

Relationship Between Epilepsy And Psychiatric Disorders Such As Depression And Anxiety

Relação Entre Epilepsia E Transtornos Psiquiátricos Como Depressão E Ansiedade

Guilherme Subtil Cardoso¹, Marcela Souza Lima Paulo², Amanda dos Santos Cintra³

¹Physician graduated from the Escola Superior de Ciências da Santa Casa de Misericórdia de Vitória (EMESCAM). Vila Velha, ES, Brasil.

²Professor (PhD) and Coordinator of the Science and Technology Axis of the Medical Course at the Escola Superior de Ciências da Santa Casa de Misericórdia de Vitória (EMESCAM). Vitória, ES, Brasil.

³Neurologist and Professor of the Medical Course at the Escola Superior de Ciências da Santa Casa de Misericórdia de Vitória (EMESCAM). Vitória, ES, Brasil.

ABSTRACT

Introduction: Epilepsy is a chronic neurological condition that affects a significant portion of the global population, with an estimated prevalence of around 50 million people. When associated with psychiatric comorbidities, such as depression and anxiety, it can have a profound impact on the quality of life of these patients, in addition to exacerbating fear and stress related to seizures, leading to lower treatment engagement and, consequently, worse clinical outcomes.

Objectives: To describe the relationship between epilepsy and psychiatric disorders, such as depression and anxiety, in order to understand the prevalence, underlying pathophysiological mechanisms, and implications for the integrated clinical management of these conditions.

Methods: This is a review article using studies from the last five years, searched in the PubMed/MedLine and Virtual Health Library databases, employing the Boolean search strategy ("epilepsy" AND "depression" AND "mental disorders" AND "anxiety"). Only full-text articles involving adult individuals were included, while review articles were excluded. Additionally, relevant and well-established articles in the field were incorporated.

Results: The findings indicate that the prevalence of depression in patients with epilepsy ranges from 20% to 55%, while anxiety is observed in approximately 15% to 34% of patients. The review identified pathophysiological mechanisms, such as neurotransmitter dysfunctions, structural brain changes, and the adverse effects of antiepileptic drugs, which contribute to the high prevalence of these psychiatric comorbidities. These conditions were associated with a significant deterioration in quality of life and difficulties in controlling epileptic seizures.

Conclusion: The conclusion of this study reinforces the importance of a multidisciplinary approach in managing patients with epilepsy and psychiatric comorbidities, aiming to improve clinical outcomes and the quality of life of these patients.

RESUMO

Introdução: A epilepsia é uma condição neurológica crônica que afeta uma parte significativa da população mundial, com prevalência estimada em cerca de 50 milhões de pessoas. Quando associada a comorbidades psiquiátricas, como depressão e ansiedade, pode acarretar um profundo impacto na qualidade de vida desses pacientes, além de exacerbar o medo e o estresse relacionados às crises, levando a um menor engajamento no tratamento e, conseqüentemente, a piores desfechos clínicos.

Objetivos: Descrever a relação entre epilepsia e transtornos psiquiátricos, como depressão e ansiedade, buscando compreender a prevalência, os mecanismos fisiopatológicos subjacentes e as implicações para o manejo clínico integrado dessas condições.

Métodos: Trata-se de uma revisão de literatura realizada com base em artigos publicados nos últimos cinco anos, disponíveis nas bases de dados PubMed/MedLine e na Biblioteca Virtual em Saúde. Para a estratégia de busca, foram utilizados os descritores booleanos ("epilepsia" AND "depressão" AND "distúrbios mentais" AND "ansiedade"). Foram incluídos artigos completos envolvendo indivíduos adultos, excluindo-se revisões sistemáticas, além da inclusão de artigos de referência conceituados na área.

Resultados: A prevalência de depressão em pacientes com epilepsia variou de 20% a 55%, enquanto a ansiedade foi observada em cerca de 15% a 34% dos casos. A revisão evidenciou que disfunções nos neurotransmissores, alterações estruturais cerebrais e efeitos adversos dos medicamentos anticrises contribuem para a alta prevalência dessas comorbidades psiquiátricas. Essas condições associadas foram correlacionadas a uma piora significativa na qualidade de vida e a dificuldades no controle das crises epiléticas.

Conclusão: O estudo destaca a importância de uma abordagem multidisciplinar no manejo de pacientes com epilepsia e transtornos psiquiátricos, visando otimizar os desfechos clínicos e promover uma melhor na qualidade de vida.

Keywords: epilepsy; depression; mental disorders; anxiety

Palavras-chave: epilepsia; depressão; transtornos mentais; ansiedade.

ARTICLE INFO

DOI: <https://doi.org/10.46979/rbn.v62i1.72835>

Corresponding author: Guilherme Subtil Cardoso

E-mail: g.subtil22@gmail.com

Conflicts of Interest:

The authors declare no conflicts of interest.

Funding:

No specific funding was received.

Author Contributions

GSC was responsible for data curation, writing – original draft, writing – review and editing, investigation, and methodology. MSLP and ASC contributed to supervision, formal analysis, validation, visualization, and conceptualization. All authors read and approved the final submitted version and take public responsibility for all aspects of the work.

INTRODUCTION

Epilepsy is a chronic neurological condition that affects a significant portion of the global population, with an estimated prevalence of approximately 50 million people. This condition is characterized by recurrent epileptic seizures resulting from abnormal electrical discharges in the brain. Regarding the management of this disorder, in addition to seizure control, it is important to consider its association with psychiatric comorbidities, which are increasingly common. Among these, depression and anxiety stand out as the most frequent in this population. Studies show that the prevalence of psychiatric disorders in patients with epilepsy is around 50% to 60%, with depression rates ranging from 20% to 55% and anxiety from 15% to 34%, while in the general population this figure is approximately 1 in every 7 people^{1,2}. These comorbidities not only increase patient suffering but also hinder the clinical management of epilepsy, making an integrated treatment approach essential^{3,4}.

Several factors influence the predisposition to developing psychiatric disorders in individuals with epilepsy, such as disease pattern, age at seizure onset, and duration of the illness. Patients with temporal lobe epilepsy, for example, show greater susceptibility to these comorbidities, suggesting a relationship between the affected brain areas and the underlying pathophysiological mechanisms that lead to the development of psychiatric disorders⁵. This interrelationship is complex and involves dysfunction in neurotransmitter circuits, such as serotonin and GABA, which are essential for mood regulation⁶. In addition, structural changes in brain regions such as the hippocampus indicate that anatomical variations may contribute to greater vulnerability of these patients to psychiatric disorders⁷.

The presence of psychiatric comorbidities significantly impacts the quality of life of individuals with epilepsy. Depression and anxiety can intensify the fear and stress associated with seizures, leading to lower engagement in treatment and worse clinical outcomes^{8,3}. Therefore, early identification and appropriate treatment of these disorders are crucial to optimize prognosis and the control of epileptic seizures^{3,4}. Furthermore, the choice of antiseizure medication (ASM) should consider not only efficacy in seizure control but also potential psychiatric effects. Some ASMs may worsen psychiatric symptoms, while others may help in the treatment of mood or anxiety disorders^{4,9}.

Optimal management of patients with epilepsy and psychiatric comorbidities should involve a multidisciplinary approach, including pharmacological and psychosocial interventions. Cognitive Behavioral Therapy (CBT) has shown efficacy in reducing depressive and anxious symptoms in this population and serves as a complementary tool to pharmacological treatment^{3,4}.

However, the use of antidepressants should be carefully monitored due to the risk of drug interactions that may impair seizure control⁴. Communication between neurologists and psychiatrists is essential to ensure integrated care addressing both epilepsy and psychiatric disorders^{3,4}.

Another relevant factor in the management of these patients is the social stigma associated with epilepsy and psychiatric disorders, which can lead to social isolation and discrimination, further reducing quality of life^{3,4}. The promotion of educational campaigns and public awareness are necessary strategies to reduce this stigma and promote greater social inclusion for these individuals^{3,4}. Thus, the present study aims to conduct a comprehensive literature review on the relationship between epilepsy and psychiatric disorders, exploring the prevalence of these comorbidities, the underlying pathophysiological mechanisms, and the implications for integrated clinical management.

METHODS

This is a narrative literature review conducted from August 2024 to February 2025. The search was carried out in the PubMed/MedLine databases and the Virtual Health Library (BVS Brazil), including articles published between 2015 and 2024. Publications were selected based on the following descriptors: "Epilepsy", "Depression", "Mental disorders" and "Anxiety", according to the standardized terms of Medical Subject Headings (MeSH). Filters were applied for publication date (last 10 years), language (Portuguese, English, and Spanish), as well as specific inclusion and exclusion criteria.

1 - Inclusion And Exclusion Criteria

Full articles available in the databases that involved individuals aged 18 years or older were included. Review articles and articles that did not present a direct relationship with the topic were excluded.

2 - Selection Strategy

The initial search resulted in 85 articles. After applying the eligibility criteria, 66 articles were excluded for not meeting the established criteria. Among the 19 remaining articles, seven were excluded after reading the title and abstract for not presenting direct relevance to the topic. The remaining articles were submitted to full-text reading, resulting in three further exclusions due to lack of alignment with the study objectives. In addition to the articles selected in the initial search, 19 additional articles and classic sources that were highly relevant to the topic but were not retrieved in the automated search were included.

3 - RESULTS AND DISCUSSION

3.1 - Prevalence Of Psychiatric Disorders In Patients With Epilepsy

The prevalence of psychiatric disorders such as depression and anxiety is significantly higher in patients with epilepsy compared to the general population. Studies indicate that depression may affect between 20% and 55% of patients with epilepsy, while Generalized Anxiety Disorder (GAD) is observed in about 15% to 34% of these individuals¹⁰. This high prevalence of mental disorders in patients with epilepsy is widely documented in the literature, suggesting a bidirectional relationship between epileptic seizures and psychiatric disorders.

According to Cintra and Yuen (2021), epilepsy not only negatively impacts quality of life but also increases the predisposition to depressive states, which may complicate clinical management. Moreover, the variability in prevalence rates observed across different studies may be attributed to factors such as differences in diagnostic criteria, characteristics of the investigated samples, and the methodologies used in epidemiological research.

The study by Cintra and Yuen¹⁰ also highlights that primary health care plays an essential role in the early detection and management of psychiatric disorders associated with epilepsy. The lack of social support and the stigma related to epilepsy often contribute to the development of mental disorders, creating a vicious cycle that worsens patients' quality of life and reduces their adherence to treatment¹¹.

Thus, the identification and appropriate treatment of these comorbidities are crucial, since the presence of psychiatric disorders may worsen the prognosis of epilepsy. In this context, it is essential that health professionals adopt an integrated approach, considering both neurological and psychiatric aspects in the treatment of patients with epilepsy.

3.2 - Common Pathophysiological Mechanisms Between Epilepsy And Psychiatric Disorders

The pathophysiological mechanisms that link epilepsy and psychiatric disorders such as depression and anxiety are complex and multifactorial. The literature indicates that these conditions share neurobiological alterations that may contribute to the high prevalence of comorbidity between epilepsy and mental disorders.

One of the main mechanisms common to epilepsy and psychiatric disorders is dysfunction in neurotransmitter circuits involving serotonin, norepinephrine, dopamine, gamma-aminobutyric acid (GABA), and glutamate¹².

Serotonin plays a fundamental role in both epilepsy and depression. Evidence suggests that reduced serotonergic activity may increase the frequency and

intensity of epileptic seizures¹³. In addition, dysfunction of 5-HT1A serotonergic receptors has been associated with the development of depression in patients with epilepsy, suggesting that inadequate regulation of serotonin release may intensify depressive symptoms¹⁴.

GABA, the main inhibitory neurotransmitter, also plays a central role in epilepsy and anxiety. During status epilepticus, internalization of synaptic GABA_A receptors occurs, compromising neuronal inhibition and intensifying seizures, which may favor the development of anxiety¹⁵. Furthermore, loss of GABAergic interneurons and abnormal synaptic reorganization may result in the formation of hyperexcitable neuronal circuits, increasing predisposition to epileptic seizures and anxiety disorders.

Glutamate, the main excitatory neurotransmitter, is also involved in the pathophysiology of epilepsy and depression. Excessive glutamate release during seizures causes excitotoxic damage, and when combined with dysfunction of the blood-brain barrier, which increases postictal glutamate levels, it can trigger neurodegenerative and neuropsychiatric processes, contributing to psychiatric comorbidities such as depression^{16,17}.

In addition to neurotransmitters, some structural brain changes may favor the development of psychiatric disorders, such as mesial temporal sclerosis (MTS), a lesion commonly found in patients with chronic epileptic seizures, often associated with temporal lobe epilepsy (TLE). Mesial temporal sclerosis causes brain atrophy that compromises in areas involved in emotional regulation and information processing, increasing vulnerability to the development of psychiatric disorders^{12,18}.

3.3 - Influence Of Antiseizure Medications (ASMs)

Antiseizure medications (ASMs) play a fundamental role in the treatment of epilepsy, but their influence on patients' mental health has been a growing concern, since beyond their antiseizure effects, these drugs can impact behavior, mood, and mental health. Thus, some ASMs may worsen psychiatric symptoms, such as levetiracetam, topiramate, and perampanel, which may contribute to the development of disorders such as depression, psychosis, and aggressiveness, while others may help in the treatment of mood disorders, such as lamotrigine, valproic acid, and carbamazepine, anticonvulsants frequently used in association with bipolar disorders due to their mood-stabilizing effects, in addition to gabapentin and pregabalin, which have anxiolytic effects^{4,9}.

Regarding psychiatric drugs, some agents such as tricyclic antidepressants, bupropion, and clozapine may lower the seizure threshold and consequently increase seizure frequency, whereas selective serotonin reuptake inhibitors may increase the threshold and even exert anticonvulsant effects⁹.

Another important point is the association between the use of ASMs and the increased risk of self-destructive behaviors, as well as other adverse psychiatric effects. In 2008, the Food and Drug Administration (FDA) issued a warning about the potential risk of suicide associated with the use of all antiseizure drugs, emphasizing that these medications may increase suicidal ideation in certain patients¹⁹. However, a study by Arana²⁰ suggests that although the use of ASMs is not directly related to an increased risk of suicidal events in patients with epilepsy, it may be an additional risk factor in individuals with psychiatric comorbidities such as depression. Moreover, Kanner¹³ observed that patients who presented depressive and anxious symptoms before starting therapy with antiseizure drugs were significantly less likely to achieve seizure control after 12 months of treatment. This finding suggests that the patient's mental health may directly influence the effectiveness of antiseizure treatment, reinforcing a cycle of bidirectional impact in which poor adherence to treatment leads to inadequate seizure control, which, in turn, may worsen psychiatric symptoms.

3.4 - Integrated Therapeutic Interventions

Multidisciplinary therapeutic interventions are essential for the effective management of patients with epilepsy and psychiatric comorbidities. This approach combines different treatment modalities, aiming to significantly improve quality of life by addressing both the neurological and psychiatric aspects of the condition. Among the integrated strategies, the following stand out: multidisciplinary approaches, behavioral therapies, pharmacological treatments, and psychosocial interventions.

A - Multidisciplinary Approaches

The integration of medical specialties, especially neurology and psychiatry, is essential for the follow-up and appropriate management of patients with epilepsy and psychiatric disorders. The literature suggests that collaboration among different professionals, particularly neurologists and psychiatrists, may lead to better clinical outcomes²¹. An example is the study by Zheng²², which implemented a multidisciplinary treatment over 12 months in patients with epilepsy associated with depressive or anxiety disorders, resulting in a significant reduction in the number of patients with severe depressive and anxiety disorders, as well as increased adherence to ASMs. Therefore, multidisciplinary approaches are fundamental for the effective management of these patients, considering improved treatment adherence and reduction of psychiatric symptoms.

B - Behavioral Therapies

Interventions such as Cognitive Behavioral Therapy (CBT) have proven effective in the treatment of psychiatric disorders in patients with epilepsy. CBT helps restructure dysfunctional thought patterns and develop coping skills, being particularly useful in reducing anxiety and depressive symptoms in individuals with epilepsy. It also promotes a significant improvement in these patients' quality of life^{23,24}.

In addition, CBT can be combined with other approaches, such as occupational therapy, providing a more integrated therapeutic approach²⁵. In this way, these strategies can both improve quality of life and reduce the frequency of epileptic seizures by minimizing the negative impact of psychiatric comorbidities.

C - Pharmacological Treatment

Antiseizure medications (ASMs) play an essential role not only in controlling epileptic seizures but also in managing psychiatric comorbidities. Studies indicate that some antiseizure drugs have mood-stabilizing effects, while others may increase predisposition to psychiatric disorders, just as psychiatric medications may lower the seizure threshold and increase seizure frequency, as previously discussed^{9,25}.

Therefore, the choice of ASM should be made carefully, considering not only its efficacy in seizure control but also its potential impact on the patient's mental health. An individualized and multidisciplinary approach may help minimize adverse effects and optimize the overall treatment of the patient.

D - Psychosocial Interventions

In addition to medical and therapeutic interventions, psychosocial support is crucial for patients with epilepsy and psychiatric disorders due to the existence of social stigma related to these comorbidities. In this sense, stigma and lack of psychosocial support become significant barriers to the mental health of these patients. The promotion of support and education about epilepsy is crucial to breaking the vicious cycle between stigma and mental disorders, improving the quality of life of these patients and, consequently, treatment adherence, since social discrimination stems from a lack of knowledge about these conditions, exacerbating the disorders²⁶.

One way to mitigate this process is through psychosocial interventions and social support programs aimed not only at educating the population about these disorders but also at helping patients cope with social stigma, promoting an environment of acceptance and understanding^{27,28}.

Thus, creating a supportive environment improves quality of life for patients with epilepsy, enhances treatment adherence, and contributes to better management of psychiatric comorbidities²⁹.

FINAL CONSIDERATIONS

This literature review demonstrated the strong relationship between epilepsy and psychiatric disorders, especially depression and anxiety. The findings show that the prevalence of these comorbidities is significantly higher in patients with epilepsy compared to the general population, reinforcing the need for a multidisciplinary and integrated approach to the management of these patients.

Furthermore, the results of this review also indicate that multiple factors contribute to the interconnection between epilepsy and mental health, including neurochemical dysfunctions, structural brain changes, the direct impact of epileptic seizures, and adverse effects of antiseizure drugs. These aspects highlight the importance of specialized and coordinated care that considers both the neurological and psychiatric dimensions, as well as the implementation of social support strategies. This integration can lead to better clinical outcomes, improved treatment adherence, and greater quality of life for patients.

Future studies should further investigate more effective therapeutic interventions that simultaneously address epilepsy and its psychiatric comorbidities. In addition, there is a need to explore new pharmacological approaches that minimize adverse effects on mental health. Advances in knowledge of shared pathophysiological mechanisms between epilepsy and psychiatric disorders may contribute to the development of more personalized and targeted treatments, optimizing the management of these conditions.

REFERENCES

- Rani R, Chavan BS, Bhatia T, Kaur J, Arora S. Prevalence of psychiatric comorbidities among the patients of epilepsy attending general hospital psychiatric unit. *Int J Curr Res Med Sci*. 2018 Apr;4(5):90–6. doi:10.22192/ijcrms.2018.04.05.013.
- Institute for Health Metrics and Evaluation (IHME). 2021 Global Burden of Disease (GBD) [Internet]. Seattle, WA: IHME; 2024 [cited 2026 Mar 05]. Available from: <https://vizhub.healthdata.org/gbd-results/>
- Mula M. Epilepsy and psychiatric comorbidities: drug selection. *Curr Treat Options Neurol*. 2017 Oct;19(12):44. doi:10.1007/s11940-017-0483-0.
- Shin H-R, Kim DW, Kim HK, Yum M-S, Chun S, Lee ST, et al. Neuropsychiatric symptoms and seizure related with serum cytokine in epilepsy patients. *Sci Rep*. 2022 May 3;12(1):7076. doi:10.1038/s41598-022-10865-x.
- Hesdorffer DC, Ishihara L, Mynepalli L, Webb DJ, Weil J, Hauser WA. Epilepsy, suicidality, and psychiatric disorders: a bidirectional association. *Ann Neurol*. 2012 Aug;72(2):184–91. doi:10.1002/ana.23601.
- Soares W, Silva AP, Lima JF, Santos JN, Carvalho RS. Caracterização dos fatores clínico-epidemiológicos e das comorbidades neurológicas em pessoas com epilepsia: um estudo transversal no Nordeste do Brasil. *Res Soc Dev*. 2024 Jul;13(7):e9813745791. doi:10.33448/rsd-v13i7.45791.
- Valova V, Hanson CS, Smithson WH, Al-Ansari BM, Brodie MJ. Early onset, long illness duration, epilepsy type, and polypharmacy have an adverse effect on psychosocial outcome in children with epilepsy. *Neuropediatrics*. 2020;51(2):164–9. doi:10.1055/s-0039-3399529.
- Aagaard SK, Taudorf L, Hjalgrim H, Dreier JW, Laursen TM, Polcwiartek C, et al. Accidental deaths in young people with epilepsy and psychiatric comorbidity—a Danish nationwide cohort study. *Epilepsia*. 2020 Mar;61(3):479–88. doi:10.1111/epi.16453.
- Pisani F, Oteri G, Costa C, Di Raimondo G, Di Perri R. Optimization of therapy in patients with epilepsy and psychiatric comorbidities: key points. *Curr Neuropharmacol*. 2022;20:1091–105. doi:10.2174/1570159X20666220526144314.
- Cintra MP, Yuen CT. Epilepsia e depressão: abordagem na atenção primária como estratégia de saúde pública. *Rev Eletr Acervo Saúde*. 2021 Oct;13(10):e8845. doi:10.25248/reas.e8845.2021.
- Sajatovic M, Jobst B, Burke A, DeRossett S, Buelow J, Begley C, et al. Clinical correlates of perceived stigma among people living with epilepsy enrolled in a self-management clinical trial. *Epilepsy Behav*. 2024 Nov;160:110025. doi:10.1016/j.yebeh.2024.110025.
- Valente KDR, Busatto Filho G. Depression and temporal lobe epilepsy represent an epiphenomenon sharing similar neural networks: clinical and brain structural evidences. *Arq Neuropsiquiatr*. 2013 Mar;71(3):183–90. doi:10.1590/S0004-282X2013000300011.
- Kanner AM, Balabanov A. Depression and epilepsy: how closely related are they? *Neurology*. 2002 Apr 23;58(8 Suppl 5):S27–39. doi:10.1212/WNL.58.8_suppl_5.S27.
- Pineda EA, Hensler JG, Sankar R, Shin D, Burke TF, Mazarati A. Plasticity of presynaptic and postsynaptic serotonin 1A receptors in an animal model of epilepsy-associated depression. *Neuropsychopharmacology*. 2011 Jun;36(6):1305–16. doi:10.1038/npp.2011.18.
- Aroniadou-Anderjaska V, Fritsch B, Aplan JP, Pidoplichko V, Quinn G, Duffell JM, et al. Alterations in GABAA receptor-mediated inhibition triggered by status epilepticus and their role in epileptogenesis and increased anxiety. *Neurobiol Dis*. 2024 Aug 6;200:106633. doi:10.1016/j.nbd.2024.106633.
- Barker-Haliski M, White HS. Glutamatergic mechanisms associated with seizures and epilepsy. *Cold Spring Harb Perspect Med*. 2015 Aug;5(8):a022863. doi:10.1101/cshperspect.a022863.
- Gruenbaum BF, Shelef I, Knyazer B, Magid A, Dubilet M, Mevorach D, et al. The role of glutamate and blood–brain barrier disruption as a mechanistic link between epilepsy and depression. *Cells*. 2024 Jul;13(14):1228. doi:10.3390/cells13141228.
- Moura AS, Sousa MN, Lima LF, Silva Júnior JN, Nogueira AA. Análise da relação entre epilepsia e depressão/analysis of the relationship between epilepsy and depression. *Braz J Health Rev*. 2021 Apr;4(2):7338–61. doi:10.34119/bjhrv4n2-277.
- Basyoni H, Abdel-Rahman E, Abdelghany E, Abdallah M. Toxicity and suicidal tendency linked to the antiepileptic medications. *Egypt J Forensic Sci Appl Toxicol*. 2022;22(2):1–15. doi:10.21608/ejfsat.2021.79847.1203.
- Arana A, Wentworth CE, Ayuso-Mateos JL, Arellano FM. Suicide-related events in patients treated with antiepileptic drugs. *N Engl J Med*. 2010 Aug 5;363(6):542–51. doi:10.1056/NEJMoa0909801.
- Reasoner EE, Flandreau EI. The comorbidity between epilepsy and psychiatric disorders: assessing the integration of neuropsychiatric care. *IMPULSE [Internet]*. 2021 Jan 31 [cited 2025 Jan 12];18(1). Available from: <https://impulse.pubpub.org/pub/y166f2xp/release/1>.

22. Zheng Y, Zhang Q, Xu C, Ye H, Zhou Y, Zhang L, et al. Multidisciplinary management improves anxiety, depression, medication adherence, and quality of life among patients with epilepsy in eastern China: a prospective study. *Epilepsy Behav.* 2019 Nov;100:106400. doi:10.1016/j.yebeh.2019.07.001.
23. Gandy M, Sharpe M, Perry KN, Briggs L, Allen L, Laidlaw J. Cognitive behaviour therapy to improve mood in people with epilepsy: a randomised controlled trial. *Cogn Behav Ther.* 2014 Mar;43(2):153–66. doi:10.1080/16506073.2014.892530.
24. Choudhary N, Sagar R, Thakur A, Mehta S, Sarkar S. Effectiveness of CBT for reducing depression and anxiety in people with epilepsy: a systematic review and meta-analysis of randomized controlled trials. *Epilepsy Behav.* 2024 Feb;151:109608. doi:10.1016/j.yebeh.2023.109608.
25. Araújo Filho GM, Mazetto L, Caboclo LOSF, Yacubian EMT. Efeitos psiquiátricos e comportamentais das drogas antiepilépticas e sua ação como moduladores de humor. *J Epilepsy Clin Neurophysiol.* 2011;17(2):65–9. doi:10.1590/S1676-26492011000200006.
26. Madeira N, Pereira AT, Macedo A. Aspectos psiquiátricos dos tumores do sistema nervoso central. *Rev Port Psiquiatr Saúde Ment.* 2018 Dec;1(3):18–24. doi:10.51338/rppsm.2018.v1.i3.82.
27. Rocha YR, Fernandes RCP, Silva AF, Souza CL, Araújo TM. Abordagem dos transtornos psíquicos na Atenção Primária à Saúde/approach to psychological disorders in primary health care. *Braz J Health Rev.* 2021 Oct;4(5):22590–600. doi:10.34119/bjhrv4n5-350.
28. Qin Y, Wang H, Shen Y, Zhou J, Yang M, Zhang N. The relationship between ecological executive function and stigma among patients with epilepsy: the mediating effect of social support. *Epilepsy Res.* 2022 Apr;183:106919. doi:10.1016/j.eplepsyres.2022.106919.
29. Soares W, Silva AP, Lima JF, Santos JN, Carvalho RS. Caracterização dos fatores clínico-epidemiológicos e das comorbidades neurológicas em pessoas com epilepsia: um estudo transversal no Nordeste do Brasil. *Res Soc Dev.* 2024 Jul;13(7):e9813745791. doi:10.33448/rsd-v13i7.45791.