

# BRIEF OVERVIEW OF MENTAL HEALTH AND BENEFITS OF THIRD WAVE COGNITIVE-BEHAVIORAL THERAPIES IN ADULTS WITH EPILEPSY

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## Abstract

Epilepsy is a complex neurological disease affecting individuals' everyday life. The prevalence of epilepsy is around 5 cases per 1000 inhabitants in Croatia, which corresponds to the worldwide prevalence. Most common comorbidities in epilepsy are anxiety, depression and psychosis. Anxiety is differentiated between peri-ictal, ictal and postictal anxiety. Looking through the diathesis-stress model, depression is generally caused by certain triggers, personal and everyday stressors, which are more numerous in people with epilepsy than in the general population, thus they are 3.7 to 6 times more likely to suffer from depression. They are also eight times more likely to suffer from psychosis. Depending on the moment it emerges, and other factors, individuals can experience various symptoms, from depersonalization to hallucinations. Third-wave cognitive-behavior therapies have shown to be effective in helping to deal with mental health problems in people with epilepsy. Some of the effective interventions are mindfulness, disengaging from negative thoughts, and working on acceptance.

**KEYWORDS:** anxiety, depression, epilepsy, mental health, psychosis, stressors, therapy

## INTRODUCTION

*“Melancholics ordinarily become epileptics, and epileptics, melancholics: what determines the preference is the direction that malady takes; if it bears upon the body, epilepsy, if upon the intelligence, melancholy.”- Hippocrates<sup>1</sup>*

People dealing with epilepsy tend to have much more daily stressors than other people, so it is important to inspect stressful factors such as chronic neurological diseases, and the stigma around them while helping them in achieving better quality of life. Beside those factors, it is obvious that there is a correlation between epilepsy and mental health problems, which even Hippocrates discussed 24 centuries ago. The main aim of this literature review is to present findings from recent studies; presenting epilepsy itself, its neurobiology, epidemiology, most frequent comorbidities and the importance of psychological interventions while dealing with epilepsy.

The World Health Organization defines epilepsy as a chronic noncommunicable disease which is characterized by recurrent seizures (a brief episode of involuntary movement involving one part of the body or the entire body, sometimes accompanied by loss of consciousness).<sup>2</sup> A seizure

is a paroxysmal alteration of neurologic function caused by neural hyperactivity with the main conceptualization being the distortion of the normal excitation-inhibition balance in the brain.<sup>3</sup> The first classification by the International League Against Epilepsy (ILAE) was introduced in 1964, focusing exclusively on epileptic seizures. This early classification made a distinction between generalized and focal seizures but did not consider epilepsy as a broader disease entity. It was not until 1985 that the ILAE published its first formal classification of the epilepsies, which recognized epilepsy syndromes as distinct clinical entities.<sup>4</sup> This classification introduced key terms such as idiopathic, symptomatic, and cryptogenic epilepsies, along with several specific epilepsy syndromes. Although the 1985 classification marked significant progress, it had several limitations. These were later addressed and improved upon between 2017 and 2021, when the ILAE's Nosology and Definitions Task Force released an updated and more comprehensive classification.<sup>4</sup> In 2025, ILAE introduced new seizure classification with six main changes, including the removal of the term *onset* from the names of the main seizure classes, distinction between classifiers and descriptors, replacing awareness with consciousness, promoting observable manifestations, emphasizing whole seizure chronological sequence, and recognizing epileptic

negative myoclonus as a seizure type.<sup>5</sup> These changes were of great importance for improving communication with patients and other professionals, directing further research, and optimizing diagnostics.

American Psychological Association defines mental health as a state of mind characterized by emotional well-being (emotional stability), minimal anxiety and disabling symptoms, and the ability to form healthy and stable relationships while dealing and coping with everyday challenges and stressors.<sup>6</sup>

## THE NEUROBIOLOGY OF EPILEPSY

The main pillars of an epilepsy diagnosis are patient history and neurologic examination. Neurologic examination implies assessing focal signs that could show or localize cerebral pathology.<sup>3</sup>

The most specific method for defining the epileptogenic cortex is EEG (Electroencephalography), which records changes in brain waves' patterns that can be used to diagnose epilepsy.<sup>7</sup> For example, some of the epileptiform EEG patterns are very short spikes with a sharp-pointed peak with a duration of 20 to 70 milliseconds, and longer sharps that last 70 to 200 milliseconds.<sup>8</sup>

On the cellular level, seizures are followed by a rise in the extracellular potassium, as a result of the excess discharge which can lead to an elevation of such levels of potassium that can further depolarize neurons.<sup>9</sup> Another possibility is that abnormalities in the balance of the ionic gradients of sodium and potassium might lead to a decrease in the threshold for an action potential and such mutations in the subunits of the voltage-dependent channels can lead to epilepsy.<sup>9</sup>

There are several types of epilepsy, general and several focal types. Depending on the type of the epilepsy, different brain regions are considered epileptogenic zones.<sup>10</sup> Generally, the brain activity during epileptic seizures is considered to activate and arise from a certain epileptogenic zone and then spread to other brain regions. Recent findings provided with neuro-imaging and electro-physiology suggest that those focal zones are not the only ones affected, but rather that there is present an abnormal functioning of the cortical and subcortical brain structure network.<sup>10</sup>

## EPIDEMIOLOGY

In Croatia, in 2007, The Croatian Association for Epilepsy conducted a study on a sample which included 4.5% of the total Croatian population.<sup>11</sup> Among other tested variables, people were asked if they ever had seizures by giving them the ILAE definition of epilepsy: (1) at least two seizures, excluding the provoked ones and febrile convulsions or (2) active epilepsy — having at least one seizure in the previous 5 years.<sup>11</sup> Results have shown that the total prevalence would be 5.5/1000, while the real prevalence of epilepsy in Croatia lies between 4.8–5.5 per 1000 inhabitants, which positively corresponds with data that in 2002 the consumption of antiepileptics amounted to 4.5 daily doses per 1000 inhab-

itants.<sup>11</sup> More than two decades later, in 2024, the Croatian Institute for Public Health reported that there were almost 60 000 people diagnosed with epilepsy with the prevalence of 1 500 per 100 000 inhabitants, with one sixth being in the city of Zagreb.<sup>12</sup> For comparison, a worldwide estimation on epilepsy prevalence stands between 50 and 60 cases per 100 000 persons a year, and up to 8% of people having at least one seizure in their lifetime.<sup>13</sup>

## COMORBIDITIES

The general prevalence of psychiatric comorbidities in epilepsy is 35%.<sup>14</sup> The most frequent psychiatric disorders that burden people with epilepsy are depression, anxiety,<sup>15</sup> and psychosis.<sup>14,16</sup>

The prevalence of anxiety disorders in the general population is estimated to be 5% to 10%, while in people with epilepsy it is estimated to be 11% to 50%.<sup>17</sup> Anxiety can be detected as a symptom or as a diagnosis itself: as a symptom it is a normal human reaction in a stressful situation, while as a disorder it is characterized as an irrational fear without known cause.<sup>17</sup> Correlation between epilepsy and anxiety is mutual. On one hand, thoughts, fears, and anxiety triggered by long lists of possible side effects from antiepileptic medicine can cause the onset of anxiety disorders.<sup>17</sup> On the other hand, anxiety can induce seizures in people with epilepsy, because of an excessive amount of stress hormones.<sup>17</sup> There are several types of anxiety associated with epilepsy. First are peri-ictal anxiety symptoms which can occur a short period of time before a seizure, and are characterized by emotional disturbance and hyperventilation.<sup>18</sup> Second are ictal anxiety symptoms which are hard to differentiate from a classic panic attack, and can include fear of seizures, social phobia, agoraphobia and behavioral avoidance.<sup>18</sup> Third, and most frequent, is postictal anxiety; anxiety which occurs within 6–24h during the postictal period (72h following a seizure), and can be manifested as general anxiety, panic or compulsivity, often accompanied by depression.<sup>18</sup>

The prevalence of depression among the general population is estimated to be around 10%, but in people with epilepsy those numbers rise from 17% to 30%, and 6% to 9% for those in remission.<sup>19</sup> Main risk factors for depression in people with epilepsy are seizure frequency, low income, unemployment, stigma, anxiety, being female, unmarried status, disease course, worse quality of life, higher disability scores and focal-impairment awareness seizures.<sup>20</sup> Viewing those risk factors through the diathesis-stress model, some of them are everyday stressors. Adding the chronic stress exposure of having epilepsy itself can be a trigger for the development of depression.<sup>21</sup> Additionally, one of the most common causes of death in people with epilepsy is suicide, which is 10 times more frequent than in the general population.<sup>22</sup> Studies also suggest that the bidirectional relationship between epilepsy and depression is possible; a history of depression was 3.7 to 6 times more frequent among patients with newly diagnosed epilepsy.<sup>23</sup>

People with epilepsy are eight times more likely to suffer from psychotic disorders than the general population.<sup>23</sup> Ictal

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psychoses are the rarest and most commonly related to visual or auditory illusions and hallucinations, as well as other psychic phenomena including depersonalization, derealization etc.<sup>24</sup> Postictal psychosis does occur in 2%–7.8% of people with epilepsy and is defined by abnormalities of behavior or affect, delusions and hallucinations, up to seven days after a seizure.<sup>24</sup> Chronic, interictal psychosis can be caused by a long history of uncontrolled seizures and is prevalent in 5% of patients.<sup>24</sup> This psychosis includes paranoid delusions and hallucinations, which is formally closer to schizophrenia than postictal psychosis.<sup>24</sup>

### THE ROLE OF PSYCHOLOGICAL INTERVENTIONS IN PEOPLE WITH EPILEPSY

Although psychotherapy is not the first step in treating epilepsy, its use is important in dealing with fear, depression and anxiety caused by it. Third-wave cognitive-behavioral therapies (CBT) have shown to be effective in helping to deal with mental health-related symptoms in people with epilepsy.<sup>25</sup> Like the first two waves, the third wave of CBT still focuses on dealing with maladaptive thinking patterns in emotion and behavior, but with a greater emphasis on one's beliefs, goals, acceptance and meta-cognition.<sup>26</sup> In the context of CBT for people dealing with epilepsy, acceptance helps them live more normal lives by accepting difficulties and trying to make the most despite them. Working on beliefs and goals can help them thrive personally and academically, and working on meta-cognition can help them restructure their own way of thinking, regarding their diagnosis or something else. One of the third-wave CBTs is Acceptance and Commitment Therapy which helps with enhancing the acceptance of experiencing seizures and reducing rigidity in mental processes.<sup>25</sup> This form of therapy is shown to be more effective than supportive therapy or giving information alone, but not as effective as mind-body treatments.<sup>25</sup> Other forms of third-wave CBTs are Mindfulness-Based Stress Reduction and Mindfulness-Based Cognitive Therapy which incorporate formal meditation practices, helping people

ground themselves in stressful situations and disengage from negative thoughts.<sup>25</sup>

Skills-based psychological interventions are meant to improve quality of life by promoting and teaching adaptive coping skills which can be used in everyday life.<sup>27</sup> These adaptive coping skills can be grouped into three categories: (1) problem-focused coping being active coping and planning, (2) socially supported coping being venting and reaching for emotional and instrumental support, and (3) emotional-focused coping being positive reframing, acceptance, humor and religion if applicable.<sup>28</sup> The main aim is to help people develop awareness of their current feelings and repeated behaviors, to better understand themselves, their interpersonal relationships and adjust to chronic illnesses (such as epilepsy).<sup>27</sup>

### DISCUSSION

To begin, there are several types of epilepsy and several neurological mechanisms explaining how it functions, but further research is necessary for providing clearer findings on this topic. The most recent seizure classification is from 2025 and it can only be speculated how it will develop with future research. Furthermore, because of its physiological and psychological complexity, epilepsy has diverse comorbidities which demand further research on how they mutually affect each other, correlate and change during a course of time. Future longitudinal studies could provide a better understanding on how epilepsy and comorbidities affect individuals through their life. Lastly, some psychological interventions and CBT techniques have shown to be effective in dealing with some epilepsy symptoms and symptoms caused by comorbidities while focusing on individuals' acceptance of themselves, things that are happening to them and handling negative thoughts, specific and everyday stressors. Despite these findings, there is an immense lack of studies regarding the effects of other psychotherapeutic modalities in helping people with epilepsy, thus it is still not possible to mark third-wave CBT as the most effective in this context.

## CONCLUSION

In conclusion, people dealing with epilepsy tend to have more daily stressors, and are more prone to mental health problems than others. CBT interventions can be of great help while trying to manage different symptoms, mental or physical. Besides dealing with symptoms, it is important to work on individuals'

interpersonal relationships and other aspects of everyday life which are affected by their chronic condition. Although their quality of life is influenced by epilepsy, improvement is possible and needed, just as further research on this topic.

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# KRATKI PREGLED MENTALNOG ZDRAVLJA I DOBROBITI TREĆEG VALA KOGNITIVNO BIHEVIORALNE TERAPIJE U ODRASLIH S EPILEPSIJOM

## Sažetak

Epilepsija je složeni neurološki poremećaj koji utječe na svakodnevni život oboljelog pojedinca. Zastupljenost epilepsije u Hrvatskoj je oko 5 slučajeva na 1000 stanovnika, što odgovara zastupljenosti na globalnoj razini. Najčešći komorbiditeti uz epilepsiju su anksioznost, depresija i psihoza. Anksioznost se može podijeliti na peri-iktalnu, iktalnu i postiktalnu. U modelu dijateza-stresa, depresiju uzrokuju određeni okidači, svakodnevni i osobni stresori, koji su poprilično brojniji kod osoba s epilepsijom nego kod opće populacije, stoga su 3.7 do 6 puta skloniji patiti od depresije. Također, 8 su puta skloniji patiti od psihoze. Ovisno o vremenu u kojemu se psihoza javi i ostalim čimbenicima, pojedinci mogu doživjeti cijeli niz simptoma, od depersonalizacije do halucinacija. Psihoterapija iz trećeg vala kognitivno-bihevioralnih terapija se pokazala učinkovitom za nošenje sa problemima mentalnog zdravlja kod pojedinaca s epilepsijom. Neke od učinkovitih intervencija su usredotočena svjesnost (mindfulness), razrješavanje negativnih misli i rad na prihvatanju.

**KLJUČNE RIJEČI:** anksioznost, depresija, epilepsija, mentalno zdravlje, psihoza, stresori, terapija