize a holistic paradigm that prioritizes not only the objective reduction of seizure count but also the preservation of health-related quality of life and



subjective social functioning. Consequently, the systematic assessment of medication tolerability has transitioned from being a secondary consideration to a critical component of comprehensive, patient-centered neurological care. Despite the active clinical introduction of third-generation antiepileptic medications designed with better pharmacokinetic profiles, adverse drug reactions continue to remain highly prevalent in routine clinical practice, reinforcing the ongoing relevance of localized observational studies to identify specific patient vulnerabilities.

Aim of the Study

The primary objective of this investigation was to systematically assess the real-world prevalence of common and subtle adverse effects associated with diverse antiepileptic drug regimens and to evaluate their specific, quantified influence on various domains of quality of life in adult patients with epilepsy within an outpatient clinical setting.

Materials and Methods

Study Design

A single-center, prospective observational clinical study was meticulously planned and carried out at the specialized Department of Neurology of Tashkent Medical Academy to capture real-world data regarding treatment tolerability.

Participants

Thirty-five adult patients with clinically and electroencephalographically confirmed diagnoses of epilepsy participated in this observational study. The age of the enrolled participants ranged from 19 to 58 years, with a calculated mean age reflecting a predominantly working-age demographic. The study population included 20 female patients and 15 male patients.

All participating individuals met the baseline requirement of receiving continuous, uninterrupted antiepileptic therapy for a minimum duration of six



months prior to enrollment to ensure the stability of steady-state drug concentrations.

Inclusion Criteria:

- * An established, documented diagnosis of epilepsy according to the International League Against Epilepsy guidelines;
- * A stable, unchanged antiepileptic treatment regimen for at least the preceding six months;
- * Provision of voluntary, signed informed consent after receiving detailed explanations of the study protocol.

Exclusion Criteria:

- * Co-morbid severe psychiatric disease, such as active psychosis or severe cognitive decline, which could invalidate self-reported outcomes;
- * Acute neurological pathology, including recent ischemic stroke, intracranial hemorrhage, or neuroinfection within the past year;
- * Severe decompensated systemic illness involving hepatic, renal, or cardiovascular failure;
- * An inability to comprehend or complete the standardized questionnaires independently due to language barriers or profound developmental delay.

Clinical Evaluation

All enrolled patients underwent a detailed, comprehensive neurological assessment and a structured clinical interview conducted by experienced neurologists. Crucial clinical data regarding specific seizure semiology, age of disease onset, duration of epilepsy, historical seizure frequency, exact antiepileptic drug dosages, and the cumulative duration of antiepileptic therapy were carefully documented in specialized research charts.

Assessment of Adverse Effects

Patients were systematically evaluated for the presence of common and documented AED-related adverse reactions using a structured symptom



checklist. This protocol specifically investigated subjective and objective complaints including persistent physical fatigue, systemic dizziness, daytime somnolence, impaired concentration capacity, short-term memory disturbances, emotional instability or irritability, and functional gastrointestinal complaints.

Quality-of-Life Assessment

Health-related quality of life was comprehensively assessed using the official, validated Quality of Life in Epilepsy Inventory (QOLIE-31). This reliable instrument utilizes specific item weights to evaluate multiple independent health domains, including emotional well-being, cognitive functioning, perceived medication effects, social activity levels, and overall life satisfaction, yielding standardized scores where lower values indicate poorer functional status.

Statistical Analysis

Standard descriptive statistical methods were applied for all data processing and analysis. Quantitative and categorical variables were analyzed and presented as percentages, frequencies, and computed mean values to characterize the sample accurately.

Results

Among the examined adult participants, 26 patients, representing 74.2% of the studied cohort, actively reported experiencing one or more persistent adverse effects that they directly associated with their ongoing antiepileptic treatment.

The clinical frequency of individual adverse reactions varied significantly across the sample. Chronic fatigue was identified as the most prevalent complaint, affecting 57.1% of the patients. Systemic dizziness was reported by 42.8% of the participants, closely followed by daytime sleepiness, which was documented in 40% of the individuals. Objective and subjective



memory impairment was noted by 34.2% of the cohort. Furthermore, mood instability, heightened irritability, and emotional lability were documented in 31.4% of cases, while an explicit impairment in concentration capacity was reported by 28.5% of the studied population.

When evaluating treatment structures, a clear correlation was observed regarding medication complexity. Patients receiving polytherapy regimens experienced adverse reactions with significantly higher frequency and intensity than those patients treated with streamlined monotherapy.

Furthermore, the utilization of polytherapy regimens is strongly linked to poorer drug tolerability and more severe psychosocial impairment. Developing individualized therapeutic strategies that balance efficacy with safety, alongside the regular clinical assessment of medication tolerability, is essential to achieve optimal long-term clinical outcomes and protect the quality of life of individuals living with epilepsy.

Practical Recommendations

1. The systematic and regular evaluation of treatment-related adverse effects using standardized instruments should be fully integrated into routine neurological follow-up appointments.
2. Rational monotherapy should always be prioritized as the primary therapeutic approach, and polytherapy should be reserved exclusively for cases demonstrating verified drug resistance.
3. Patient cognitive performance and emotional well-being should be monitored periodically throughout long-term antiepileptic treatment to detect subtle declines early.
4. Comprehensive patient education regarding potential side effects, expected adaptation periods, and the vital importance of strict treatment adherence should be conducted at the initiation of therapy.



5. Individualized adjustment of drug dosages, careful selection of specific medication profiles, and a focus on treatment tolerability are essential to optimize psychosocial adaptation.

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