Journal of Neurology and Neurological Disorders
Volume 11 | Issue 1

Research Article Open Access

Yoga as a Therapeutic Intervention for Generalized Anxiety Disorder: A Systematic Review

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Citation: Varvara Papasideri, Stylianos Sergios Chatziioannou, Emmanouil M Xydias, Elias Tsakos (2025) Yoga as a Therapeutic Intervention for Generalized Anxiety Disorder: A Systematic Review. J Neurol Neurol Disord. 11(1): 106.

Received Date: December 02, 2025 **Accepted Date:** December 28, 2025 **Published Date:** December 31, 2025

Abstract

Objective: This systematic review aimed to evaluate the effectiveness of yoga as a therapeutic intervention for reducing anxiety symptoms, improving comorbid depression and somatic complaints, and enhancing quality of life in adults with Generalized Anxiety Disorder (GAD).

Methods: A systematic search of PubMed and CINAHL was conducted up to August 2025. The review was registered in PROSPERO (CRD420251152980). Eligible studies included randomized controlled and clinical trials evaluating yoga interventions in adults diagnosed with GAD based on DSM criteria. Data extraction focused on intervention type, outcomes, and treatment effects. Risk of bias was assessed using Joanna Briggs Institute (JBI) tools, and results were synthesized narratively due to heterogeneity.

Results: Five studies (two RCTs, one quasi-experimental study, and two clinical trials; total N = 468) met inclusion criteria. Yoga interventions, including Sudarshan Kriya Yoga, Kundalini Yoga, and mindfulness-based yoga, consistently reduced anxiety symptoms, as shown by significant improvements in the Hamilton Anxiety Rating Scale, Beck Anxiety Inventory, and State-Trait Anxiety Inventory. Additional benefits were observed for depressive symptoms, sleep quality, and somatic complaints. Kundalini Yoga was superior to stress management education but not noninferior to cognitive-behavioral therapy. All interventions were well tolerated.

Conclusions: Yoga appears to be an effective, safe, and well-tolerated complementary intervention for GAD, producing clinically meaningful reductions in anxiety and related symptoms. However, small sample sizes and intervention heterogeneity limit generalizability. Future large-scale RCTs should clarify comparative efficacy and long-term outcomes.

Public Significance Statement: This systematic review highlights yoga as a promising complementary therapy for managing generalized anxiety disorder. By integrating mind–body practices with conventional treatment, yoga may reduce anxiety and improve emotional and physical well-being. Further research is needed to confirm its long-term effectiveness in diverse populations.

Keywords: Generalized Anxiety Disorder; Yoga; Anxiety; Mind–Body Interventions; Systematic Review.

Introduction

Generalized Anxiety Disorder (GAD) is one of the most prevalent mental disorders and is characterized by excessive, difficult--to-control anxiety, accompanied by multiple somatic symptoms such as restlessness, easy fatigue, difficulty concentrating, irritability, muscle tension, and sleep disturbances [1,2]. The fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) describes GAD as a condition marked by persistent, excessive, and unrealistic worry about everyday matters, typically across multiple domains, such as finances, family, health, and the future [33].

Globally, the lifetime prevalence of GAD is estimated at 3.7%, while the 12-month prevalence is 1.8% [3]. A systematic review of twelve European epidemiological studies estimated the median 12-month prevalence of GAD at 1.7% (range: 0.2% to 4.3%) [4]. Lifetime prevalence varies significantly depending on countries' income levels, being lower in low-income countries (1.6%) and higher in high-income countries (5.0%) [3]. Moreover, GAD is characterized by high comorbidity with mood disorders and other anxiety disorders, which may reach up to 50%. GAD often co-occurs with bipolar disorder and is associated with a more adverse clinical course, as well as an increased risk of suicide [5].

GAD typically manifests in adulthood, while onset before adolescence is rare. About 25% of cases occur by age 25, 50% by age 39, and 75% by age 53 [3]. Additionally, the prevalence of GAD is higher among women, unmarried individuals, those who are inactive, and people with lower levels of education and income compared to national norms [3]. GAD is also associated with significant disability and functional impairment. In the study by Ruscio et al., nearly 50% of individuals with GAD in the past 12 months reported severe dysfunction in one or more life domains attributable to the disorder [3].

The etiology of GAD remains unclear; however, it is considered multifactorial. It is hypothesized to result from a combination of genetic factors, environmental influences (such as traumatic childhood experiences), medical conditions (e.g., diabetes mellitus), alcohol and psychoactive substance use, as well as chronic or acute stressful life events, all of which contribute to the onset, course, and chronicity of GAD [6]. Additionally, some studies have suggested that the manifestation of GAD symptoms is associated with dysfunction in brain regions involved in decision-making, memory, cognitive flexibility, the evaluation and regulation of emotions, as well as in threat detection and processing [7,8].

Patients with GAD can benefit significantly from pharmacotherapy [6]. Randomized clinical trials and meta-analyses support the efficacy of various pharmacological treatments in adults with GAD, including selective serotonin reuptake inhibitors (SSRIs), serotonin–norepinephrine reuptake inhibitors (SNRIs), agomelatine, mirtazapine, bupropion, buspirone, pregabalin, hydroxyzine, quetiapine, and benzodiazepines [9]. Current guidelines emphasize that benzodiazepines should be avoided in the long-term management of GAD and limited to short-term use due to the risk of tolerance and dependence [10]. They further recommend SSRIs as first-line therapy, while SNRIs or pregabalin are suggested in cases where SSRIs are ineffective or not tolerated [9]. Pregabalin and quetiapine can be prescribed for long-term treatment of GAD [11]. However, long-term use of anxiolytic medications carries significant risks, particularly in complex and treatment-resistant patients [12]. Additionally, many patients exhibit low adherence to pharmacotherapy due to cost and adverse effects, such as dependence on benzodiazepines [13].

Beyond pharmacotherapy, psychotherapies-particularly cognitive-behavioral therapy (CBT)—and physical exercise play a crucial role in the management of GAD [6]. Psychotherapy aims to improve interpersonal relationships, social skills, and the individual's mental and physical well-being. Additionally, it seeks to eliminate or reduce negative emotions, thoughts, compulsions, or behaviors [14]. In recent years, numerous randomized studies have investigated the effectiveness of various forms of psychotherapy for generalized anxiety disorder. Psychological therapies appear to have significant beneficial effects, both in reducing symptoms and in improving overall mental well-being [15]. Specifically, a recent meta-analysis of 65 randomized trials found that third-wave Cognitive-Behavioral Therapies (SMD: -0.76; 95% CI: -1.15, -0.36), standard CBT (SMD: -0.74; 95% CI: -1.09, -0.38), and relaxation therapy (SMD: -0.59; 95% CI: -1.07, -0.11) were associated with significant reductions in symptoms during the acute phase of GAD compared with usual care [16]. Moreover, the meta-analysis found no significant differences in effectiveness between the various forms of psychotherapy, nor substantial differences in patient acceptability—suggesting that each form of psychotherapy is equally acceptable compared with usual care [16]. However, in the long term—3 to 12 months after the completion of the study—only CBT was associated with significantly reduced GAD symptoms compared with usual care (SMD: -0.60; 95% CI: -0.99, -0.21 Therefore, CBT is considered a first-line treatment for generalized anxiety disorder [16].

Yoga is a popular and promising, yet insufficiently researched, intervention for anxiety management [17-19]. raditional forms of yoga include physical postures (asana), breath regulation (pranayama), relaxation, as well as meditation and mindfulness practices [20]. Yoga has been described as "manaha prashamanopayaha yoga ityabhidiyate"—"yoga is a skillful method for calming the mind" [21]. In recent years, the use of yoga for health purposes has increased significantly. In 2017, approximately 14.3% of the U.S. population reported using yoga as a means to promote health [22]. Meta-analyses have shown that mindfulness-based interventions are effective for anxiety disorders, including GAD [23, 24]. However, the effectiveness of yoga as a therapeutic approach for GAD remains less clear and warrants further investigation. The aim of the present systematic review is to evaluate the effectiveness of yoga as a therapeutic intervention in reducing psychological and somatic symptoms, as well as in improving the quality of life in adults with Generalized Anxiety Disorder (GAD).

Material and Methods

This systematic review adheres to the PRISMA 2020 reporting guidelines and follows the APA Journal Article Reporting Standards for Systematic Reviews (JARS–Quant). The review was preregistered with PROSPERO (CRD420251152980). The study did not involve primary data collection, and therefore, no raw data, code, or participant materials are available. All data analyzed were extracted from published peer-reviewed studies.

Study Design

This systematic review was conducted to evaluate the effectiveness of yoga as a therapeutic intervention for adults suffering from Generalized Anxiety Disorder. The PICO framework guided the structure of the review. The population consisted of adults (≥18 years) diagnosed with GAD. The intervention involved various forms of yoga as a therapeutic approach. Comparisons were made either against no intervention or against other therapeutic methods and psychological interventions. The primary outcomes assessed included the reduction of physical and psychological symptoms, as well as the improvement of quality of life.

This systematic review adhered to Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) 2020 guidelines to ensure a transparent and reproducible methodology [25] and employed the Joanna Briggs Institute's (JBI) Critical appraisal checklist for systematic reviews and research syntheses to minimize bias [26].

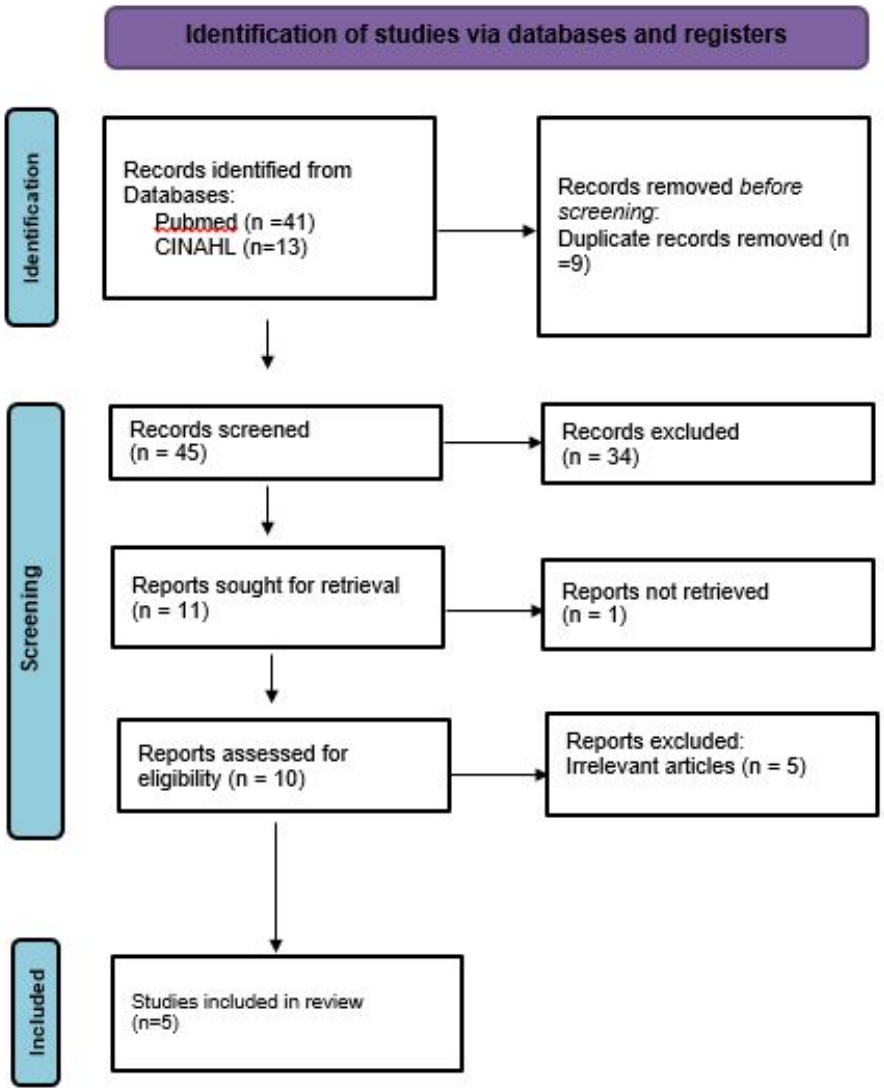

Figure 1: PRISMA Flow Diagram of Study Selection Process.

Eligibility Criteria

In this review, we included studies that evaluated the effectiveness of yoga in reducing physical and psychological symptoms, as well as in enhancing quality of life among adults with generalized anxiety disorder (GAD). GAD diagnoses were established according to standardized diagnostic criteria, such as those outlined in the DSM-5. Symptom severity and quality of life were assessed using validated self-report instruments or standardized questionnaires. Eligible studies were restricted to randomized and non-randomized controlled trials published in English up to August 2025. Studies investigating the effects of yoga in minors with GAD, or in patients with anxiety disorders without reporting separate outcomes for GAD, were excluded. We also excluded non-interventional studies, reviews, case reports, opinion papers, non-English publications, and studies lacking complete outcome data.

Search Strategy

A comprehensive literature search was conducted in PubMed and CINAHL, utilizing a combination of MeSH terms and keywords such as "Generalized Anxiety Disorder", "yoga," "symptoms," and "quality of life." Boolean operators were employed to refine and optimize the search results. The search was limited to English-language studies involving human participants, published up to August 2025. Additionally, citation tracking and manual screening of reference lists from included articles were

performed to ensure thorough coverage.

Study Selection

Search results were imported into Rayyan software, where duplicates were removed. Two reviewers independently screened the titles and abstracts of all identified studies. The full texts of studies deemed potentially relevant were reviewed to determine their eligibility according to predefined inclusion criteria. Any disagreements were resolved through discussion with a third reviewer. The study selection process was documented using the PRISMA flow diagram.

Data Extraction

A standardized data extraction form was used to collect information on study characteristics, sample sizes, types of yoga interventions, outcome measures, and findings related to the effectiveness of yoga as a therapeutic intervention for GAD.

Data Synthesis

Due to the heterogeneity in study designs, interventions, and outcome measures, conducting a meta-analysis was not feasible. Instead, a narrative synthesis was conducted aiming to highlight the impact of yoga on reducing psychological and physical symptoms, as well as on improving quality of life in adults with generalized anxiety disorder. No original statistical code was generated as data synthesis was descriptive

Ethics

This review did not involve human participants directly and therefore did not require approval from an institutional review board.

Results

The database searches identified 54 records, of which 9 duplicates were removed. Following title and abstract screening, 45 records were assessed and 34 were excluded. Eleven full-text articles were sought for retrieval, with 10 successfully accessed. After eligibility assessment, 5 studies met the inclusion criteria. These included two randomized controlled trials, one quasi-experimental study, and two clinical trials. The study selection process is presented in the PRISMA flow diagram (Figure 1).

The included studies investigated different yoga-based interventions for adults diagnosed with generalized anxiety disorder, including Sudarshan Kriya Yoga, mindfulness-based yoga practices, and Kundalini Yoga. Study characteristics, intervention protocols, outcome measures, and quantitative findings are summarized in Table 1.

Sudarshan Kriya Yoga Interventions

[27] conducted an open-label pilot study to evaluate the feasibility, tolerability, and preliminary effectiveness of a multicomponent Sudarshan Kriya Yoga program in outpatients with GAD. The intervention primarily targeted anxiety through structured breathing techniques and meditative practices. Participants demonstrated clinically meaningful improvements in core anxiety symptoms and anxiety sensitivity following completion of the program. Notably, the intervention did not result in significant changes in depressive symptoms or broader cognitive–emotional domains such as intolerance of uncertainty or perfectionism, suggesting that SKY may exert a more focused anxiolytic effect rather than a broad-spectrum psychotherapeutic impact [27].

In a larger clinical trial, [28] evaluated the efficacy of Sudarshan Kriya Yoga delivered as a structured workshop followed by long-term practice. The intervention was associated with significant and sustained reductions in anxiety symptoms, depressive

symptoms, and overall psychological distress. Improvements were observed across multiple clinician-rated and self-reported measures and were maintained at follow-up assessments, indicating potential durability of treatment effects when regular practice is continued [28].

Table 1: Characteristics of Included Studies on Yoga Interventions for Generalized Anxiety Disorder.

Authors (year publication)	Country	Study design	Sample	Intervention group	Control group	Outcomes Measures	Results
[28]	Italy	Clinical trial	69 outpatient adults with a primary diagnosis of DSM-IV	N=69	-	HRSA, HRSD, ZSAS, ZSDS, SCL-90	SKY therapy significantly reduces the scores of Anxiety and Depression.
				Female (%): -			
				Age (years): -		Baseline, 2nd week, 3rd and 6th month	
				SKY workshop: 10 sessions over the course of two weeks, followed by weekly SKY follow-up classes for a period of six months. Each individual session lasted approximately two hours.			
[30]	USA	quasi-experimental study	49 individuals with DSM-IV-diagnosed GAD	N=34	N=15	SCL-90-R, STAI, BAI και BDI-II	Following the completion of the intervention, the intervention group showed a statistically significant improvement across all subscales of the SCL-90-R, with the exception of the Paranoid Ideation subscale, as well as on the STAI-Trait, STAI-State, BAI, and BDI-II scales. In contrast, no statistically significant changes were observed in the control group on any of the aforementioned scales.
				Female (%): 100%	Female (%): 100%		
				Age: 46.82 (±14.61)	Age: 39.27 (±13.27)	Baseline and 8th week	

				8-week for 1.25 hours Kundalini Yoga intervention	8 weeks of 60-		
					minute individual therapy, which entailed supportive listen-		
					ing and cognitive restructuring.		
[29]	USA	RCT	93 individuals with DSM-IV-diagnosed GAD	N: 48	N:41	Anxiety symptoms: SIGH-A, CGI-S and GGI-I, BAI, PSQI	Patients in the MBSR group showed statistically significant greater improvement in scores on the CGI-S ($p = 0.041$), BAI ($p = 0.036$), PSQI ($p = 0.035$), STAI-S ($p = 0.040$), and SUDS ($p = 0.025$) scales compared to patients in the SME group. Additionally, positive statements on the SSPS questionnaire increased significantly more in the MBSR group ($p = 0.004$). The response rate was significantly higher in the MBSR group (66%) compared to the SME group (40%) ($p = 0.025$).
				Female (%): 48	Female (%): 54		
				Age (years): 41 (±14)	Age (years): 37 (±12)	Stress reactivity: Trier Social Stress Tests (TSST): STAI, SUDS, SSPS	
				MBSR: 8 week two hour class (breath-awareness, a body-scan, and gentle Hatha yoga) with a single weekend "retreat" day, and daily home practice guided by audio recordings	SME: 8-week two-hour class, with 20 minute homework exercises, and a 4-hour weekend "Special Class"	Baseline and 8th week	

[27]	Canada	Open label study	31 subjects with a primary diagnosis (DSM-IV-TR)	N: 31	-	MINI, HAM-A, ASI, BAI, CISS, PSWQ, BDI II, IUS, MPS, SPIN, LSAS-SR	Significant reductions occurred in the pre- and post-intervention mean HAM-A total score ($p<0.01$) and psychic subscale ($p\leq0.01$)
				Female (%): 67			
				Age (years): 42.59 (±13.30)		Baseline and one month following SKY course	
				The SKY course is delivered over five to six consecutive days, totaling 22 hours of structured instruction			
[20]	USA	RCT	226 adults 18 years or older with a primary *DSM-5* GAD diagnosis	N: 93	N: 90	Acute GAD response (Clinical Global Impression–Improvement Scale score of much or very much improved)	Response rates were higher in the Kundalini yoga group (54.2%) than in the stress education group (33.%) (OR: 2.46; p=0.03) The noninferiority test did not find Kundalini yoga to be as effective as CBT (difference, 16.6%; p=0.42 for noninferiority).
				Female (%):74	Female (%): 72		
				Age (years): 32.6 (±13.3)	Age (years): 35.1 (±13.8)	Baseline, 12th week and 6month follow up	
				12 sessions of Kundalini Yoga (including physical postures and exercises, breathing techniques, relaxation exercises, meditation and mindfulness practices, as well as elements of yoga theory, philosophy, and psychology), each lasting 120 minutes	12 sessions of CBT: psychoeducation, cognitive restructuring, progressive muscle relaxation, worry exposures, and in vivo exposure exercises		
					N: 43		
					Female (%): 86		
					Age: 31.6 (±13.3)		

					Stress education: lectures on physiologic, psychological, and medical effects of stress; effects of lifestyle behaviors, such as caffeine, alcohol, and smoking; resilience factors; and the importance of exercise and diet.		

ASI: Anxiety Sensitivity Index; BDI: Beck Depression Inventory; BAI: Beck Anxiety Inventory; CISS: Coping Inventory for Stressful Situations; CGI-I: Clinical Global Impression–Improvement Scale; CGI-S: Clinical Global Impression of Severity; HRDS: Hamilton Rating Scale for Depression; HRSA: Hamilton Rating Scale for Anxiety; IUS: Intolerance of Uncertainty; LSAS: Liebowitz Social Anxiety Scale–Self Report Total; MBSR: Mindfulness-Based Stress Reduction; MPS: Multidimensional Perfectionism Scale; PSWQ: Penn State Worry Questionnaire; PSQI: Pittsburgh Sleep Quality Index; SKY: Sudarshan Kriya Yoga; SME: Stress Management Education; SIGH-A: Structured Interview Guide for the HAM-A; SCL-90: Symptom Checklist-90; SPIN: Social Phobia Inventory; STAI: State-Trait Anxiety Inventory; SUDS: Subjective Units of Distress Scale; SSPS: Self-Statements during Public Speaking Scale; SSPS-N: Negative Self-Statements; SSPS-P: Positive Self-Statements; TSST: Trier Social Stress Test; ZSAS: Zung Self-Rating Anxiety Scale; ZSDS: Zung Self-Rating Depression Scale.

Mindfulness-Based Yoga Intervention

[29] examined the effects of a mindfulness-based stress reduction program incorporating yoga components compared with stress management education in a randomized controlled trial. Both interventions were associated with reductions in anxiety severity, reflecting the nonspecific therapeutic benefits of structured psychosocial interventions. However, participants receiving the mindfulness-based program demonstrated greater improvements across several clinician-rated and self-reported anxiety measures, as well as higher rates of clinical response. Additional benefits were observed in sleep quality, stress reactivity, and positive self-statements during experimentally induced stress, suggesting enhanced emotional regulation and resilience associated with mindfulness-based yoga practices [29].

Kundalini Yoga Interventions

[30] conducted a quasi-experimental study evaluating the effects of Kundalini Yoga in adults with GAD. The intervention emphasized breath control, movement, and meditative components aimed at regulating autonomic and emotional responses. Participants in the yoga group demonstrated significant improvements in anxiety, depressive symptoms, and somatic symptom burden across most symptom domains, whereas the control group showed no significant changes. These findings suggest that Kundalini Yoga may exert both psychological and somatic benefits in individuals with GAD [30].

[20] conducted a large randomized clinical trial comparing Kundalini Yoga with cognitive-behavioral therapy and stress management education. Both Kundalini Yoga and CBT were associated with superior treatment response rates compared with stress education. CBT demonstrated the highest and most durable response, particularly at follow-up, confirming its status as a first-line treatment for GAD. Kundalini Yoga, however, produced clinically meaningful symptom improvements and did not significantly differ from CBT in short-term outcomes. All interventions were well tolerated, with no serious adverse events reported, supporting the safety and acceptability of yoga-based treatments [20].

Summary of Findings

Across studies, yoga-based interventions consistently demonstrated beneficial effects on anxiety symptoms in adults with generalized anxiety disorder. Additional improvements in depressive symptoms, somatic complaints, sleep quality, and stress reactivity were observed in several studies, although the magnitude and durability of effects varied by intervention type and comparator. While yoga did not outperform cognitive-behavioral therapy, it consistently demonstrated superiority over stress education and showed favorable safety and tolerability profiles. Detailed quantitative results are provided in Table 1.

Discussion

The findings of the reviewed studies indicate that yoga-based interventions can provide clinically meaningful benefits in the management of GAD, although their effectiveness varies in terms of the duration and intensity of effects. Various yoga interventions were used in the studies, including Sudarshan Kriya Yoga [27, 28], mindfulness-based practices [29] and Kundalini Yoga [20, 30] These findings are consistent with previous meta-analyses reporting that yoga interventions are associated with moderate reductions in anxiety symptoms across clinical and non-clinical populations [17, 19].

One of the findings of the present review is that yoga contributes to the reduction of anxiety symptoms. All included studies demonstrated that yoga leads to a significant decrease in anxiety levels, supporting its potential role as a complementary therapeutic intervention in GAD [19, 20, 27, 29, 30]. This effect is likely due to the multifactorial nature of the practice, which combines physical postures, rhythmic breathing, meditation, and mindfulness techniques, simultaneously targeting autonomic nervous system regulation, reduction of catastrophic interpretations of negative thoughts, and enhancement of emotional self-regulation capacity [21]. Moreover, yoga promotes "decentering," that is, the ability to distance oneself from distressing thoughts and bodily sensations, which reduces discomfort and facilitates adaptive stress coping [31].

The improvement of anxiety symptoms appeared to be significant with any form of yoga, suggesting that the core mechanisms activated by the practice exert a therapeutic effect regardless of the specific type. Moreover, yoga emerged as a more effective method for alleviating anxiety symptoms compared to stress management education interventions (SE, SME). It is worth noting that in the study by Simon et al. (2021), Kundalini Yoga was not confirmed as non-inferior to cognitive-behavioral therapy (CBT); however, the long-term outcomes were less stable, with CBT maintaining a clear superiority. Nevertheless, KY may constitute a reliable alternative intervention, particularly for patients who prefer non-pharmacological treatments or have limited access to specialized psychotherapeutic services.

At the same time, yoga appears to be effective in improving depressive symptoms and somatic [28, 30]. Specifically, both the SKY intervention and Kundalini Yoga led to a significant reduction in depressive symptoms in patients with GAD [28, 30] Moreover, in the study by [30] participants who practiced yoga showed a greater reduction in symptoms compared to the group receiving treatment as usual. The reduction of somatic symptoms seems to contribute to the intervention's effectiveness, as Kundalini Yoga includes practices targeting physical symptoms such as cardiovascular, gastrointestinal, and respiratory discomfort [30]. However, these results were not confirmed in the study by [27], where the SKY intervention did not produce significant changes in depression scores (BDI-II). It is noteworthy that baseline scores were low (mild depression), which may limit the ability to detect further improvement—a phenomenon known as the "floor effect."

Additionally, it was found that the Mindfulness-Based Stress Reduction (MBSR) program, which included yoga, led to a significant reduction in anxiety and distress symptoms, particularly during laboratory-induced stress [29]. These results suggest that mindfulness-based interventions can enhance psychological resilience, possibly by improving the regulation of cognitive and emotional responses [32]. Furthermore, the increase in positive self-statements (SSPS) supports the hypothesis that mindfulness may cultivate a more positive self-esteem, reducing self-criticism [20, 33].

Most included studies were conducted in Western populations, which may limit the generalizability of findings to more diverse or underrepresented groups. Future studies should evaluate yoga interventions across varied cultural and socioeconomic contexts.

Despite these positive outcomes, the studies have certain limitations that restrict the interpretation of the findings. First, the yoga interventions used varied significantly, including Sudarshan Kriya Yoga, mindfulness-based practices, and Kundalini Yoga. This diversity makes it difficult to compare results and draw generalizable conclusions, as each form of yoga emphasizes different components, such as meditation, breathing techniques, mantras, or physical postures. Second, in several studies, yoga was combined with psychological interventions, making it challenging to isolate yoga's specific contribution to the outcomes. Third, assessment measures and evaluation tools differed across studies, making direct comparison of results difficult. Finally, many studies faced limitations related to sample size, intervention duration, and the absence of long-term follow-up, which may affect the reliability and stability of the conclusions.

Clinical Implications and Adjunctive Use of Yoga

The findings of this review support yoga as a **clinically relevant adjunctive intervention** for adults with generalized anxiety disorder, rather than a replacement for established first-line treatments. Current clinical guidelines consistently recommend pharmacotherapy (e.g., SSRIs, SNRIs) and cognitive-behavioral therapy as first-line approaches for GAD. Within this framework, yoga may serve as a complementary strategy to enhance symptom reduction, particularly for anxiety-related somatic symptoms, stress reactivity, sleep disturbances, and emotional regulation. Yoga may be especially beneficial for patients with partial response to standard treatments, those experiencing residual symptoms, or individuals seeking integrative, non-pharmacological approaches alongside conventional care. Importantly, the reviewed evidence does not support yoga as a standalone substitute for cognitive-behavioral therapy but rather as a supportive modality that may augment therapeutic outcomes and improve overall treatment acceptability.

Implementation of Yoga in Clinical Practice

Effective integration of yoga into routine clinical care requires a structured and collaborative approach. In typical clinical settings, yoga may be implemented through referral to certified yoga instructors with experience in mental health populations, ideally within multidisciplinary teams that include psychiatrists, psychologists, and primary care providers. Programs should emphasize gentle, structured practices incorporating breath regulation, mindfulness, and relaxation, rather than physically demanding postures, to ensure safety and accessibility. Yoga interventions may be delivered in group-based formats within outpatient clinics, community mental health services, or affiliated wellness programs, and can be aligned with stepped-care models as an adjunct to pharmacotherapy or psychotherapy. Clear communication regarding treatment goals, monitoring of symptom progression, and coordination with ongoing psychological or pharmacological treatment are essential to ensure that yoga complements, rather than replaces, evidence-based care.

Constraints on Generality

The conclusions of this review are limited to adult populations diagnosed with GAD according to DSM criteria. The heterogeneity of yoga modalities, intervention duration, and study populations may affect generalizability. Findings may not extend to adolescents, elderly populations, or individuals with other anxiety disorders.

Conclusion

Overall, the evidence suggests that yoga, irrespective of its specific form, may serve as an effective and accessible complementary intervention for alleviating anxiety, depression, and somatic symptoms. Future research should aim to identify the individ-

ual characteristics that predict a stronger therapeutic response to yoga compared to cognitive-behavioral therapy (CBT), such as treatment preferences, motivational factors, and attitudes toward mental health. Such insights could facilitate the integration of yoga into a personalized, stepped-care model for the treatment of anxiety disorders. Moreover, further investigations in patients with GAD should explore the comparative effectiveness of yoga against other mindfulness-based interventions, including mindfulness-based stress reduction (MBSR).

Disclosures and Acknowledgements

This study was preregistered with PROSPERO (Registration ID: CRD420251152980).

All data analyzed in this review were obtained from published peer-reviewed articles.

No external funding was received for this research.

The authors have no conflicts of interest to disclose.

Acknowledgement: The authors thank the European University of Cyprus library services for facilitating access to academic databases.

References

1. Dong M, Lu W, Zeng X, Yang Y, Liao DD, et al. (2025) Prevalence and correlates of generalized anxiety disorder and subthreshold anxiety symptoms in south China: A network perspective. Journal of Affective Disorders. 379: 232–40.

2. Stein DJ, Scott KM, Jonge P, de Kessler RC (2017) Epidemiology of anxiety disorders: from surveys to nosology and back. Dialogues in Clinical Neuroscience. 19: 127.

3. Ruscio AM, Hallion LS, Lim CCW, Aguilar-Gaxiola S, Al-Hamzawi A, et al. (2017) Cross-sectional Comparison of the Epidemiology of DSM-5 Generalized Anxiety Disorder Across the Globe. JAMA Psychiatry. 74: 465–75.

4. Wittchen HU, Jacobi F (2005) Size and burden of mental disorders in Europe--a critical review and appraisal of 27 studies. European Neuropsychopharmacology : The Journal of the European College of Neuropsychopharmacology, 15: 357–76.

5. Preti A, Vrublevska J, Veroniki AA, Huedo-Medina TB, Fountoulakis KN (2016) Prevalence, impact and treatment of generalised anxiety disorder in bipolar disorder: a systematic review and meta-analysis. Evidence-Based Mental Health. 19: 73–81.

6. Preti A, Demontis R, Cossu G, Kalcev G, Cabras F, et al. (2021) The lifetime prevalence and impact of generalized anxiety disorders in an epidemiologic Italian National Survey carried out by clinicians by means of semi-structured interviews. BMC Psychiatry. 21: 1–8.

7. Kolesar TA, Bilevicius E, Wilson AD, Kornelsen J (2019) Systematic review and meta-analyses of neural structural and functional differences in generalized anxiety disorder and healthy controls using magnetic resonance imaging. NeuroImage. Clinical. 24.

8. Madonna D, Delvecchio G, Soares JC, Brambilla P (2019) Structural and functional neuroimaging studies in generalized anxiety disorder: a systematic review. Revista Brasileira de Psiquiatria (Sao Paulo, Brazil : 1999). 41: 336-62.

9. Fagan HA, Baldwin DS (2023) Pharmacological Treatment of Generalised Anxiety Disorder: Current Practice and Future Directions. Expert Review of Neurotherapeutics. 23: 535–48.

10. Andrews G, Bell C, Boyce P, Gale C, Lampe L, et al. (2018) Royal Australian and New Zealand College of Psychiatrists clinical practice guidelines for the treatment of panic disorder, social anxiety disorder and generalised anxiety disorder. Australian and New Zealand Journal of Psychiatry. 52: 1109-72.

11. Perna G, Alciati A, Riva A, Micieli W, Caldirola D (2016) Long-Term Pharmacological Treatments of Anxiety Disorders: An Updated Systematic Review. Current Psychiatry Reports. 18: 1–16.

12. Kaczkurkin AN, Foa EB (2015) Cognitive-behavioral therapy for anxiety disorders: an update on the empirical evidence. Dialogues in Clinical Neuroscience. 17: 337-46.

13. Brett J, Murnion B (2015) Management of benzodiazepine misuse and dependence. Australian Prescriber. 38: 152–55.

14. Mishra AK, Varma AR (2023) A Comprehensive Review of the Generalized Anxiety Disorder. Cureus. 15: e46115.

15. Cuijpers P, Cristea IA, Karyotaki E, Reijnders M, Huibers MJH (2016) How effective are cognitive behavior therapies for major depression and anxiety disorders? A meta-analytic update of the evidence. World Psychiatry : Official Journal of the World Psychiatric Association (WPA). 15: 245–58.

16. Papola D, Miguel C, Mazzaglia M, Franco P, Tedeschi F, et al. (2023) Psychotherapies for Generalized Anxiety Disorder in Adults: A Systematic Review and Network Meta-Analysis of Randomized Clinical Trials. JAMA Psychiatry. 81: 250.

17. Cramer H, Lauche R, Anheyer D, Pilkington K, de Manincor M, et al. (2018) Yoga for anxiety: A systematic review and meta-analysis of randomized controlled trials. Depression and Anxiety, 35(9), 830–843. https://doi.org/10.1002/DA.22762

18. Hofmann SG, Andreoli G, Carpenter JK, Curtiss J (2016) Effect of Hatha Yoga on Anxiety: A Meta-Analysis. Journal of Evidence-Based Medicine. 9: 116-24.

19. Pascoe MC, Bauer IE (2015) A systematic review of randomised control trials on the effects of yoga on stress measures and mood. Journal of Psychiatric Research. 68: 270-82.

20. Simon NM, Hofmann SG, Rosenfield D, Hoeppner SS, Hoge EA, et al. (2020) Efficacy of Yoga vs Cognitive Behavioral Therapy vs Stress Education for the Treatment of Generalized Anxiety Disorder: A Randomized Clinical Trial. JAMA Psychiatry. 78: 1.

21. More P, Kumar V, Usha Rani MR, Philip M, Manjunatha N, et al. (2021) Development, validation, and feasibility of a generic yoga-based intervention for Generalized Anxiety Disorder. Complementary Therapies in Medicine. 63: 102776.

22. Black LI, Barnes PM, Clarke TC, Stussman BJ, Nahin RL (2018) Use of Yoga, Meditation, and Chiropractors Among U.S. Children Aged 4-17 Years. NCHS Data Brief. 324: 1–8.

23. Hofmann SG, Sawyer AT, Witt AA, Oh D (2010) The effect of mindfulness-based therapy on anxiety and depression: A meta-analytic review. Journal of Consulting and Clinical Psychology. 78: 169–83.

24. Williams M, Honan C, Skromanis S, Sanderson B, Matthews AJ (2023) Psychological Outcomes and Mechanisms of Mindfulness-Based Training for Generalised Anxiety Disorder: A Systematic Review and Meta-Analysis. Current Psychology (New Brunswick, N.J.). 43: 5318–40.

25. Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, et al. (2021) The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. BMJ (Clinical Research Ed.). 372: n71.

26. Hilton M (2024) JBI Critical appraisal checklist for systematic reviews and research syntheses. The Journal of the Canadian Health Libraries Association. 45: 180.

27. Katzman MA, Vermani M, Gerbarg PL, Brown RP, Iorio C, et al. (2012) A multicomponent yoga-based, breath intervention program as an adjunctive treatment in patients suffering from generalized anxiety disorder with or without comorbidities. International Journal of Yoga. 5: 57.

28. Doria S, De Vuono A, Sanlorenzo R, Irtelli F, Mencacci C (2015) Anti-anxiety efficacy of Sudarshan Kriya Yoga in general anxiety disorder: A multicomponent, yoga based, breath intervention program for patients suffering from generalized anxiety disorder with or without comorbidities. Journal of Affective Disorders. 184: 310–17.

29. Hoge EA, Bui E, Marques L, Metcalf CA, Morris LK,et al. (2013) Randomized Controlled Trial of Mindfulness Meditation for Generalized Anxiety Disorder: Effects on Anxiety and Stress Reactivity. The Journal of Clinical Psychiatry. 74: 786.

30. Gabriel MG, Curtiss J, Hofmann SG, Khalsa SBS (2018). Kundalini Yoga for Generalized Anxiety Disorder: An Exploration of Treatment Efficacy and Possible Mechanisms. International Journal of Yoga Therapy. 28: 97–105.

31. Woodyard C (2011) Exploring the therapeutic effects of yoga and its ability to increase quality of life. International Journal of Yoga. 4: 49.

32. Creswell JD (2017) Mindfulness Interventions. Annual review of psychology: 68: 491–516.

33. Khoury B, Sharma M, Rush SE, Fournier C (2015) Mindfulness-based stress reduction for healthy individuals: A meta-analysis. Journal of psychosomatic research. 78: 519–28.

34. American Psychiatric Association (2013) Diagnostic and statistical manual of mental disorders (5th ed). American Psychiatric Press.