



## **Effect of Yoga in Stress Management in Patients with Epilepsy- A Literature Review**

**Jeekshitha Kulal <sup>a#</sup>, A. P. Rashmitha <sup>a\*≡</sup> and K. U. Dhanesh Kumar <sup>a°</sup>**

<sup>a</sup> Nitte Institute of Physiotherapy, NITTE (Deemed to be University), Nithyananda Nagar, Mangalore, Karnataka- 575018, India.

### **Authors' contributions**

*This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.*

### **Article Information**

DOI: 10.9734/JPRI/2021/v33i62B35169

### **Open Peer Review History:**

This journal follows the Advanced Open Peer Review policy. Identity of the Reviewers, Editor(s) and additional Reviewers, peer review comments, different versions of the manuscript, comments of the editors, etc are available here: <https://www.sdiarticle5.com/review-history/81203>

**Review Article**

**Received 27 October 2021**  
**Accepted 28 December 2021**  
**Published 29 December 2021**

## **ABSTRACT**

**Objective:** The major goal of this research evaluation was to see if yoga therapy may help people with epilepsy manage stress.

**Introduction:** Epilepsy is a neurological disorder that has a high psychological and physical toll. Self-reported seizures are frequently caused by stress, individual and many patients with epilepsy believe that reducing stress improves seizure management.

**Methodology:** An electronic search of published research publications was conducted using Google Scholar, PubMed, Science Direct, and other databases, and the results were analysed to determine the effectiveness of yoga in the treatment of stress in epileptic patients." Based on inclusion criteria, few papers were included in the literature review like randomised controlled trials, systematic literature reviews, systematic reviews, Cochrane review, and pilot study.

**Results:** This review looked at how yoga affects stress through multiple mechanisms and found that it helps epileptic patients reduce stress and improve their quality of life.

**Conclusion:** This study found that yoga can be one of the alternative methods for reducing stress in epileptics. Yoga should be practised by epileptics to reduce stress and seizure frequency, as well as increase overall well-being. It doesn't have any negative side effects.

<sup>#</sup> Under Graduate Student;

<sup>≡</sup> Assistant Professor;

<sup>°</sup> Principal;

\*Corresponding author: E-mail: rashmitha1409@gmail.com;

**Keywords:** *Yoga and epilepsy; yoga and stress; stress and epilepsy; stress reduction; refractory epilepsy.*

## 1. INTRODUCTION

Epilepsy affects 65 million people globally, with 80 percent of them living in underdeveloped nations. Epilepsy affects 67.8 out of every 100,000 people in underdeveloped countries and 43.4 out of every 100,000 people in developed countries [1]. Epilepsy can strike people of any age, race, or social status [2]. Seizures that occur frequently can result in a number of physical, psychological, and social complications. As a result, perfect seizure control can avert these complications [3].

Recurrent and unprovoked seizures characterise epilepsy, which are a temporary indication and symptom of uncontrolled, excessive electrical activity in the cerebral cortex [4]. Epileptiform discharges may begin and stay localised in this disease, resulting in partial seizures, or they may extend to broader areas in both hemispheres of the brain, resulting in generalised seizures. Adults are the most common victims of partial epilepsy [5]. Multiple surveys have found that stress is the most prevalent cause of self-reported seizure, and many patients with epilepsy believe that reducing stress improves seizure control. Epilepsy is one of the most frequent major neurological diseases in the world, with substantial psychological and physical consequences [6]. In the everyday treatment of epilepsy, it is critical to create, evaluate, and execute a complementary treatment model in individuals with epilepsy [7].

Yoga is a centuries-old practice and does mean living in harmony with oneself and the natural world. Positive behavioural modification [yamas and niyamas], physical posture practise [asanas], breath regulation [pranayama], sensation control [pratyahara], and meditative practices [dharana dhyana and samadhi] are all part of a yoga-based lifestyle. Yoga can be a useful method for improving personal wellness and reducing stress [3]. The links between the brain, mind, body, and behaviour, as well as their impact on health and disease, are the focus of mind-body therapies. These techniques frequently provide stress reduction and relaxation [8].

According to scientific evidence, yoga training reduces stress, improves quality of life, and

reduces psychiatric difficulties in people with epilepsy, as well as decreasing seizure frequency via stimulating the vagus nerve [9].

Seizures that occur frequently can result in a number of physical, psychological, and social complications. As a result, perfect seizure control can avert these complications [10].

The search turned in 25 studies, and which were related to the research were included in the review. We explored additional sources during the review to explain review issues. Articles specifically discussing the effect of yoga on stress management in epilepsy were included in this search. In addition, the reference lists of published original and review articles were manually examined to find other research that met the criteria.

## 2. METHODOLOGY

A systemic literature was conducted on electronic data base of google scholar, PubMed, science direct using the terms “yoga and epilepsy” “yoga and stress” “stress and epilepsy” as key words. Results were filtered by the clinical trials.

### 2.1 Inclusion Criteria

- Patient diagnosed with primary idiopathic epilepsy.
- Both male and female were included
- All the age group
- Any studies of yoga intervention that measured stress has primary dependent variable.
- Studies that include mechanism between yoga and stress.
- All RCT using yoga as an epilepsy treatment.

### 2.2 Exclusion Criteria

The studies were excluded in the narrative review if they were:

- Not based on the study.
- Abstracts and unpublished articles.

**Table 1. Some of the significant literature review**

<b>Author and year</b>	<b>Study design</b>	<b>Methodology</b>	<b>Result</b>	<b>Conclusion</b>
1)Sujatha V. Kanhere, Deepa K R. Bagadia. (2018)	Randomised control trail	Twenty children between the ages of 8 and 12 who had been diagnosed with epilepsy and were on regular antiepileptic drugs were included in the study. Ten children (study group) and ten children (control group) received yoga therapy. Yoga therapy was delivered in ten one-hour sessions.	At the end of three and six months, none of the children in the study group suffered seizures. At 3 and 6 months, four and three children in the control group, respectively, developed seizures. At the time of enrolment, eight children in each group had an abnormal EEG. One EEG in the experimental group and seven in the control group were abnormal at the end of six months (P = 0.020).	In the yoga group, there was a decrease in seizure frequency, leading in seizure freedom. In a considerable number of children who underwent yoga as an intervention, their EEG returned to normal. There were no documented side effects from yoga therapy.
2)Mariangela Panebianco. (2020)	Systemic literature review	There were 50 participants in all, 14 males and 36 females, with an average age of 23.2 years, who were divided into two groups: those who were given yoga and those who were not (range 15-55 years).	The results of the overall efficacy analysis revealed that yoga treatment was superior to no intervention and several behavioural treatments. With yoga treatment, there are no negative side effects. According to the Satisfaction With Life Scale, the yoga group demonstrated considerable improvement in their quality of life.	When compared to no intervention or other behavioural treatments, yoga can reduce seizure frequency. Yoga can now be considered an attractive therapy option for epilepsy, in addition to standard AEDs, due to its non-pharmacological nature, few side effects, and international recognition.
3)Sridharan Ramaratnam. (2017)	Cochrane review	A total of 50 persons were recruited for two unblinded studies (18 treated with yoga and 32 to control	In all studies, the baseline phase lasted three months, and the treatment phase lasted between five and six months. In	The yoga intervention is similar in complexity to other complementary and alternative

Author and year	Study design	Methodology	Result	Conclusion
		interventions). All of the participants' antiepileptic medications were continued.	one study, randomization was done by rolling a die, while in the other, it was done by using a computerised randomisation table. However, neither study gave data on how allocation was concealed, and both were classified as having an unclear risk of bias. The two studies were judged as having a low risk of bias in general.	treatments. Yoga may be used in conjunction with antiepileptic medications (AEDs) at this time.
4)Bhagavatheeswaran Rajesh. (2006)	Pilot study	The participants were 20 patients (14 males and 6 females, ages 15 to 47, median 27 years) with clearly established epilepsy and at least four CPS (with or without secondary generalisation) in the previous three months.	With the exception of one patient, all patients saw a reduction in seizure frequency after three months, with six of them experiencing a 50% reduction in seizure frequency. 14 of the 16 patients who were on the YMP for more than three months reacted at six months, and six of them were seizure-free for three months. All eight patients who stayed on the YMP for more than six months improved, and three of them were seizure-free for six months.	If verified in larger-scale randomised studies, this YMP could become a cost-effective and side-effect-free supplementary treatment for patients with drug-resistant epilepsies.
5) Tobias Lundgren. (2008)	Randomised control trail	A randomised controlled experiment with repeated measures (N = 18) was used in the study. All of the subjects	According to the findings, both ACT and yoga reduce seizure index and improve quality of life over time. When compared to yoga, ACT reduced	The findings of this study reveal that supplementary therapy like ACT and yoga can reduce seizure index

Author and year	Study design	Methodology	Result	Conclusion
		experienced drug-resistant seizures and an EEG-verified epilepsy diagnosis. The participants were split into two groups: ACT and yoga.	seizure index much more. Both the ACT and yoga groups considerably improved their quality of life as judged by one of two quality-of-life tools.	and improve quality of life in people with epilepsy.
6) Kristen E. Riley and Crystal L. Park	Systemic review of literature		Any yoga intervention that measured stress as a primary dependent variable and investigated a mechanism was included in a systematic review of the literature. For the final systematic review, 5 studies were chosen. Three psychological mechanisms (positive affect, mindfulness) and four biological mechanisms were investigated in this five research (posterior hypothalamus, cortisol). Yoga has been demonstrated to influence the link between stress and positive affect, self-compassion, inhibition of the posterior hypothalamus, and salivary cortisol. The tremendous growth of literature explaining potential pathways is astonishing.	Yoga, as an extra stress-reduction approach, has far-reaching impacts. Yoga therapies have the ability to help people cope with stress and stress-related disorders.

### 3. FINDINGS

The above studies evaluated the effectiveness of yoga in stress management in epileptic patients. Various studies on the prevalence, effect on daily

living activity, and effectiveness of yoga were compared in this article. For a review, we looked at a number of studies that revealed stress in epilepsy had a major impact on daily activities. Seizures that occur frequently can result in a

number of physical, psychological, and social complications [11]. As a result, perfect seizure control can avoid these complications. As a result, it has a negative impact. This clearly demonstrates that stress in epilepsy is the primary cause of human life cycle disruption when compared to the lives of people who do not experience stress.

Yoga as an extra therapy in children with epilepsy leads to seizure independence and considerable improvement in EEG at 6 months [12].

The practise of yoga and meditation improves the physiological and psychological symptoms of neurological illnesses in a statistically significant way [13].

According to Kristen E. Riley and Crystal L. Park, providing a second stress-reduction approach in the form of yoga has far-reaching implications. Yoga therapies have the ability to improve stress-related conditions [14].

Because of its non-pharmacological nature, few side effects, and international acceptance, determined that yoga would be a good therapeutic choice for epilepsy in addition to standard AEDs [15].

The yoga intervention, is similar to other complementary and alternative treatments. Yoga may be used in conjunction with antiepileptic medications (AEDs) at this time [16].

This YMP might become a cost-effective and side effect-free supplementary treatment in patients with drug-resistant epilepsies if verified by randomised studies involving a greater number of patients [17].

The complementary therapy such as ACT and yoga can reduce seizure index and improve quality of life [18].

The stress-reduction method in the form of yoga, has far-reaching consequences. Yoga therapies have the ability to help people cope with stress and stress-related disorders [19].

Yoga is increasingly being used in therapeutic settings for a variety of mental and physical health issues, including stress-related ailments and concerns, with positive results [3]. Patients with epilepsy have emotional issues in addition to medical issues caused by the disorder. The

psychosocial well-being of these patients is frequently overlooked. Despite the fact that yoga is a commonly utilised mind-body treatment for disease prevention and health promotion [20]. There is insufficient data to support the use of yoga in epilepsy stress management. As a result, the study's goal is to gather evidence on the effect of yoga on stress management in epilepsy patients.

Yoga has been shown to improve health and well-being by reducing stress and promoting relaxation. However, there is no evidence that yoga as a single intervention can significantly reduce symptoms in people with refractory epilepsy [21]. Hatha yoga is the most popular school of yoga, emphasising physical components such as body postures, breathing and relaxation techniques, and dietary habits [22]. Yoga has been used to treat a variety of neurological illnesses, including epilepsy, as a complimentary therapy [6]. Yoga can help people become more efficient at coping with oxidative stress by improving glutathione metabolism, increasing antioxidant enzyme synthesis, and removing peroxidation products [23]. Yoga has been shown to improve quality of life and reduce psychological issues in people with epilepsy [24].

#### **4. CONCLUSION**

After conducting an extensive literature review, the researcher discovered that several studies had been conducted on the subject, but that some of them were lacking in some aspects or were conducted in settings other than the researcher's interest. The review revealed that yoga may help to reduce stress in individuals with epilepsy when compared to those who received no intervention or alternatives. Yoga can now be used in conjunction with anti-epileptic medications to help people with epilepsy manage their stress. Yoga poses, relaxation techniques, pranayama, and meditation have all been shown to be effective in the treatment of primary dysmenorrhoea, as well as increasing productivity in daily life. Yoga is one of the oldest formal disciplines known for restoring this balance.

#### **CONSENT**

It is not applicable.

#### **ETHICAL APPROVAL**

It is not applicable.

## COMPETING INTERESTS

Authors have declared that no competing interests exist.

## REFERENCES

1. Mehndiratta MM, Wadhai SA. International epilepsy day-a day notified for global public education & awareness. *The Indian journal of medical research*. 2015;141(2):143.
2. Farnia V, Afshari D, Abdoli N, Radmehr F, Moradinazar M, Alikhani M, Behrouz B, Khodamoradi M, Farhadian N. The effect of substance abuse on depression, anxiety, and stress (DASS-21) in epileptic patients. *Clinical Epidemiology and Global Health*. 2021;9:128-31.
3. Mohammadzadeh P, Nazarbaghi S. The prevalence of drug-resistant-epilepsy and its associated factors in patients with epilepsy; 2022.
4. Panebianco M, Signorelli M, Rodolico A, Restivo D, Zavanone C. Effects of yoga on seizure frequency and quality of life for people with refractory epilepsy: A systematic literature review; 2020.
5. Shawahna R, Abdelhaq I. Exploring perceived benefits, motives, barriers, and recommendations for prescribing yoga exercises as a nonpharmacological intervention for patients with epilepsy: a qualitative study from Palestine. *Epilepsy & Behavior*. 2020;106:107041
6. Panebianco M, Sridharan K, Ramaratnam S. Yoga for epilepsy. *Cochrane Database of Systematic Reviews*. 2017;(10).
7. Jasti N, Bhargav H, George S, Varambally S, Gangadhar BN. Tele-yoga for stress management: Need of the hour during the COVID-19 pandemic and beyond? *Asian journal of psychiatry*; 2020.
8. Riley KE, Park CL. How does yoga reduce stress? A systematic review of mechanisms of change and guide to future inquiry. *Health psychology review*. 2015;9(3):379-96.
9. Farnia V, Afshari D, Abdoli N, Radmehr F, Moradinazar M, Alikhani M, Behrouz B, Khodamoradi M, Farhadian N. The effect of substance abuse on depression, anxiety, and stress (DASS-21) in epileptic patients. *Clinical Epidemiology and Global Health*. 2021;9:128-31.
10. Kotwas I, McGonigal A, Bastien-Toniazzo M, Bartolomei F, Micoulaud-Franchi JA. Stress regulation in drug-resistant epilepsy. *Epilepsy & Behavior*. 2017;71:39-50.
11. Prathikanti S, Rivera R, Cochran A, Tungol JG, Fayazmanesh N, Weinmann E. Treating major depression with yoga: A prospective, randomized, controlled pilot trial. *Plos one*. 2017;12(3):e0173869.
12. Kanhere SV, Bagadia DR, Phadke VD, Mukherjee PS. Yoga in children with epilepsy: A randomized controlled trial. *Journal of pediatric neurosciences*. 2018;13(4):410.
13. Mishra SK, Singh P, Bunch SJ, Zhang R. The therapeutic value of yoga in neurological disorders. *Annals of Indian Academy of Neurology*. 2012;15(4):247.
14. Lundgren T, Dahl J, Yardi N, Melin L. Acceptance and commitment therapy and yoga for drug-refractory epilepsy: A randomized controlled trial. *Epilepsy & Behavior*. 2008;13(1):102-8.
15. Costanzo MC, Arcidiacono C, Rodolico A, Panebianco M, Aguglia E, Signorelli MS. Diagnostic and interventional implications of telemedicine in Alzheimer's disease and mild cognitive impairment: a literature review. *International journal of geriatric psychiatry*. 2020;35(1):12-28.
16. Naveen GH, Sinha S, Girish N, Taly AB, Varambally S, Gangadhar BN. Yoga and epilepsy: What do patients perceive?. *Indian journal of psychiatry*. 2013;55(Suppl 3):S390.
17. Rajesh B, Jayachandran D, Mohandas G, Radhakrishnan K. A pilot study of a yoga meditation protocol for patients with medically refractory epilepsy. *Journal of Alternative & Complementary Medicine*. 2006;12(4):367-71.
18. Lundgren T, Dahl J, Hayes SC. Evaluation of mediators of change in the treatment of epilepsy with acceptance and commitment therapy. *Journal of behavioral medicine*. 2008;31(3):225-35.
19. Riley KE, Park CL. How does yoga reduce stress? A systematic review of mechanisms of change and guide to future inquiry. *Health psychology review*. 2015;9(3):379-96.
20. Espinosa-Garcia C, Zeleke H, Rojas A. Impact of Stress on epilepsy: Focus on neuroinflammation—A mini review. *International journal of molecular sciences*. 2021;22(8):4061.
21. Ramaratnam S, Sridharan K. Yoga for epilepsy. *Cochrane Database of Systematic Reviews*. 2002;(1).

22. Woodyard C. Exploring the therapeutic effects of yoga and its ability to increase quality of life. International journal of yoga. 2011;4(2):49.
23. Banerjee AK, Mandal A, Chanda D, Chakraborti S. Oxidant, antioxidant and physical exercise. Molecular and cellular biochemistry. 2003;253(1):307-12.
24. Yardi N. Yoga for control of epilepsy. Seizure. 2001 Jan 1;10(1):7-12.

---

© 2021 Kulal et al.; This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

*Peer-review history:*  
*The peer review history for this paper can be accessed here:*  
<https://www.sdiarticle5.com/review-history/81203>