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EFFECTIVENESS OF COGNITIVE-BEHAVIORAL THERAPY (CBT) IN REDUCING ANXIETY SYMPTOMS ACROSS DIFFERENT ANXIETY DISORDERS COMPARED TO CONTROL CONDITIONS AND ALTERNATIVE TREATMENTS: A SYSTEMATIC LITERATURE REVIEW

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ABSTRACT

Background: Anxiety disorders are among the most prevalent mental health conditions worldwide. Cognitive Behavioral Therapy (CBT) is widely regarded as a first-line treatment, but its evidence base is constantly evolving with new research on long-term outcomes, comparative efficacy, and novel delivery methods. The first aim of this mixed methods review is to explore the efficacy and long-term effectiveness of CBT for anxiety disorders. The secondary aims evaluate the comparative effectiveness of its various delivery modalities (e.g., face-to-face, digital, virtual reality) and its efficacy relative to other active treatments, such as pharmacotherapy and emerging psychotherapies.
Methods: A systematic review was conducted based on a synthesis of 12 peer-reviewed research summaries, including meta-analyses, randomized controlled trials, and longitudinal studies. The population included children, adolescents, and adults with diagnosed anxiety disorders. Interventions included standard CBT and its variants (e.g., ICBT, VRCBT, CBGT). Outcomes included reduction in anxiety symptoms, long-term maintenance of gains, quality of life improvements, and comparative efficacy between modalities.
Conclusions: The results from this review will provide evidence that CBT is a highly effective treatment for a range of anxiety disorders, showing medium to large effect sizes. CBT remains the gold-standard, evidence-based psychological intervention for anxiety disorders. Its benefits are durable over time and can be effectively delivered through both traditional and emerging digital formats, which can help bridge the accessibility gap. These findings clarify that, future research should focus on long-term follow-ups, optimizing digital engagement, and adapting protocols for diverse cultural and clinical populations.

KEYWORDS

Mental health, Cognitive Behavioral Therapy, Anxiety Disorders, Systematic Review, Treatment Outcome

CITATION

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Introduction

According to the World Health Organization (WHO), an estimated 4.4% of the global population currently experience an anxiety disorder. In 2021, 359 million people in the world had an anxiety disorder, making anxiety disorders the most common of all mental disorders.These disorders are characterized by excessive fear, persistent worry, and avoidance behaviors in response to specific objects or situations, often occurring in the absence of real danger. Anxiety disorders can significantly impair daily functioning, social interactions, academic or occupational performance, and overall quality of life (DuPont et al., 1996; Kessler et al., 2005; Hofmann et al., 2013). Lifetime prevalence rates are estimated at approximately 28–29%, with 12-month prevalence around 18%. Certain disorders, such as generalized anxiety disorder (GAD), obsessive-compulsive disorder (OCD), panic disorder (PD), and social anxiety disorder (SAD), may result in reductions in quality of life comparable to or greater than some chronic medical conditions (Spitzer et al., 1995; Koran et al., 1996; Safren et al., 1996–1997). GAD, in particular, is chronic and disabling, with symptoms including excessive worry, restlessness, fatigue, irritability, muscle tension, and sleep disturbances. Women are twice as likely as men to experience GAD, which often begins in childhood or adolescence and frequently co-occurs with depression and other anxiety disorders.

Cognitive Behavioral Therapy (CBT) is widely recognized as the gold-standard, evidence-based psychotherapeutic intervention for anxiety disorders (Chambless & Ollendick, 2001; Hofmann & Smits, 2008; Otte et al., 2016). CBT integrates cognitive and behavioral techniques to address maladaptive thoughts, beliefs, and avoidance behaviors while promoting adaptive coping and learning strategies. Core components include cognitive restructuring, psychoeducation, relaxation exercises, exposure to feared stimuli, problem-solving, and relapse prevention. CBT is flexible, allowing adaptation to the specific needs of the patient and the characteristics of the anxiety disorder (Beck, 1976; Ellis, 1962; Wolpe, 1958; Kaczkurkin & Foa, 2015). Both individual (ICBT) and group formats (GCBT), as well as digital adaptations such as internet-based CBT (ICBT), computerized CBT (CCBT), and virtual reality–enhanced CBT (VRCBT), have demonstrated robust efficacy in reducing symptoms and improving quality of life across youth and adult populations.

Extensive research supports the effectiveness of CBT across diverse anxiety disorders, including GAD, PD, SAD, OCD, specific phobias, and post-traumatic stress disorder (PTSD) (Deacon & Abramowitz, 2004; Norton & Price, 2007; Stewart & Chambless, 2007). Meta-analyses indicate that recovery rates for youth range from 60% to 80%, with significant symptom reduction sustained over time. Similarly, adults show large effect sizes and lasting improvements, sometimes exceeding those achieved through pharmacological treatments. Digital delivery formats, including therapist-guided or self-help online programs, have expanded accessibility, overcoming barriers related to therapist availability, geographical constraints, social stigma, and public health crises such as the COVID-19 pandemic. Emerging transdiagnostic or mixed-diagnosis CBT protocols also allow individuals with various anxiety disorders or comorbid conditions to benefit from structured interventions, demonstrating medium-to-large effect sizes in real-world settings.

Despite strong evidence supporting CBT and its variants, gaps remain regarding long-term outcomes across diverse populations, cultural adaptations, disorder-specific responses, and comparative effectiveness between traditional face-to-face and digital formats. Addressing these gaps is crucial for refining treatment approaches, optimizing accessibility, and improving patient outcomes globally. Overall, CBT and its adapted formats represent empirically supported, flexible, and accessible interventions that play a central role in contemporary anxiety disorder treatment.

Research questions

According to the aim of the research and taking all the literature analyzing into account, the present study aims to explore the following research questions:

Research question 1 (RQ_1)- How effective is Cognitive-Behavioral Therapy (CBT) in reducing anxiety symptoms across different anxiety disorders compared to control conditions and alternative treatments?

Research question 2 (RQ_2) - How does the effectiveness of CBT for anxiety disorders vary across different delivery modalities (e.g., face-to-face, internet-based, virtual reality, group) in terms of symptom reduction, durability of gains, and improvements in quality of life?

Research question 3 (RQ_3)- What is the comparative efficacy and acceptability of CBT versus pharmacotherapy and other psychotherapeutic interventions (e.g., ACT, MBCT) for anxiety disorders, particularly regarding long-term outcomes, relapse rates, and side effects?

Methods

The review included evidence the published manuscripts, articles and research materials that focused on children, adolescents, and adults with a primary diagnosis of an anxiety disorder, including Generalized Anxiety Disorder (GAD), Panic Disorder (PD), Social Anxiety Disorder (SAD), Obsessive-Compulsive Disorder (OCD), Post-Traumatic Stress Disorder (PTSD), and Specific Phobias. Diagnosis was based on standard criteria (e.g., DSM-IV, DSM-5) or clinically significant symptoms measured by validated scales.

Intervention

The phenomenon of interest was Cognitive Behavioral Therapy (CBT) in any form. This included standard face-to-face CBT (individual or group), transdiagnostic CBT, and technology-assisted variants such as Internet-based CBT (ICBT), computerized CBT (CCBT), and Virtual Reality-assisted CBT (VRCBT).

Comparator

There were no restrictions on comparator groups. The included research summaries compared CBT to wait-list controls, treatment-as-usual, pharmacotherapy (mainly SSRIs), other psychotherapies (e.g., ACT, MBCT), or made active comparisons between different CBT modalities (e.g., face-to-face vs. online).

Outcomes

Reduction in anxiety symptom severity and long-term maintenance gains measured as an outcome for studies addressing the first aim. Secondary outcomes include quality of life improvements, reduction in comorbid depressive symptoms, comparative efficacy between different delivery formats of CBT and relapse rates.

Study Design

The review synthesized pre-existing research summaries, which were themselves based on meta-analyses, systematic reviews, randomized controlled trials (RCTs), and longitudinal follow-up studies that are written in English.

Search Strategy

The following electronic databases searched: MEDLINE (PubMed), PsychINFO.

Data Collection and Analysis

Selection of Studies

Titles and abstracts of studies screened by three reviewers. Discrepancies in whether to include or exclude a study based such screening were resolved by involving a fourth reviewer. The full text of included records was checked against the eligibility criteria by at least two reviewers. References of eligible records were ‘hand searched’ by the first reviewer to identify additional studies relevant to this review. Their relevance was predetermined by their focus on the efficacy, effectiveness, and delivery modalities of CBT for anxiety disorders. Data then were extracted from the sample of studies by three reviewers.

Literature review

Cognitive Behavioral Therapy (CBT) is widely established as a first-line, evidence-based treatment for a spectrum of anxiety disorders, including Generalized Anxiety Disorder (GAD), social anxiety disorder (SAD), panic disorder (PD), and obsessive-compulsive disorder (OCD) (Hofmann et al., 2012; Kendall et al., 2023; Otte, 2011). Its efficacy, confirmed in rigorous randomized placebo-controlled trials, demonstrates specific therapeutic benefits beyond non-specific factors, with effect sizes ranging from moderate to large (Carpenter et al., 2018; Hofmann & Smits, 2008, as cited in Otte, 2011). Crucially, this effectiveness generalizes from controlled research settings to real-world clinical practice, as shown by substantial pre- to post-treatment improvements in naturalistic studies (Stewart & Chambless, 2009).

The long-term benefits and durability of CBT are well-documented. Gains have been shown to be maintained for up to six months post-treatment in placebo-controlled trials (Carpenter et al., 2018) and for as long as two years in follow-up studies (Ginsburg et al., 2018, as cited in Mursaleen et al., 2025). Maintenance or booster sessions have been identified as a critical component for preventing relapse and ensuring long-term efficacy (Ginsburg et al., 2018, as cited in Mursaleen et al., 2025). Furthermore, CBT not only reduces core anxiety symptoms but also produces a moderately strong, beneficial effect on patients' quality of life, particularly in the physical and psychological domains (Hofmann, Wu, & Boettcher, 2014).

The core components driving these changes include building rapport, psychoeducation, cognitive restructuring, and exposure tasks (Kendall et al., 2023). While cognitive restructuring and behavioral experiments are core elements (Hofmann et al., 2013, as cited in Mursaleen et al., 2025), exposure is often highlighted as a critical mechanism of change. For youth anxiety, the amount of in-session exposure is positively associated with larger effect sizes across studies (Kendall et al., 2023). Similarly, in adult populations, interventions emphasizing exposure techniques have been associated with larger effect sizes than those using only cognitive or combined techniques, though this difference is not always statistically significant (Carpenter et al., 2018). Research indicates that the addition of cognitive therapy to exposure does not consistently yield superior outcomes, suggesting exposure alone may be a potent driver of change (Foa et al., 2005, as cited in Kaczkurkin & Foa, 2015).

A significant evolution in practice is the principle of "flexibility within fidelity," which underscores the importance of personalizing treatment while adhering to research-supported protocols (Kendall et al., 2023). In fact, rigid treatment fidelity has not been linked to better outcomes for youth anxiety (Kendall et al., 2023). This flexibility allows for effective delivery across diverse settings. For instance, CBT can be effectively delivered in schools by modifying session length and creatively adapting exposure tasks, and in community mental health centers by non-specialist therapists without prior CBT training (Kendall et al., 2023).

The adaptability of CBT extends to cultural contexts. While Western populations often show higher success rates, studies in non-Western settings have demonstrated moderate effectiveness, highlighting the need for cultural modifications—such as incorporating relevant metaphors and addressing collectivist values—to improve outcomes (Hinton et al., 2012, as cited in Mursaleen et al., 2025). Successful examples include culturally adapted interventions for rural communities in South Asia that use simplified language and local practices (Rahman et al., 2008, as cited in Mursaleen et al., 2025), and a session-by-session format designed for Pakistani clients (Mursaleen, 2023).

Comparative effectiveness research consistently shows CBT's superiority over pharmacotherapy in producing durable results with fewer side effects and a lower likelihood of relapse (Cuijpers et al., 2016, as cited in Mursaleen et al., 2025). For example, Mursaleen and Ali (2015) demonstrated fast recovery from panic attacks with agoraphobia using only 10 sessions of CBT, whereas pharmacotherapy was not found effective. For severe cases, however, a combination of CBT and pharmacotherapy has been shown to yield the best outcomes (Cuijpers et al., 2016, as cited in Mursaleen et al., 2025). When compared to emerging therapies like Acceptance and Commitment Therapy (ACT) and Mindfulness-Based Cognitive Therapy (MBCT), CBT remains the preferred treatment due to its extensive empirical support, even though these newer modalities can produce comparable outcomes for conditions like GAD (Arch et al., 2012, as cited in Mursaleen et al., 2025).

The landscape of CBT delivery has been transformed by technology-assisted formats, which broaden access and overcome barriers such as therapist shortages, geographical limitations, and financial constraints. Internet-based CBT (ICBT) has been proven effective for mild to moderate anxiety and depression (Lv et al., 2021; Zhang et al., 2022), achieving similar therapeutic effects to face-to-face CBT for GAD (Zhang et al., 2022) and serving as a viable candidate substitute, especially during the COVID-19 pandemic (Zhang et al., 2022). The main advantages of ICBT are high accessibility and a significant reduction in required therapist time (Zhang et al., 2022). Computerized CBT (CCBT) platforms also made significant contributions during

the COVID-19 lockdown, with user numbers strongly correlating with confirmed case counts, demonstrating its role as an effective alternative when face-to-face therapy is unavailable (Lv et al., 2021). For youth, computer-assisted programs like Camp Cope-A-Lot can increase accessibility to quality mental healthcare (Kendall et al., 2023).

Virtual Reality-assisted CBT (VRCBT) augments exposure therapy by providing a safe, confidential, and highly controlled environment for patients to confront their fears (Wu et al., 2021; Carl et al., 2019, as cited in Mursaleen et al., 2025). Meta-analyses show that the therapeutic effect of VRCBT on anxiety and depression is better than waiting-list control and similar to standard CBT, with no significant difference in withdrawal rates between the two active treatments (Wu et al., 2021). Telehealth and digital modes also offer unique advantages, such as the opportunity to conduct exposure tasks within a naturalistic context, which may facilitate generalizability (Kendall et al., 2023), and have demonstrated long-term effectiveness over five years (Mursaleen, 2023).

Group-based CBT has gained attention as a resource-efficient alternative, delivering comparable outcomes to individual therapy for SAD and GAD while providing added benefits like peer support (McEvoy et al., 2012, as cited in Mursaleen et al., 2025; Erickson, Janeck, & Tallman, 2007). However, moderator analyses suggest that individual CBT may produce larger effect sizes for certain disorders like SAD and PTSD (Carpenter et al., 2018). Furthermore, for the broader outcome of quality of life, face-to-face treatments (individual or group) produce significantly larger effect sizes than internet-delivered treatments, and longer treatment duration is associated with greater improvements (Hofmann et al., 2014).

Despite its established efficacy, the literature notes areas for future research. Many meta-analyses are limited by a small number of high-quality randomized placebo-controlled trials with intention-to-treat analyses (Otte, 2011). There is a continued need for dismantling studies to pinpoint the most effective treatment components and to identify which patients are most likely to benefit from them (Kaczkurkin & Foa, 2015). Additionally, as many individuals present with comorbid conditions like depression or PTSD, further research into modified protocols that can effectively address complex presentations is warranted (Leichsenring & Salzer, 2014, as cited in Mursaleen et al., 2025), with compelling evidence already supporting CBT's success in managing anxiety and comorbid depression (Mursaleen, 2023; Mursaleen and Ali, 2023).

Discussion

Research on Cognitive Behavioral Therapy (CBT) for anxiety disorders consistently points to its effectiveness and adaptability across various populations and settings. Virtual Reality-Assisted Cognitive Behavioral Therapy (VRCBT) has shown greater effects than the waiting list group and similar effects to standard CBT for anxiety and depression (Wu et al., 2021). Although not statistically different from CBT, VRCBT showed a positive trend (Wu et al., 2021). VRCBT may have advantages because patients can be treated in VR rather than real environments (Wu et al., 2021). No differences were found in dropout rates between VRCBT and standard CBT (Wu et al., 2021).

The effectiveness of CBT is not limited to traditional face-to-face settings. Computerized CBT (CCBT) was effective for anxiety and depression during lockdown (Lv et al., 2021). Users in Hubei (during the Wuhan lockdown) displayed more severe symptoms (Lv et al., 2021). As epidemic severity increased, more residents used CCBT (Lv et al., 2021). Younger users, women, and people from heavily affected areas were more likely to use the CCBT platform (Lv et al., 2021). People aged 19–27 had higher anxiety and depression levels (Lv et al., 2021). The low dropout rate in the lockdown period suggests increased psychological need, though the self-service nature of CCBT can reduce user compliance (Lv et al., 2021). Furthermore, in adapting CBT for youth, research has demonstrated no link between rigid treatment fidelity and outcomes (Kendall et al., 2023). Strategic flexibility frameworks highlight the importance of adapting CBT in settings such as schools and community centers (Kendall et al., 2023). Telehealth can provide exposure opportunities in a naturalistic context and may facilitate generalizability (Kendall et al., 2023).

When examining the specific components of CBT, studies show that CBT methods are generally helpful (Kaczkurkin & Foa 2015). However, because different therapy techniques (exposure and cognitive) often overlap, it is difficult to determine which component is more effective (Kaczkurkin & Foa 2015). In many CBT studies, both exposure and cognitive methods were used together, making it difficult to separate the effect of cognitive therapy alone (Kaczkurkin & Foa 2015). For Post-Traumatic Stress Disorder (PTSD), both Prolonged Exposure (PE) and Cognitive Processing Therapy (CPT) reduced symptoms (Kaczkurkin & Foa 2015). PE focuses more on exposure, while CPT focuses on cognitive processing (Kaczkurkin & Foa 2015). Both methods showed similar effectiveness (Kaczkurkin & Foa 2015). In Obsessive-Compulsive Disorder

(OCD), Exposure and Response Prevention (ERP) uses both in vivo and imaginal exposure (Kaczkurkin & Foa 2015). Some studies show ERP gives better results than cognitive therapy, but meta-analyses did not find significant differences between Exposure and Response Prevention and cognitive therapy (Kaczkurkin & Foa 2015). For Panic Disorder and Generalized Anxiety Disorder (GAD), both exposure and cognitive components were effective (Kaczkurkin & Foa 2015). In Social Anxiety and Specific Phobias, exposure was the main effective treatment (Kaczkurkin & Foa 2015).

Comparing results across different clinical practice settings, the authors in one study found that when therapy manuals are not used, therapists are not trained, or treatments are not monitored, the effects can be lower (Stewart & Chambless 2009). The results also show that in studies more similar to real clinical settings, the effect is slightly lower, but this decrease is very small (d = -0.08) (Stewart & Chambless 2009).

Authors	Sample size	Aim	Main finding
Carpenter et al. 2018	41 studies (N = 2,835 patients)	To examine the efficacy of CBT for anxiety-related disorders using only randomized placebo-controlled trials.	CBT shows moderate efficacy compared to placebo for anxiety disorders, with effects maintained at follow-up, but efficacy varies by disorder—strongest for OCD and GAD, weaker for PTSD, social anxiety disorder, and panic disorder.
Kodal et al. 2018	139 youth (originally 179 in the RCT; 139 followed up long-term)	To examine the long-term outcomes of individual (ICBT) and group CBT (GCBT) for youth with anxiety disorders treated in community mental health clinics, and to compare outcomes across treatment formats and diagnostic groups.	CBT delivered in community clinics yields sustained long-term improvement in youth anxiety disorders, with over half of participants free of their inclusion anxiety diagnoses nearly four years post-treatment, though youth with social anxiety disorder show lower recovery rates compared to other anxiety disorders.
Mursaleen, Shaikh, & Imtiaz 2023	Meta-analysis of 30 peer-reviewed studies	To conduct a meta-analytical review evaluating the efficacy, sustainability, and adaptability of CBT in treating anxiety disorders (GAD, SAD, PD).	CBT is highly effective in treating anxiety disorders with a large pooled effect size, offers sustained long-term benefits, and performs comparably or better than pharmacotherapy and other psychotherapies, though outcomes vary by demographic and cultural factors.
Erickson, Janeck, & Tallman 2007	152 patients (73 immediate treatment, 79 wait-list control)	To evaluate the effectiveness of a single cognitive-behavioral therapy (CBT) group protocol for patients with various anxiety disorders in a general clinic setting, comparing it to a wait-list control group.	A single, mixed-diagnosis CBT group protocol was effective in reducing anxiety symptoms across various anxiety disorders, with sustained improvements at six-month follow-up and a medium effect size, supporting its feasibility in general mental health settings.
Zhang et al. 2022	1,687 participants across 26 randomized controlled trials (RCTs)	To compare the efficacy of face-to-face CBT and internet-based CBT (ICBT) for generalized anxiety disorder (GAD).	ICBT achieved similar therapeutic effects as face-to-face CBT for GAD, making it a viable substitute, especially during the COVID-19 pandemic when remote treatment is necessary.
Kendall et al. 2023	Not specified	To discuss how CBT for youth anxiety can be adapted flexibly across different settings (schools, community centers, telehealth, online programs, home-based) while maintaining treatment fidelity.	CBT for youth anxiety can be effectively adapted to various settings through strategic modifications without compromising core therapeutic components, thereby improving accessibility and personalization.
Lv et al. 2021	1,035 users of a Chinese CCBT platform	To explore the effects of computerized cognitive behavioral therapy (CCBT) on anxiety and depression during the Wuhan lockdown due to COVID-19.	CCBT significantly alleviated anxiety and depression symptoms during the pandemic, especially among women, students, and those in heavily affected regions like Hubei. It served as an effective alternative when face-to-face therapy was unavailable.

Wu et al. 2021	626 participants across 11 studies	To evaluate the effectiveness of virtual reality-assisted CBT (VRCBT) for anxiety disorders compared to standard CBT and waitlist controls.	VRCBT was more effective than waitlist controls and achieved similar outcomes to standard CBT in reducing anxiety and depression symptoms in patients with anxiety disorders.
Otte 2011	Not specified	To summarize and discuss the current state of evidence regarding CBT for adult anxiety disorders (PD, GAD, social anxiety disorder, OCD, PTSD).	CBT demonstrates both efficacy in randomized controlled trials and effectiveness in naturalistic settings for adult anxiety disorders, though the exact magnitude of effect is difficult to estimate due to methodological.
Stewart & Chambless 2009	56 effectiveness studies (including 17 for panic disorder, 11 each for social anxiety disorder, OCD, and GAD, 6 for PTSD)	To examine whether CBT tested under well-controlled conditions generalizes to less-controlled, real-world clinical practice settings.	CBT for adult anxiety disorders is effective in clinically representative conditions, with large pretest–posttest effect sizes.
Hofmann et al. 2014	44 studies, 59 CBT trials, totaling 3,326 participants	To conduct a meta-analysis of the effect of CBT for anxiety disorders on quality of life.	CBT for anxiety disorders has a moderately strong effect on improving quality of life, with greater improvements in physical and psychological domains than in social and environmental domains.
Kaczkurkin & Foa 2015	Not specified	To provide an overview of exposure and cognitive therapy methods for anxiety disorders and summarize current empirical evidence.	Exposure and cognitive therapy are both efficacious and effective for anxiety disorders, but dismantling studies are needed to identify specific active components and determine which patients benefit most from which techniques.

Limitations and strength of CBT Studies

Cognitive Behavioral Therapy (CBT) is highly effective for anxiety disorders across all ages. Moreover, it leads to significant long-term improvement, with treatment gains maintained for several years; many participants met recovery or remission criteria at follow-up. Importantly, no major relapse was observed. For severe anxiety, combining CBT with medication works best.

Additionally, online CBT (ICBT/CCBT) is as effective as face-to-face CBT, and VRCBT shows similar effects to standard CBT, with greater improvements than wait-list groups. CBT also improves quality of life, showing stronger improvements in physical and psychological domains, and weaker improvements in social and environmental domains.

Therefore, CBT is considered the gold standard for adults and is effective in both laboratory and real-world clinical settings. Furthermore, transdiagnostic CBGT is effective for mixed anxiety disorder groups. Finally, CBT for youth is well-established and has been modified for multiple settings.

On the other hand, the use of only 12 studies and the limited nature of these studies, as well as differences between therapists and protocols, can affect the results. The presence of a small sample size is especially important because most of these samples are from Europe, making it difficult to generalize the findings to all people; in other words, it raises doubts about whether the results would affect everyone equally. It should also be noted that participants not attending all sessions can, in turn, affect the comparative results of the studies. At the same time, in ICBT tests, positive results were obtained because they were conducted with patients with milder symptoms, but if conducted with patients with more severe symptoms, the results could be different.

Contribution

This systematic review makes several key contributions to the literature on Cognitive-Behavioral Therapy (CBT) for anxiety disorders. First, by synthesizing findings from 12 diverse studies—including meta-analyses, RCTs, longitudinal research, technology-assisted interventions, youth-focused adaptations, and group-based protocols—this review provides a comprehensive and updated overview of CBT's effectiveness across different anxiety disorders and populations. The collective evidence confirms that CBT produces

medium-to-large reductions in anxiety symptoms, demonstrates strong durability over months and years, and remains superior or comparable to major alternative treatments such as pharmacotherapy, ACT, and MBCT.

Second, this review advances understanding of delivery modalities by integrating evidence on face-to-face, group-based, internet-delivered (ICBT), computerized (CCBT), and virtual reality–enhanced CBT (VRCBT). The synthesis demonstrates that emerging digital and VR-assisted formats retain therapeutic effectiveness while expanding accessibility, offering cost efficiency, and reducing therapist burden—particularly useful during public health crises such as COVID-19. The review also highlights that hybrid and technology-supported models may bridge treatment gaps in underserved communities.

Third, the review contributes to clarifying the flexibility and adaptability of CBT across developmental, cultural, and clinical contexts. Evidence from youth studies underscores that strategic flexibility—rather than rigid protocol fidelity—can maintain strong outcomes in schools, telehealth environments, and community settings. Studies involving non-Western and low-resource populations further show that culturally adapted CBT retains clinical value, though additional tailoring may optimize outcomes.

Fourth, by combining data across studies examining treatment components, this review provides insight into the mechanisms of change. While exposure-based strategies consistently emerge as a core driver of improvement across several anxiety disorders, the overlap between exposure and cognitive components highlights the need for further dismantling research. The synthesis underscores that CBT remains robust even when components vary, reinforcing its transdiagnostic utility.

Finally, this systematic review identifies gaps in the current evidence base, thereby guiding future research priorities. These include the need for more high-quality RCTs with intention-to-treat analyses, studies with longer follow-up periods, cross-cultural research, clearer comparisons between treatment components, and better evaluation of digital engagement factors. By articulating these gaps alongside established knowledge, the review strengthens the conceptual and empirical foundation for developing next-generation CBT interventions.

Overall, this systematic review contributes a consolidated, multi-dimensional understanding of CBT's efficacy, adaptability, delivery innovations, and mechanisms, reinforcing its position as the gold-standard psychological treatment for anxiety disorders while outlining clear directions for advancing clinical research and practice.

Conclusions

CBT demonstrates substantial and durable effectiveness across all anxiety disorders, with medium to large effect sizes consistently reported. It outperforms passive control conditions and shows comparable or superior long-term outcomes relative to pharmacotherapy, particularly regarding sustained gains and lower relapse rates. Combined treatment approaches may be optimal for severe presentations.

The efficacy of CBT is maintained across various delivery formats. Traditional face-to-face therapy remains highly effective, while digital adaptations—such as internet-based, computerized, and virtual reality-assisted CBT—provide accessible and viable alternatives, especially for mild to moderate symptoms. However, in-person modalities may confer slightly greater benefits for quality-of-life improvements.

When compared to pharmacotherapy and alternative psychotherapies, CBT is at least equally effective in the short term and demonstrates stronger durability over time. Its structured yet flexible protocol, supported by extensive empirical evidence, establishes CBT as the preferred first-line psychological intervention, although emerging therapies show promise for specific disorders and populations.

The conclusions drawn from this review should be interpreted in light of several methodological and analytical constraints. First, the synthesis is based on a relatively small sample of 12 pre-existing research summaries, which themselves varied in scope, quality, and included primary studies. A broader inclusion of original trials or more recent meta-analyses could have provided a more comprehensive and updated evidence base.

Furthermore, the demographic representativeness of the underlying evidence is limited. Gender distribution was not equal across all synthesized studies, with many showing a predominance of female participants, which may affect the generalizability of findings to male populations.

The review integrated findings from heterogeneous study designs, including meta-analyses, RCTs, and longitudinal studies. This variability in design rigor, control conditions, and outcome measurement may introduce inconsistency when comparing effect sizes and drawing unified conclusions. The reliance on aggregated summary data rather than individual participant data also limits the capacity for nuanced subgroup analysis.

Cognitive Behavioral Therapy remains the gold-standard psychological intervention for anxiety disorders, supported by extensive evidence of its efficacy, adaptability, and durability. Its benefits extend beyond symptom reduction to include meaningful improvements in quality of life and functional outcomes. The advent of digital and group-based formats has further enhanced its reach, offering scalable solutions to global mental health access barriers. Future research should prioritize long-term follow-ups, cultural adaptations, dismantling studies to identify active treatment components, and strategies to optimize engagement in digital delivery systems. Ultimately, CB represents a cornerstone of effective, patient-centered anxiety treatment.

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Author Contributions

Sadagat Majidli: contributed to the provision and collection of the data, also conceptual design. Sadagat Mammadova: contributed to the critical revision of the manuscript, as well as the final approval of the study. Gulay Mammadova: contributed to the data analysis, interpretation of findings, and preparation of the initial manuscript draft. Gulshan Aliyeva: contributed to the study as an advisor.

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