Comorbidity Burden and Treatment Complexity in Adult-Onset Epilepsy: Insights from a Cross-sectional study in Paraíba, Brazil

Carga de Comorbidades e Complexidade Terapêutica na Epilepsia de Início na Vida Adulta: Insights de um Estudo Transversal na Paraíba, Brasil

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ABSTRACT

Background: Epilepsy is a chronic neurological disorder frequently associated with a high burden of psychiatric and systemic comorbidities, which negatively impact prognosis and quality of life. Data from Northeastern Brazil regarding comorbidities and polypharmacy in adult-onset epilepsy remain limited. **Objective:** To analyze the clinical and epidemiological profile of patients with epilepsy treated at a tertiary neurology service in Northeastern Brazil, with emphasis on comorbidities, psychiatric conditions, and treatment patterns. **Methods:** This was an observational, cross-sectional study including adult patients with epilepsy followed at a tertiary hospital. Clinical, epidemiological, and pharmacological data were analyzed, including number of antiseizure medications, presence of comorbidities, and psychiatric disorders. Descriptive statistics were performed.
Results: The sample was predominantly female (73.3%, n=22), with a median age of 38.5 years (IQR 12.2). Patients presented a mean of 2.3±1.39 comorbidities, with psychiatric disorders observed in 30% (n=9) of cases, mainly anxiety (26.7%, n=8) and depression (20%, n=6). Migraine was also frequent (33.3%, n=10). The median number of antiseizure medications was 2.0 [1.0-2.75], and 26.7% (n=8) of patients met criteria for drug-resistant epilepsy. Polypharmacy was common, with 96.7% (n=29) of patients using additional medications, including antidepressants/anxiolytics (36.7%, n=11), corticosteroids (10%, n=3), and anticoagulants (6.7%, n=2).
Conclusion: Adult patients with epilepsy in this cross-sectional study present a high burden of comorbidities, particularly psychiatric and migraine disorders, along with frequent polypharmacy and a relevant proportion of drug-resistant epilepsy. These conditions negatively affect prognosis, increase healthcare costs, and reduce quality of life. There is a need for further regional studies to better characterize the epidemiology of epilepsy in Northeastern Brazil, supporting more accurate clinical decision-making and improved comprehensive care.

Keywords: Epilepsy Generalized, Mental Disorders, Comorbidity.

RESUMO

Introdução: A epilepsia é uma doença neurológica crônica frequentemente associada a elevada carga de comorbidades psiquiátricas e sistêmicas, que impactam negativamente o prognóstico e a qualidade de vida. Dados do Nordeste brasileiro sobre comorbidades e polifarmácia na epilepsia de início na vida adulta ainda são limitados.
Objetivo: Analisar o perfil clínico e epidemiológico de pacientes com epilepsia atendidos em um serviço terciário de neurologia no Nordeste do Brasil, com ênfase em comorbidades, condições psiquiátricas e padrões terapêuticos. **Métodos:** Trata-se de um estudo observacional, transversal, incluindo pacientes adultos com epilepsia acompanhados em um hospital terciário. Foram analisados dados clínicos, epidemiológicos e farmacológicos, incluindo número de medicamentos antiepilépticos em uso, presença de comorbidades e transtornos psiquiátricos. Realizaram-se estatísticas descritivas.
Resultados: A amostra foi predominantemente feminina (73.3%, n=22), com mediana de idade de 38.5 anos (IIQ 12.2). Os pacientes apresentaram média de 2.3±1.39 comorbidades, sendo observados transtornos psiquiátricos em 30% (n=9) dos casos, principalmente ansiedade (26.7%, n=8) e depressão (20%, n=6). Migrânea também foi frequente (33.3%, n=10). A mediana do número de medicamentos antiepilépticos utilizados foi de 2.0 [1.0-2.75], e 26.7% (n=8) dos pacientes preencheram critérios para epilepsia farmacorresistente. A polifarmácia foi comum, com 96.7% (n=29) dos pacientes utilizando medicamentos adicionais, incluindo antidepressivos/ansiolíticos (36.7%, n=11), corticosteroides (10%, n=3) e anticoagulantes (6.7%, n=2).
Conclusão: Pacientes adultos com epilepsia neste trabalho apresentam elevada carga de comorbidades, particularmente transtornos psiquiátricos e enxaqueca, além de frequente polifarmácia e proporção relevante de epilepsia farmacorresistente. Essas condições impactam negativamente o prognóstico, aumentam os custos em saúde e reduzem a qualidade de vida. Há necessidade de novos estudos regionais para melhor caracterizar a epidemiologia da epilepsia no Nordeste brasileiro, subsidiando decisões clínicas mais precisas e um cuidado integral mais eficaz.

Palavras-chave: Epilepsia Generalizada, Transtornos Mentais, Comorbidade.

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INTRODUCTION

Epilepsy is a chronic neurological condition frequently associated with a high burden of medical and psychiatric comorbidities[1]. It is estimated that approximately 50% of adults with active epilepsy present at least one associated medical condition[1], with up to an eight-fold increased risk[1] of developing migraine and higher odds of cardiovascular and cerebrovascular diseases[2].

These comorbidities reflect the systemic complexity of epilepsy and have a direct impact on seizure prognosis and patients' quality of life. Disorders such as depression and anxiety are consistently associated with worse clinical outcomes[2].

In this context, the present study aims to analyze the clinical and epidemiological profile of patients with epilepsy followed at a Neurology Service in a tertiary hospital in northeastern Brazil, focusing on psychiatric comorbidities and on the relationship between disease duration, number of antiseizure medications, and the occurrence of anxiety and depression.

MATERIALS AND METHODS

Study design, inclusion, and exclusion criteria:

This observational, cross-sectional, descriptive study was conducted at the Neurology outpatient clinic of a tertiary referral center in Northeastern, Paraíba, Brazil. Data were obtained from hospital medical records and a consecutive sampling approach was used.

It included adult patients (>18 years-old) with a diagnosis of epilepsy and at least one associated comorbidity who attended a consultation during the period from November 2024 to October 2025. Patients without at least one additional comorbidity or with incomplete medical records were excluded.

Data collection instruments and procedures:

Clinical and sociodemographic data were retrospectively collected from medical records using a standardized form, aiming to assess the association between epilepsy diagnosis and patients' comorbidities. The variables analyzed included age, sex, duration of smoking, weekly alcohol intake, time since epilepsy diagnosis, associated comorbidities, antiseizure medications and concomitant medications.

The data were organized and stored in Microsoft Excel 2010 and subsequently analyzed using Jamovi software. Variables were classified as quantitative or qualitative and data normality was assessed using the Shapiro-Wilk test. Descriptive statistics were applied, with results expressed as absolute and relative frequencies for categorical variables and as measures of central tendency and dispersion for continuous variables. A significance level of $p < 0.05$ was adopted.

Ethical considerations:

This study was reviewed and approved by the Research Ethics Committee of the Lauro Wanderley University Hospital, affiliated with the Federal University of Paraíba (CAAE:81674524.0.0000.5183).

RESULTS

Profile

The sample is predominantly composed of female participants, with a small male representation, which limits sex-based comparisons. The age profile differs between genders, with men being older than women, suggesting possible differences in the timing of diagnosis or in disease patterns between the groups. The non-normal distribution of some variables indicates heterogeneity within the sample, which limits certain generalizations.

Despite these differences, the time since diagnosis is similar between genders, indicating that both groups are at comparable stages of the disease. There is a low prevalence of smoking and minimal alcohol consumption, with no clear pattern of relevant behavioral risk factors in the studied group (Table 01). In this context, the sample is suitable for describing the clinical and epidemiological profile of the population under study, allowing for consistent internal analyses, although caution is warranted when generalizing the findings.

Table 1 – Sample profile. Source: The authors (2026).

	Female	Shapiro-Wilk	Male	Shapiro-Wilk
Gender (%,n)	73.3% (n=22)		16.7% (n=8)	-
Age (years)[1]	38.5 [12.2]	p<0.001	56.5±20.7	p=0.431
Time since diagnosis[1] (years)	3 [2-4.75]	p=0.006	3 [1–5]	p=0.017
Smoking status (%, n)	4.54% (n=1)[2]	-	12.5% (n=1)[3]	-
Alcohol intake (%, n)		-		-
< 7 drinks a week	n=2	-	-	-
7-14 drinks a week	-	-	n=1	-
> 14 drinks a week	n=1	-	-	-

Table caption: [1]Quantitative variables were expressed as mean ± standard deviation (SD) when normally distributed ($p > 0.05$) and as median and interquartile range (IQR) when non-normally distributed ($p < 0.05$), according to the Shapiro–Wilk test. [2]>30 cigarettes a day. [3]Betwen 20-30 cigarettes a day.

Comorbidities

For analytical purposes, comorbidities were grouped into categories. The absolute frequency of each group is presented in Table 02. An overlap between conditions was observed, meaning that the same patient may present multiple comorbidities simultaneously.

The mean number of comorbidities per patient was 2.3±1.39 (mean±SD), with p-Shapiro-Wilk=0.006, indicating non-normal distribution. The presence of

Table 2 – Frequency of comorbidities. Source: The authors (2026).

Comorbidities	Frequency (absolute numbers)
Mental Disorders	
Anxiety	26.7% (n=8)
Depression	20% (n=6)
Bipolar disorder	6.7% (n=2)
Conditions associated with cerebral events	
Stroke sequelae[1]	16.7% (n=5)
Thrombophilia	6.7% (n=2)
Lupus	13.3% (n=4)
Migraine	33.3% (n=10)
Metabolic Disorders	
Hypertension	16.7% (n=5)
Hypothyroidism	16.7% (n=5)

[1] Such as hemiparesis, aphasia, and others.

psychiatric disorders was observed in 30% (n=9) of patients, with anxiety being the most common (26.67%, n=8). More than one concomitant mental disorder was identified in 20% (n=6) of the total sample, all of which consisted of combinations of anxiety and depression. Among patients with a single comorbidity, migraine was the most frequently observed (10%, n=3).

Medications in use

The number of antiseizure medications used simultaneously showed a median of 2 [1.0-2.75] (p-Shapiro–Wilk<0.001). Refractory epilepsy, defined by the International League Against Epilepsy (ILAE)[3] as the persistence of epileptic seizures despite adequate trials of at least two appropriately chosen, tolerated, and optimally dosed antiseizure medications, was observed in 26.67% (n=8) of patients.

The most frequently used antiseizure drug in monotherapy was lamotrigine (30%, n=9), followed by sodium valproate (10%, n=3). The combination of these two drugs was observed in 6.67% (n=2) of patients. Other combinations involving two, three, or four drugs were less frequent and highly heterogeneous, with most regimens reported only once (3.3% each).

In addition to epilepsy treatment, approximately 96.7% (n=29) of patients reported the use of other continuous medications. Notably, 36.7% (n=11) of the total sample were using antidepressants or anxiolytics, 10% (n=3) were using corticosteroids, and 6.7% (n=2) were using anticoagulants.

DISCUSSION

Data from Northeastern Brazil regarding the presence of comorbidities and polypharmacy in adults with late-onset epilepsy remain scarce in the literature. For this reason, expanding the understanding of this topic reflects the local healthcare reality, contributing to improved therapeutic planning and optimization of comprehensive care.

The present study identified an epilepsy profile consistent with what has already been described in the literature[4]. There was a predominance of females (73.3%, n=22) and, among patients with comorbidities or using concomitant medications, higher age (median 38.5 [12.2] years), later onset of epilepsy (42.9±19.9 years), and pharmacological refractoriness[4] (use of 2 [1.0-2.75] simultaneous antiseizure medications).

The literature reports that 50% of patients with epilepsy present at least one comorbidity[1], with psychiatric disorders accounting for 44% of the total burden[6]. The most commonly reported psychiatric condition is depression[6], in contrast to what was observed in the present sample, in which anxiety accounted for 26.7% (n=8) compared to 20% (n=6) for depression. However, this difference cannot be interpreted as significant due to the small sample size, which limits statistical inference.

Among cerebrovascular-related disorders, the second most frequent category of comorbidities in patients with epilepsy[6], migraine represented the most prevalent condition in both the literature and the present sample (33.3%, n=10). The likelihood of developing migraine in individuals with epilepsy can be up to eight times higher than in the healthy population[4], mainly due to shared pathophysiological mechanisms between the two conditions, resulting in a bidirectional relationship.

A relevant proportion of patients were using medications potentially associated with a reduction in seizure threshold, either directly or indirectly, such as antidepressants, anxiolytics (36.7%, n=11), corticosteroids (10%, n=3), and anticoagulants (6.7%, n=2). This finding reinforces the need for careful review of polypharmacy and an integrated approach between neurology and other specialties[7].

An interesting aspect of the sample is the significant presence of patients with lupus (13.3%, n=4), differing from what is commonly reported in the literature. Studies indicate that epilepsy occurs in approximately 11.5% of patients with systemic lupus erythematosus[8]. This higher prevalence is likely due to the fact that the study hospital is a regional reference center for lupus.

Patient selection may have been influenced by biases inherent to the level of care. For example, selection and referral bias, given that patients with milder conditions tend to be managed in primary care; Berkson's bias; and information bias related to reliance on medical records[5].

CONCLUSION

In conclusion, the studied population consisted predominantly of adult female patients with epilepsy, characterized by frequent comorbidities, polypharmacy, and a relevant proportion of pharmacoresistant cases.

Conditions such as depression, migraine, and cardiovascular diseases exert a significant negative impact on patient prognosis, increasing healthcare costs and

substantially compromising quality of life.

In this context, there is a clear need for further studies that better characterize the epidemiological and clinical profile of epilepsy in Northeastern Brazil, in order to provide a more accurate representation of local casuistics and, consequently, support more effective and regionally adapted therapeutic strategies, ultimately contributing to improved comprehensive patient care.

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