

Empirical Review of Cognitive-Behavioral Therapy for Anxiety Disorders

Indira Das¹ and Dr. Mudita Popli²

Research Scholar, Department of Clinical Psychology¹

Associated Professor, Department of Clinical Psychology²

Glocal University, Saharanpur, Uttar Pradesh, India

Abstract: Cognitive behavioral therapy (CBT) has been shown to treat several mental health issues, including anxiety [1]. Cognitive-behavioral therapy (CBT) is a short, skills-oriented intervention that aims to change maladaptive emotional responses by changing beliefs, behaviors, or both. B. F. Skinner and Joseph Wolpe, 1950s behavioral therapy pioneers, helped create CBT. Behavioral therapy assumes that behavior changes affect emotions, cognitions, and evaluations.

Keywords: anxiety disorder; post-traumatic stress disorder; obsessive-compulsive disorder;

I. INTRODUCTION

Development of cognitive-behavioral, behavioral, and therapy. To simplify and encourage conversation about this large spectrum of treatments, we have classed cognitive and behavioral therapies as "CBT". The relative importance of cognitive vs behavioral approaches differs across therapy regimens. Over time, many protocols have been developed to deliver cognitive-behavioral therapy (CBT) to patients with nonspecific anxiety symptoms, GAD, OCD, PD, specific phobias, and social anxiety disorder. Whole books describe CBT-based remedies for specific anxiety disorders. This publication does not include CBT therapies for specific anxiety disorders. Despite the wide range of cognitive-behavioral therapy (CBT) protocols for anxiety disorders, important commonalities arise that form the basis of discourse.

In this paper, we discuss the latest empirical evidence on these approaches and two kinds of CBT procedures that are used in many anxiety disorder-specific therapies. After describing two of the most commonly used cognitive and exposure treatments (CBT), we discuss the empirical data on their usefulness in treating anxiety disorders. We end by discussing the differences between cognitive-behavioral therapy (CBT) therapies for anxiety disorders and suggesting further study. In structuring our evaluation of CBT procedures, we recognize that they are often interrelated and not always performed separately. One of the many anxiety disorder-specific CBT books is Clinical Handbook of Psychological Disorders, edited by David H. Barlow⁹ or CBT for Anxiety Disorders: A Practitioner Book, edited by Gregoris Simos and Stefan G. Hofmann. Clinicians interested in learning how to implement CBT protocols should consult one of these books. Additionally, this page introduces anxiety-related cognitive-behavioral treatment (CBT). Thus, the following CBT method analysis is not exhaustive but susceptible to amendment based on future study.

Exposure therapy

Exposure-based CBT is a popular anxiety disorder therapy. Exposure-based therapy may be partly explained by emotional processing theory.¹⁰ Cognitive fear structures association networks store information about the feared stimulus, fear responses (e.g., avoidance, escape, and psychophysiological reactions), and their significance. These associative networks activate the fear structure when an external stimuli mimics the feared stimulus. When the link between stimuli, reactions, and their meanings deviates from reality, such as when it is engaged for safe stimuli or the feared responses, the fear structure becomes pathological. Avoidance strategies that prevent learning also maintain the fear structure.

Exposure can modify the pathological fear structure by activating it and presenting new information that refutes its pathological and irrational associations (e.g., congested malls do not cause violent attacks and tachycardia does not cause heart attacks). Confronting the feared stimuli or reaction and putting correcting information into the fear

memory should reduce dread. Exposure might be interoceptive, in vivo. Imaginal exposure occurs when the patient keeps thinking about the dreaded circumstance or its consequences and becomes anxious. In contrast, in vivo exposure involves systematically approaching previously avoided but secure places, items, people, or situations. Interoceptive exposure is used to treat panic disorder by purposely triggering panic attack-related body symptoms. Both exposure strategies help patients learn new information to change their anxiety. Ten quick sessions are typical for exposure treatment.

Efficacy/effectiveness of exposure for anxiety disorders

Each anxiety disorder's exposure therapy is similar, although the focus is usually on the patient's individual issues. Exposure treatments also emphasize in vivo, or interoceptive exposure procedures differently. Exposure therapy is the preferred treatment for many pathological anxiety disorders due to its proven efficacy.

Post-traumatic stress disorder

Prolonged exposure treatment (PE) uses in vivo and imaginal exposures to treat PTSD.¹¹ During physical therapy (PE), patients repeat trauma memories via creative imagery and vocal retelling. After returning, the imaginal exposure is processed and digested to obtain new insights about oneself, others, and the environment and to change negative views into positive or neutral ones. Listening to the story recorded during imaginal exposure exposes patients to the painful experience between sessions. This enhances traumatic memory processing. PTSD patients are often given in vivo exercises that gradually reintroduce secure places, objects, and activities. Alternative PTSD psychotherapies include exposure. For instance, the early cognitive processing treatment protocol (CPT) encouraged patients to write and speak about their experience.¹²

A meta-analysis found that extended exposure therapy (PE) reduced PTSD symptoms and secondary outcome measures at post-treatment and follow-up compared to control circumstances.¹³ This research found no significant difference between PE, CPT, EMDR, CT, or SIT. The authors believe this is due to different but equally efficient therapy mechanisms or exposure approaches used in the comparator treatments. Alternative studies found that PE outperformed relaxation training and EMDR in symptom reduction, pace of recovery, and percentage of subjects who no longer fulfilled PTSD criteria.¹⁴ Adding cognitive therapy to physical education did not enhance results in some trials (15–17). Adding exposure strategies to cognitive treatment improved its results.¹⁶

OCD treatment with exposure and response prevention (EX/RP) uses in vivo and imaginal exposure.¹⁸ For homework, in vivo exposures are done during therapy sessions with the therapist's encouragement and outside of sessions (e.g., washing to disprove the expected harm of becoming ill or touching public restroom faucets without performing the compulsive ritual). Response prevention—avoiding compulsive actions—is essential to therapy because compulsions function as safety mechanisms that link obsessions to expected negative consequences. When in vivo exposure is impossible (e.g., fear of catching HIV), imaginal exposure is used to expose the patient to the feared situation and enable anxiety to reduce without coercion. The patient's anticipation that considering the obsessional notion would harm and prevent compulsion is disproven by imaginal exposure.

A meta-analysis found EX/RP outperformed placebo and waiting list. Exposure treatment outperformed progressive muscle relaxation for OCD patients.²⁰ However, EX/RP has shown equivalent impact estimates to cognitive restructuring alone and together.¹⁹ In a recent meta-analysis, cognitive therapy alone and EX/RP did not significantly vary in OCD treatment results.²¹ These results were generated from a comparison of several EX/RP research, since just three focused completely on cognitive treatment. Many cognitive therapy research on OCD include behavioral trials, or exposures. Furthermore, empirical research shows that exposure treatment qualities matter. According to a meta-analysis of variants of EX/RP, exposure therapy for obsessive-compulsive disorder (OCD) was most effective when therapist-guided exposure was used instead of self-guided exposure, when complete response prevention was needed instead of partial or no response prevention, and when in vivo and imaginal exposure were combined.²²

Panic disorder

Interoceptive exposure (e.g., hyperventilating or running to increase heart rate) is an important part of panic disorder exposure therapy to disprove the idea that bodily sensations will cause public humiliation or a heart attack. A panic

disorder meta-analysis found that CBT, which mostly included exposure therapy with or without cognitive therapy, outperformed no treatment or a placebo.²³ Another research found that CBT with interoceptive exposure therapy had the best effect sizes for panic disorder patients, however cognitive restructuring was also used.²⁴ Interoceptive exposure is often used to treat panic disorder, however in vivo exposure is less effective.²⁵

Generalized anxiety disorder

In addition to imaginal exposure (imagining the worst-case situation related to their worries), in vivo exposures are seldom utilized to treat GAD. For instance, Craske and Barlow's GAD therapy approach comprises self-guided exposures, where patients iteratively narrate their problems using imaginal exposure to reduce anxiety.²⁶ Few studies have examined exposure-based GAD therapy. CBT with imaginal exposure improved GAD patients' functioning after 12 months more than nondirective treatment and applied relaxation.²⁷ A recent research evaluated cognitive treatment, relaxation, and imaginal exposure (self-control desensitization) for GAD patients and found no significant changes.²⁸ Further research is needed to determine whether exposure therapy treats GAD.

Social anxiety disorder

In vivo exposure (socializing without avoidance or safety) is often used to treat social anxiety disorder. According to Rapee and Heimberg's CBT paradigm, social anxiety sufferers interpret social/evaluative information with biases and distortions, worsening their anxiety.²⁹ This fear is perpetuated by avoiding social encounters, although social experience may disprove cognitive illusions related to social expectations. Exposure, with or without cognitive treatment, lowers social anxiety.³⁰⁻³² Recent study shows that exposure treatment with applied relaxation and cognitive therapy outperforms wait-list control in treating social anxiety disorder.³³ Cognitive treatment outperformed exposure plus relaxation in the same trial. Meta-analysis showed that cognitive and exposure treatments were more effective than relaxation or waitlist control in treating social anxiety disorder.^{34,35}

Specific phobias

For particular phobia, in vivo exposure is recommended. In vivo exposure may be flooding or continual exposure to the most powerful stimulus that causes anxiety. Meta-analytical studies show that in vivo exposure therapy is more successful than placebo, no treatment, and non-exposure-based active therapy for some phobias.³⁶ Relaxation has been shown to help particular phobia sufferers, although it is not more beneficial than exposure.³⁶ A study found that cognitive treatment for five sessions, a single 3-hour session, or five sessions outperformed the waiting control condition. There were no significant differences between exposure and cognitive therapy.

Cognitive therapy

Anxiety problems are often treated with cognitive therapy. Cognitive therapy is based on Beck's tri-part model of emotion, which links ideas, feelings, and actions. This theoretical framework suggests that changing maladaptive beliefs might change a patient's maladaptive emotion and behavior. Cognitive therapy addresses erroneous thinking in different ways. These include recognizing erroneous thinking, assessing the facts supporting or opposing automatic ideas, challenging and changing maladaptive attitudes, changing problematic actions, and improving interpersonal connections. Cognitive therapy includes psychoeducation on the tri-part model of emotion, cognitive restructuring, and distorted thinking (all-or-nothing thinking, jumping to conclusions, dismissing the positive, etc.). Homework is usually given to allow patients to practice their abilities outside of therapy. By doing so, people may master the skills and use them daily. Cognitive therapy and behavioral strategies like exposure exercises are often used to treat anxiety problems. Cognitive therapy aims to resolve the patient's issues in 20 sessions.

Efficacy/effectiveness of cognitive therapy for anxiety disorders

Cognitive therapy is used for anxiety disorders. Cognitive approaches for anxiety disorders have shown mixed results in independent studies. A study comparing transdiagnostic cognitive-behavioral treatment (CBT) with relaxation training for anxiety disorders found that relaxation training increased patient attrition but had similar benefits.³⁸ Cognitive therapy's usefulness and success in treating anxiety disorders are hampered by the small number of research that have examined cognitive approaches without exposure. Many treatment procedures investigated in treatment outcome studies combine exposure and cognitive therapy, making it difficult to assess their respective contributions.

Post-traumatic stress disorder

Many cognitive therapy methods have been proposed for PTSD. For instance, cognitive processing treatment (CPT) for post-traumatic stress disorder (PTSD) assumes that faulty beliefs about the event's origins and effects create the

patient's incapacity to process trauma-related emotions.¹² In CPT, the therapist helps the patient discover "stuck points," learn new coping skills for uncomfortable thoughts, and understand how trauma transforms beliefs. CPT begins with psychoeducation on PTSD symptoms and its rationale by the therapist. Each patient must write a one-page "stress statement" explaining why the traumatic event happened and how it changed their self-perception and worldview. Starting with the patient's cognitive distortions or sticking points about the incident (e.g., "I am a weak person"), the impact statement is used. Patients learn to notice and organize their thoughts and emotions to understand their interdependence. The patient records the most stressful traumatic incident for two therapy sessions and reads it to the therapist. Socratic inquiry—subtly questioning the patient's views to extract more balanced viewpoints to address their sticking points—takes up a lot of the following sessions. Patients may get specialized therapy for trust, self-esteem, and power/control in addition to cognitive-behavioral skills. Alternative cognitive therapy for PTSD may include imaginal and in vivo exposures or not.⁴⁰ Research shows that CPT reduces PTSD symptoms in soldiers and nonveterans.⁴¹⁻⁴⁵ Resick and colleagues found that CPT improved PTSD symptoms more than a control group with little attention.⁴⁶ The same research found CPT as beneficial as extended exposure treatment. In PTSD treatment, cognitive therapy (CT) outperforms wait-list, self-monitoring, and self-help manual control groups.^{39,47} As said, CPT and CT for PTSD use distinct exposure exercises, therefore they are not purely cognitive treatments. Other studies have shown similar outcomes with cognitive treatment alone rather than imaginal exposure.⁴⁰

Obsessive-compulsive disorder

EX/RP, another exposure-based treatment, uses cognitive processing during or after exposure to help OCD patients understand their fears.¹⁸ However, no cognitive processes are needed for EX/RP. Cognitive treatment for OCD sometimes involves identifying and changing faulty cognitive ideas about intrusive thoughts (e.g., intrusive thoughts signal the patient is bad). McLean and colleagues assessed a cognitive therapy strategy that begins with psychoeducation on OCD symptoms and treatment rationale.⁴⁸ The patients discuss the relationship between intrusive thought triggers and their misperceptions, which cause anxiety and obsessive behavior. Patients are then taught to recognize distorted appraisals like overvaluing thoughts, overestimating danger, inflating responsibility, overestimating responsibility's consequences, and a need for certainty and control.⁴⁸ After that, patients conducted behavioral studies to disprove their misjudgments.

As indicated, a meta-analysis of OCD treatment results found no significant differences between cognitive therapy alone and EX/RP. Few research have studied cognitive treatment for OCD.^{19,21} McLean et al. found that many cognitive therapy methods for OCD include behavioral trials. These behavioral investigations expose patients to their frightened stimuli or ideas. Thus, comparing the cognitive effects of different therapies based on behavioral trials is difficult. Research shows that group EX/RP improves OCD results more than group cognitive treatment using a behavioral trial.⁴⁸ Due to the small number of research addressing cognitive therapy alone (without a behavioral component), comparing it to exposure for OCD treatment is difficult.

Panic disorder

Interoceptive exposure and cognitive skills training are often used to treat panic disorder by reevaluating physical symptoms rather than catastrophizing them.⁴⁹ Cognitive therapy did not substantially improve panic disorder exposure-based treatment. A meta-analysis found that cognitive components improved outcomes for depressed individuals.²³ Another research found that applied relaxation, exposure, and cognitive therapy were equally effective in treating panic disorder and agoraphobia patients.

Generalized anxiety disorder

GAD therapy involves cognitive approaches to reduce worry. In the Craske and Barlow GAD treatment handbook, patients learn how to change anxiety-causing thought patterns, confront and change danger-exaggerating beliefs, and detect and change catastrophic thinking.²⁶ Cognitive therapy for GAD works. Meta-analysis showed that cognitive-behavioral treatment was more effective over time.

than applied relaxation on GAD sufferers.⁵¹ Dugas et al. found that cognitive therapy plus exposure was generally equivalent to relaxation in treating generalized anxiety disorder (GAD), but it was better than applied relaxation in a waitlist control group.⁵² These findings are limited by the CBT group's cognitive and exposure strategies. However, other research suggest that relaxation methods are as effective as cognitive therapy in treating generalized anxiety disorder (GAD) symptoms at the end of treatment and throughout follow-up.^{53,54}

Social anxiety disorder

Cognitive approaches are used to help social anxiety disorder patients identify and change cognitive aspects that cause it. In Hofmann's model of social anxiety, people learn how negative self-perceptions, an exaggerated assessment of social mishaps, a lack of agency over emotional reactions, and a belief in one's insufficient social aptitudes maintain social anxiety.⁵⁵ A meta-analysis indicated that individual cognitive-behavioral treatment (CBT) treated social anxiety better than a waitlist control.³⁵ A further meta-analysis of social anxiety disorder therapy including exposure, cognitive restructuring, and exposure plus cognitive restructuring found no significant differences in results. This suggests cognitive treatment works as well as exposure.³⁴

Specific phobia

Exposure therapy is the most effective treatment for some phobias, however cognitive restructuring may be used alongside it. For instance, prejudice-specific therapy methods may help patients recognize and replace inaccurate expectations with more accurate predictions and interpretations.⁵⁶ Cognitive treatment for certain phobias has had mixed results. One study found that a single session of cognitive treatment and exposure therapy treated small animal phobia similarly. This study's participants found cognitive therapy less obtrusive.⁵⁷ Meta-analytic data showed that cognitive approaches added to exposure treatment for particular phobias did not improve outcomes (36). These findings support the general suggestion that exposure therapy be the first treatment for particular phobias.

II. DISCUSSION

This review shows that CBT may cure anxiety disorders and identifies topics for additional study. Cognitive and exposure strategies are the most studied and used CBT modalities. Exposure therapy is often the first treatment for anxiety disorders. Specific phobias and OCD still show little resistance to exposure. Exposure approaches provide benefits over no treatment, but research has not consistently shown that they are better than cognitive therapy. We recently discussed Powers et al.'s finding that PE did not significantly vary from cognitive therapy (CT), eye-movement desensitization and reprocessing (EMDR), or stress inoculation training.¹³ In two meta-analytic investigations on OCD, EX/RP was similar to cognitive treatment despite having larger effect sizes than control conditions and better results than cognitive therapy in several trials.^{19,21} Meta-analyses of OCD treatment relied only on three research that assessed cognitive therapy alone. Many cognitive treatments for OCD use exposure-based behavioral trials. The quantity of data comparing exposure therapy to cognitive therapies for OCD suggests that more study is needed before concluding that cognitive therapy is effective.

These data are difficult to interpret due to the overlap in methodology used across several therapy. For PTSD patients, PE focuses on exposure and processing of the imaginal exposure, during which the patient considers the feelings and sensations associated with the traumatic remembrance. This cognitive integration into the therapeutic routine is notable despite the lack of established cognitive procedures. Cognitive-belief-based therapy (CPT) for post-traumatic stress disorder (PTSD) emphasizes cognitive beliefs about the causes and effects of trauma and includes an exposure component in which the patient writes and the therapist reads a detailed account of the trauma. This tracks patient development beyond cognitive treatment. Active CBT treatments may not always generate better results owing to overlap in approaches. Exposure and cognitive treatments use different but equally effective therapeutic pathways, thus combining them should improve results. Dismantling studies seldom show a difference between PE treatment alone and PE therapy plus cognitive restructuring. It seems that cognitive treatment does not improve PE.^{15,16} The number of exposure treatment studies is higher than cognitive therapy research without exposure. To contrast exposure and cognitive approaches, further cognitive therapy-focused research is needed.

Cognitive-behavioral treatment (CBT) for anxiety disorders has proven useful and efficient. Most studies recommend exposure therapy for anxiety disorders. However, further research on cognitive treatment in combination with exposure and in isolation may change these conclusions. This analysis shows that further research is needed to determine the components of successful anxiety disorder therapies that lead to beneficial results. However, the continuous finding of equivalent or almost identical effectiveness across cognitive-behavioral therapies (CBTs) suggests that their common qualities may be more important than their techniques. Few studies have sought to discover these parallels, creating a large yet underdeveloped clinical treatment research sector. Identifying effective therapies and which people are most likely to benefit from them are equally important. Research on treatment outcome predictors is useful for identifying

patient features and variables most likely to enhance results. Finally, transdiagnostic cognitive-behavioral therapy (CBT) is gaining popularity. This acknowledges that anxiety disorders share symptoms and often co-occur with depression. Research suggests anxiety disorder sufferers share psychological and biological susceptibilities. This suggests that effective anxiety treatments may use these pathways. Future treatment research would benefit from understanding the common principles that underpin successful cognitive behavioral therapy (CBT) therapies.

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