



**International Journal of Biology, Pharmacy
and Allied Sciences (IJBPAS)**

'A Bridge Between Laboratory and Reader'

www.jibpas.com

**COGNITIVE BEHAVIORAL THERAPY AS A COMPLEMENTARY AND
ALTERNATIVE MEDICINE (CAM) THERAPY FOR THE
MANAGEMENT OF ADHD**

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Received 15th March 2023; Revised 8th June 2023; Accepted 10th Sept. 2023; Available online 1st July 2024

<https://doi.org/10.31032/IJBPAS/2024/13.7.8213>

ABSTRACT

ADHD: Attention-Deficit / Hyperactivity Disorder (ADHD) is a neurodevelopmental disorder characterized by inattention, hyperactivity, and impulsivity. Pharmacological treatment is the first line of treatment for ADHD. However, the use of stimulant medication for ADHD leads to several side effects. However, medication alone may not be able to address the cognitive and behavioral issues resulting from ADHD.

CBT: Psychotherapy is utilized as an adjunctive or Complementary Alternative Medicine (CAM) therapy for ADHD. Among the various types of psychotherapy, Cognitive Behavior Therapy (CBT) is one of the most effective CAM therapies for children and adults with ADHD.

Methods: A systematic and comprehensive review of the related literature in different online databases with the keywords “Cognitive Behavioral Therapy” and “ADHD” was conducted. Two hundred and one articles were found to be relevant. Of the two hundred and one articles, thirty

were selected following PRISMA guidelines, using inclusion and exclusion criteria, and after removing duplicates. Then, these studies were thoroughly analyzed and synthesized to interpret the various research findings.

Findings: A systematic review of the research studies revealed that CBT reduces inattention, impulsivity, and hyperactivity and improves the quality of life of subjects with ADHD. After thoroughly analyzing the various CBT techniques published in peer-reviewed journals, the authors have developed an 18-week framework for CBT sessions. Overall, this article aims to provide an in-depth review of current research findings on the effectiveness of CBT as a potential intervention for ADHD or as an add-on intervention, exploring its mechanisms, outcomes, and potential for integration into comprehensive ADHD treatment plans.

Novelty: A new 18-week CBT program for individuals with ADHD, irrespective of age, has been developed to enhance their cognitive and executive functioning skills.

Keywords: ADHD, Cognitive Behavior Therapy, Inattention, Hyperactivity, Impulsivity, Mindfulness, and Cognitive Remediation

INTRODUCTION:

According to the American Psychiatric Association, Attention-Deficit Hyperactivity Disorder (ADHD) is a neurodevelopmental disorder with a neurobiological etiology characterized by persistent patterns of inattention, hyperactivity, and impulsivity. It often leads to impaired functioning in various life domains, which may affect multiple areas of functioning [1]. The prevalence of ADHD is at 5% in school-age children. Children with ADHD often have difficulty paying close attention to details and sustaining attention in tasks or games. They do not seem to listen when spoken to and need help following instructions. They fail to finish classwork at

school or homework at home. They are also forgetful in daily activities [2].

ADHD affects children, adolescents, and adults [3]. It is a chronic condition that requires treatment for several years or throughout life. ADHD is treated with stimulants such as methylphenidate (e.g., Concerta, Metadate ER, Ritalin SR) or amphetamine compounds (Adderall, Adderall-XR, Dexedrine, Spansule, Azstarys, and Vyvanse). Common side effects of medication are weight loss, tics, jitteriness, and headache. In multiple short-term studies, stimulants resulted in acute cardiovascular effects (e.g., changes in blood pressure and heart rate). Risks to human reproduction and

the incidence of cancer have also been reported.

Although stimulant medications are considered the first line of treatment for ADHD, researchers studying ADHD in children with comorbid anxiety have been able to develop and test alternative and effective treatments for children with ADHD, addressing the status of evidence for Cognitive-Behavioral (CBT) interventions [4].

While pharmacological interventions have demonstrated efficacy in alleviating some ADHD symptoms, concerns regarding long-term side effects, non-responsiveness in some individuals, and the desire for non-pharmacological alternatives have also led to increased interest in psychological interventions such as Cognitive-Behavioral Therapy (CBT). CBT can play an integral role in breaking the links between core symptoms and the continued failure and underachievement of students with ADHD. According to researchers, CBT works in the same brain regions as medication: the front parietal network and the cerebellum. This article provides solid recommendations for patients and their families to use CBT in addition to pharmacological treatment as a CAM intervention strategy or therapy. CBT is

a promising add-on to medical treatment for ADHD [5].

A flow chart representing the cognitive-behavioral aspect of ADHD (Figure 1) and a schematic representation of CBT(Figure 2) have also been designed based on the analysis and synthesis of the research articles.

Research Gap:

Much of the existing research indicates that there is a paucity of published literature on interventions to support adults with ADHD in the workplace [6].

Due to the paucity of research supporting adult ADHD in the workplace, it was decided to conduct this systematic review examining the effects of CBT, in addition to medication, as a complementary and alternative medical therapy to support children and adults with ADHD in schools, colleges, and workplaces. After thoroughly analyzing multiple research studies about the various CBT techniques published in peer-reviewed journals, the authors have attempted to create a CBT framework comprising 18 sessions for any individual with ADHD as an adjunct to pharmacological interventions to maximize the benefits of both medication and therapy in ADHD core symptom management and to enhance cognitive and executive functioning.

2. METHODOLOGY:

A systematic and comprehensive search of the related literature in databases like Google Scholar, PubMed, Eric, EBSCO, Psych Central, and APA PsycNet was conducted, with the keywords “Cognitive Behavioral Therapy” and “ADHD.” The search yielded two hundred-one articles. The inclusion criteria were peer-reviewed journal articles about ADHD and CBT and articles published from 2019 to 2024. The exclusion criteria were CBT used for other diseases and disorders like autism, Schizophrenia, other mental illnesses, and intellectual disabilities. Finally, thirty articles were selected following PRISMA guidelines, using inclusion and exclusion criteria and removing duplicates for an in-depth analysis. Then, they were thoroughly analyzed and synthesized.

2.1. Cognitive Behavioral Therapy:

CBT is a short-term, goal-oriented form of psychotherapy. It aims to change maladaptive thoughts or negative thinking patterns and help the patients reframe their feelings and thoughts about themselves. It is a frequently recommended therapy for children with ADHD. It teaches people to identify thoughts

that work against them and change them into helpful ones. CBT depends on the idea that the patient’s thoughts affect their emotions, which can affect their behavior [7]. CBT helps patients identify when they slip into negative thought patterns and facilitates positive views of the situation. For example, suppose the patient has a significant school assignment or work project with a deadline and is concerned that he might be unable to finish it on time; CBT identifies and changes the initial negative thought to create a positive pattern.

CBT’s success is due to its structured and goal-oriented nature, with therapists and clients working collaboratively to find and confront negative thought patterns with adaptive cognitive and behavioral solutions. Furthermore, CBT’s evidence-based foundation has allowed it to be integrated into various specialized therapies, such as Dialectical Behavioral Therapy [8] and Mindfulness Meditation Therapy [9], expanding its applications into clinical practice.

A schematic presentation of the Conceptual Framework of Cognitive Behavioral Therapy has been presented in **Figure 1**.

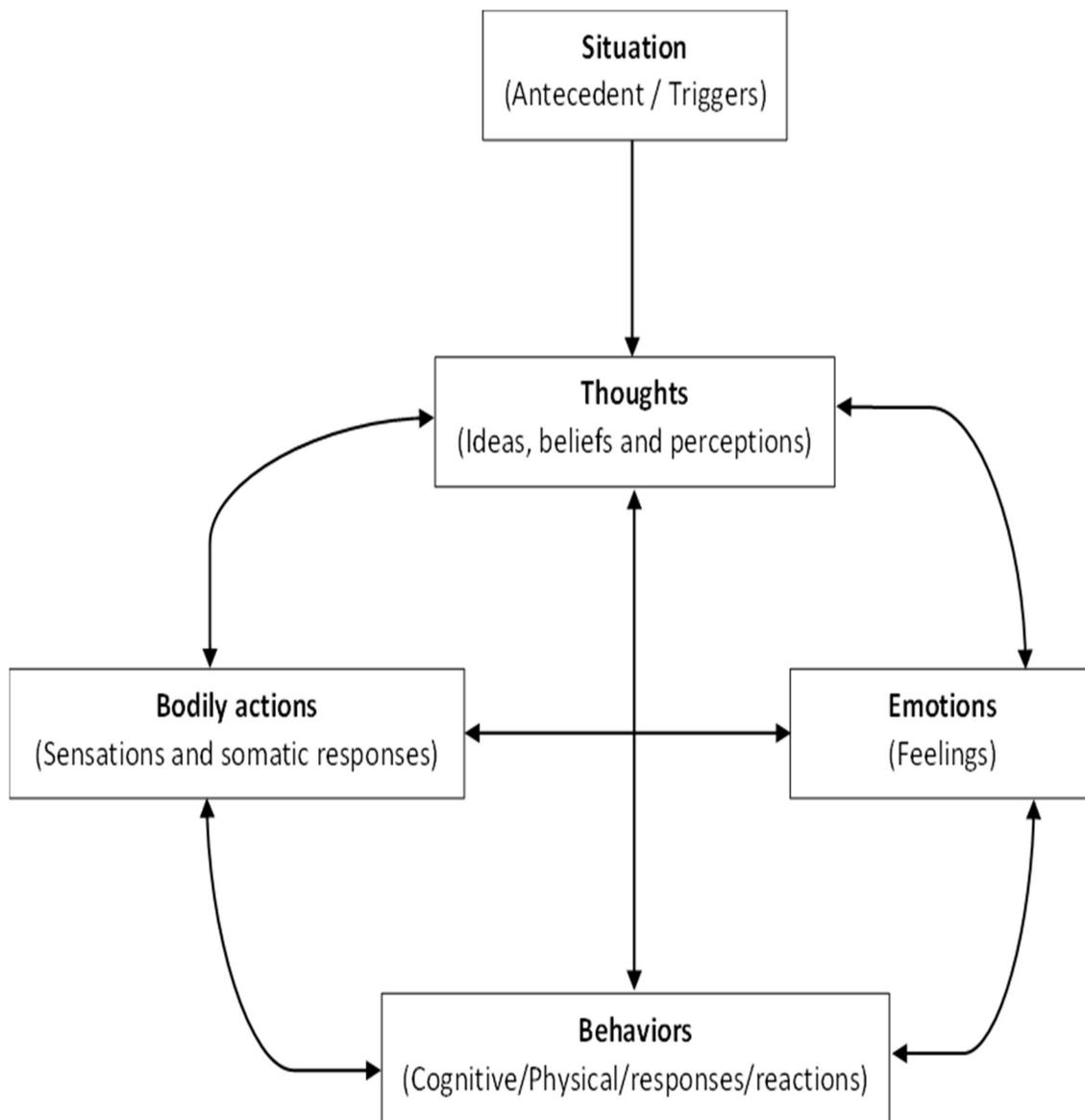


Figure 1: Conceptual Framework of CBT

CBT has the following types:

1. Cognitive Behaviorally Oriented Group Rehabilitation
2. Goal Management Training
3. Mindfulness Meditation Training
4. Cognitive – Remediation Program
5. Combined Medication & CBT

6. Metacognitive Therapy

7. Dialectical Behavioral Therapy

A Cognitive-Behavioral Therapy Model for ADHD:

CBT is a structured, methodical, evidence-based approach that aims to improve executive functioning and self-regulation

skills, targeting the core deficits seen in individuals with ADHD. CBT enables subjects to see their thoughts, feelings, or behaviors or the consequences of these processes. CBT facilitates “holding up a mirror” and “bringing the problem into the room” and thoughts and behaviors that must be addressed. It entails the clients “committing to change.” Sometimes, the client has maladaptive thoughts and behaviors, for which they are prescribed to “act the opposite.” The therapist also plays the “devil’s advocate” for the client to understand the healthier way of thinking and acting. CBT has also shown promise in boosting general well-being and functional outcomes for people with ADHD by promoting metacognitive awareness, emotional control, and the development of adaptive strategies. For children with ADHD who are six years or younger, behavioral therapy is the recommended line of treatment. For kids six years and older, stimulant medication is the

first line of treatment. However, for kids who experience adverse side effects on medication or whose symptoms do not respond well to treatment, behavioral therapy interventions such as parent training and classroom management, with clear goals, rules, and procedures, along with reinforcements and punishments, are utilized. Typically, Cognitive Behavioral Therapy Sessions last for 60 minutes once a week for up to 8-12 weeks. It has been proven that CBT and pharmacological interventions have the maximum benefits. However, it has also been proved that CBT delivers benefits similar to medication or add-on benefits when used along with medication. Hence, Primary Care Providers must develop an interprofessional team that collaborates with behavior therapists to teach and monitor the progress of CBT in children and adults with ADHD [10]. The cognitive behavioral aspect of ADHD is depicted in a flow chart in **Figure 2**.

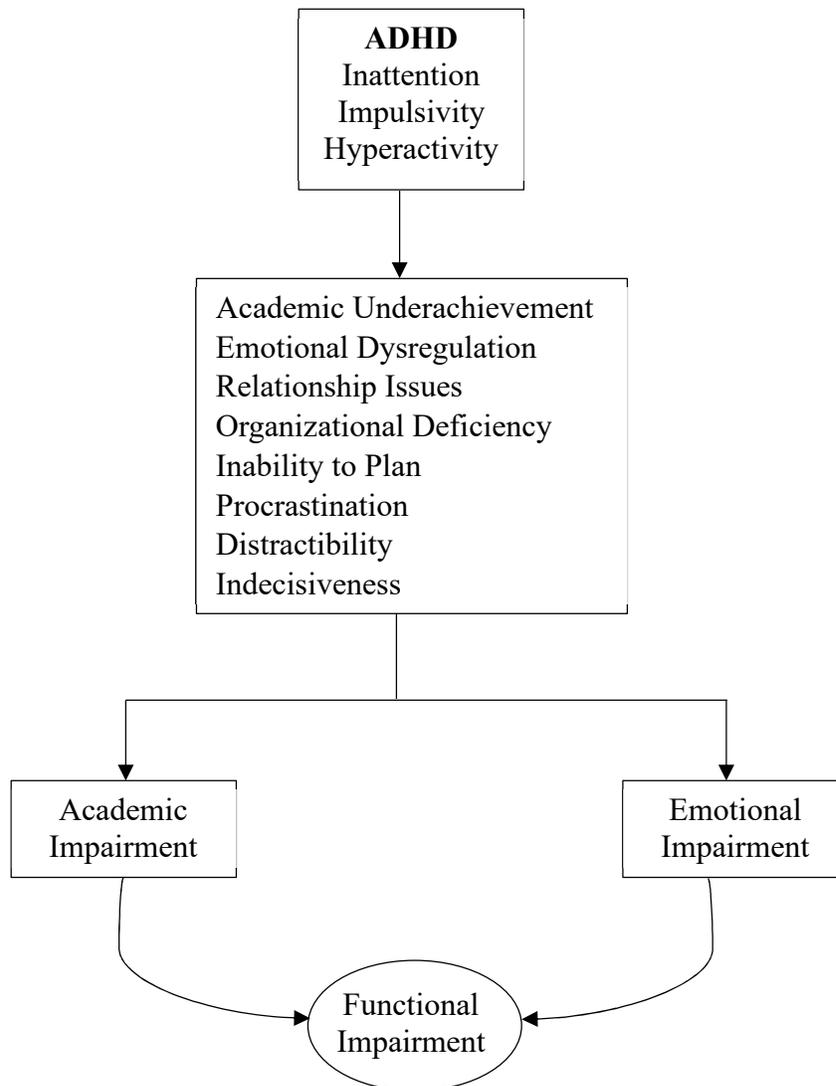


Figure 2: Cognitive-Behavioral Aspect of ADHD

2.1 Cognitive-Behaviorally Oriented Group Rehabilitation for ADHD:

Cognitive-behaviorally oriented Group Rehabilitation (CB-GR) has become an effective therapeutic modality for individuals with various physical and psychological challenges. This method emphasizes the interaction between thoughts, emotions, and

actions to support holistic recovery while incorporating cognitive-behavioral therapy (CBT) concepts into a group setting. By utilizing the strength of group dynamics, CB-GR encourages participants to practice coping mechanisms, share experiences, and learn from one another. Additionally, this strategy is

adaptable to various settings and target groups, making it a valuable tool.

A feasibility study of a new treatment protocol involving a novel Group-based Cognitive Behavioral Therapy for adults with predominantly inattentive type of ADHD was undertaken, and the group went through 14 group sessions, including skills training in organization and activity initiation while handling procrastination and passivity. The results of the novel CBT intervention for ADHD-I called the CADDI Protocol, delivered a medium effect size of 0.65 Cohen's d and 0.55 d for inattention symptoms, and a small effect size of 0.48 d for depression symptoms [11].

Cognitive behavior group therapy for supported employment called CBT-SE included an 8-week CBT-SE group therapy, and the results indicated a higher likelihood of securing a job (75% vs 58%) and an increase in the number of hours (24hrs vs 18hrs) [12].

2.2 Goal Management Training for ADHD:

Goal management training (GMT) is a group-based cognitive rehabilitation intervention that helps subjects with ADHD set realistic and practically achievable goals. It also aids in planning and organizing the steps for accomplishing that goal. GMT enables subjects to improve their focus, enhance working memory, and hone their executive

functioning skills. Moreover, by delivering GMT in a group format, patients can benefit from social support and feedback from other participants who share similar experiences and challenges.

Multiple studies have studied the effectiveness of GMT on ADHD symptoms. A randomized controlled trial conducted by Nordby *et al.* 2021, assessed GMT's effects compared to Psycho-Education and Medication Management (PEMM) in 95 adults with ADHD. The results proved that both groups improved significantly regarding measures of ADHD symptoms, executive functioning, quality of life, and satisfaction with treatment. The authors concluded that GMT is a complementary therapy or training in addition to standard treatment for adults with ADHD [13].

Another study by Jensen *et al.* 2021, studied the long-term benefits of GMT in 64 adults with ADHD who had completed the intervention two years earlier. The study results indicated that the improvements achieved by GMT were sustained or further enhanced at the follow-up assessment. The participants reported a reduction of ADHD symptomatology, increased goal attainment, enhanced executive functioning, and improved quality of life. The results suggested

that GMT can have lasting benefits for adults with ADHD [14].

2.3 Mindfulness Meditation Training:

Mindfulness Meditation Training (MMT) has gained significant attention as a promising intervention for enhancing mental well-being and promoting overall health. MMT encourages people to develop their mindfulness abilities through guided meditation sessions, which can result in a sense of inner peace and increased self-awareness.

Rooted in ancient meditative techniques, MMT emphasizes the non-judgmental awareness of the present moment and other mindfulness-based skills to address mood and anxiety symptoms. Mindfulness meditation training increased their sense of control, competence, and confidence by teaching them to focus on their breath and the present moment.

When a meta-analysis of the effect of Mindfulness-based interventions on attention, working memory, and executive control in healthy adults was conducted, it showed an overall positive effect of $g = 0.2$, an attention g of 0.18, and executive control g of 0.18. In a preliminary study on sleep and behavioral problems, mindfulness-oriented meditation (MOM) was applied clinically to 10 children aged 7-11 years through 2 programs

administered three times a week for eight weeks. This MOM program resulted in positive effects on the quality of sleep and behavioral issues in children with ADHD [15]. Moreover, by delivering mindfulness meditation training in a group format, participants could benefit from social support and feedback from other participants who shared similar experiences and challenges.

2.4 Cognitive Remediation Program for ADHD:

Cognitive Remediation Programs (CRPs) have shown promise as therapies for those with cognitive deficits, particularly those with neurological or psychological issues. Through regimented exercises and activities, these programs aim to improve cognitive performance. Research has consistently demonstrated the effectiveness of CRPs in improving cognitive domains such as attention, memory, and executive function in populations with conditions like Major Depressive Disorder (MDD), people with substance abuse, severe mental illnesses, and children with neuro-cognitive deficits. These research findings indicate that the therapeutic alliance fostered during the Cognitive Remediation Programs enhances the learning environment and fosters positive experiences within the group. [16]

Cognitive Remediation Programs are also an evidence-based combination of behavioral intervention strategies designed to reduce Cognitive deficits and improve cognitive functioning like focus, memory, executive functioning, working memory, information processing, logical thinking, and reasoning by improving the brain's plasticity. CRPs are typically tailored to the specific cognitive impairments of the target population. They can be administered individually or in group settings, depending on the needs and preferences of the participants. It can also be customized to the specific goals and interests of the participants, such as academic, vocational, or social functioning. It can be combined with other forms of treatment like Medication and psychotherapy. Cognitive remediation programs typically involve two components: cognitive remediation and strategy training. Cognitive strategy training involves teaching individuals how to cope with their cognitive difficulties and applying them to real-life situations, whereas cognitive remediation works on remediating cognitive deficits.

It has also been proved that training the working memory enhances cognitive skills such as cognitive control and fluid intelligence, resulting in better social connectedness, independence in everyday

activities, better motivation, and goal accomplishments. Cognitive strategies can include using external aids (e.g., calendars, alarms, notes), internal aids (e.g., mnemonics, self-instruction, imagery), or metacognitive skills (e.g., self-monitoring, self-evaluation, goal setting). Hence, these cognitive remediation programs have tremendous potential to improve cognitive functioning, daily life, and learning of people with cognitive issues or impairments like ADHD.

2.5 Combined Medication and Cognitive-Behavior Therapy:

CBT focuses on teaching coping strategies and modifying maladaptive patterns of thinking that could interfere with effective coping. CBT and medication had improvements in executive function compared to CBT alone [17]. A randomized controlled trial was conducted to estimate the efficacy of CBT in medicated adults with ADHD. In contrast to the medication-only test group, the control group of subjects with CBT and Medication combined showed a significant reduction of ADHD core symptoms, depression and anxiety symptoms, state anxiety, trait anxiety, and automatic thoughts. Hence, the combination of medication and CBT reduced inattention, emotional symptoms, maladaptive thought

patterns, and improved quality of life (QOL) [18].

Pharmacological interventions or medications, including stimulants and non-stimulants, have been established and proven to be the first line of treatment for ADHD [19]. Combined Medication and CBT were found to

be more effective in treating the core symptoms, executive dysfunction, and impairments in quality of life. **Figure 3** shows that CBT combined with medication significantly improved World Health Organization Quality of Life (WHO QOL) scores in all the domains.

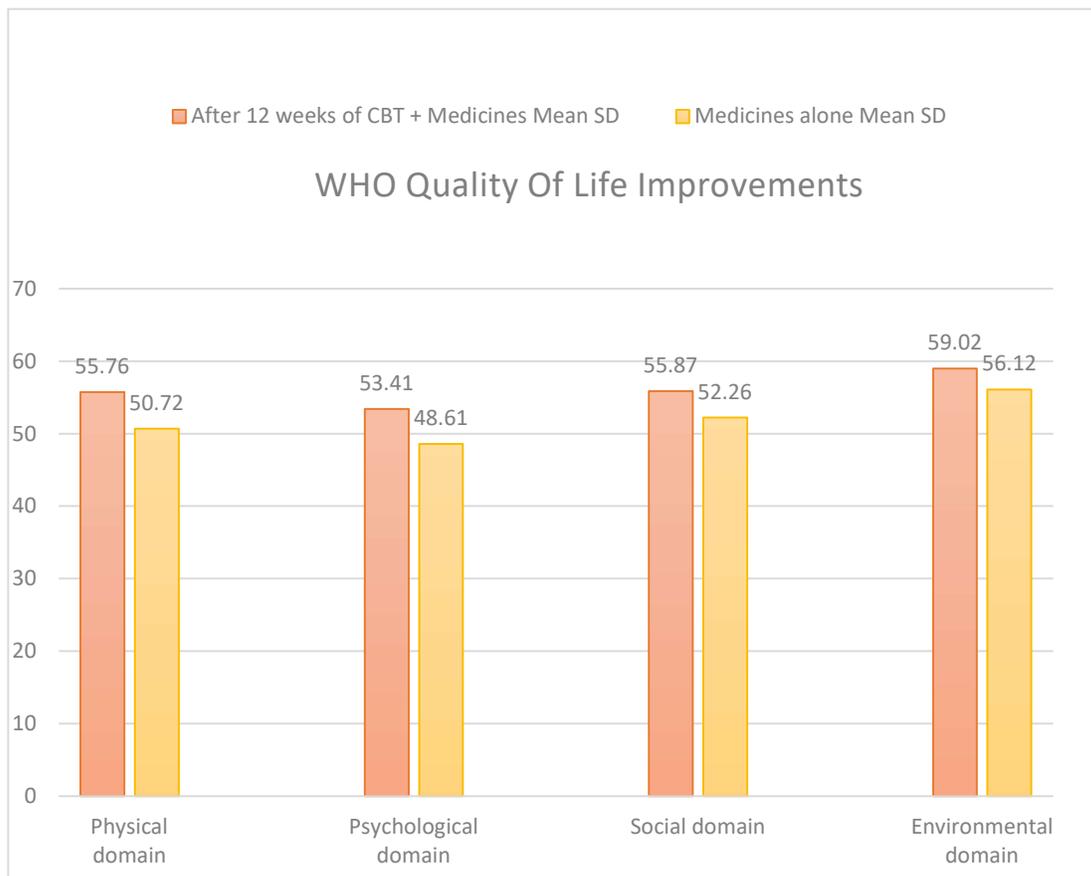


Figure 3: Comparison of Efficacy of CBT and Medication Combination vs. medication Alone for ADHD

When a randomized controlled study was conducted to evaluate the efficacy of group Cognitive Behavioral Therapy in medicated adults with ADHD for 36 weeks, the combination treatment resulted in reduced

inattention, emotional symptoms, and maladaptive thinking and a better quality of life. The efficacy of CBT and combined medication emphasizes the scope and need for complementary intervention. In multiple

evidence-based studies, CBT combined with pharmacotherapy helped enhance problem-solving skills and replaced maladaptive thinking with a medium to large treatment effect size. A significant improvement in ADHD symptoms was observed in clinician-reported and self-reported core symptoms of ADHD in patients receiving the combination of CBT and medication versus the medication-only control group [20].

2.6 Meta Cognitive Therapy:

Meta-Cognitive can be described as “thinking about thinking,” it includes the many cognitive processes that include how we perceive, process, understand, learn, and recall information. The central components of metacognition include “knowledge of cognition” and “regulation of cognition.” The knowledge of cognition refers to the various cognitive processes that include how humans perceive, process, understand, learn, and recall information. The regulation of cognitive processes refers to the deliberate and conscious control of these cognitive processes [21].

When analyzing how metacognition impacts adults with ADHD, it is essential to explore how different psychopathological aspects like inattention, depression, and anxiety affect the relationship, as the comorbidity rate is 60-80% in adults with ADHD [19]. Depression

and anxiety are one of the most common comorbidities, with a prevalence rate of 38-42% for depression, followed by 45-47% for anxiety. Meta-cognitive therapy treatments target becoming aware of and managing deficits in time management, planning, and organization and enhancing the efficient management of executive functioning skills. Hence, MCT requires the repeated practice of these skills till it becomes a habit and an automatic skill for coping with anxiety.

Metacognition is measured using the MAI (Metacognitive Awareness Inventory) to identify deficits in either knowledge of metacognitive skills or regulation of cognitive processes. A study revealed that clinicians, psychiatrists, and psychologists do not include metacognition in the clinical assessment for ADHD [22]. However, when the subject indicates an awareness of metacognitive deficits, the clinicians compare their report to the cognitive impairments of their patients with other normed cognitive results.

Metacognitive therapy is distinct from CBT in the manner it targets specific psychological processes aimed at reducing thinking, ruminating, and worrying, which characterizes depression. In an analysis of data, patients who received MCT indicated a superior efficacy on measures of executive functioning.^[23] In another meta-analysis of

anxiety and depression, the most common comorbidities of ADHD, MCT was found to be the most efficacious treatment with an effect size of 2.06g as opposed to 0.69g value of CBT [19].

2.7 Dialectical Behavioral Therapy:

Dialectical Behavioral Therapy (DBT) is one of the most effective treatments for disorders resulting in emotional instability. Though Dialectical Behavior Therapy was initially developed to treat adults with suicidal ideations, it is frequently modified by using the DBT-ST (Dialectical Behavior Therapy – Skills Training), which is administered in a group setting for a range of mental disorders [20]. A systematic review was conducted to estimate the effect of DBT on strengthening various cognitive functions, indicating that DBT improved cognitive functions like attention/focus, memory, fluency, response inhibition, delayed impulse gratification, and time-perception based on self-reports and neuropsychological testing. Hence, it is proved that DBT significantly impacts and improves cognitive functions.

Dialectical Behavior Therapy is a type of psychotherapy that teaches subjects how to manage and overcome intense emotions and improve relationships effectively. Marsha Linehan initially developed DBT to treat mental health disorders like borderline

personality disorder and suicidal tendencies. DBT combines CBT techniques with principles of mindfulness. Findings of DBT-skills training, incorporating mindfulness principles and emotional regulation modules, through the Internet indicate significant improvements in executive functioning among college students with a history of BPD [24].

3. RESULTS AND DISCUSSION:

All the CBT programs are behavior therapies incorporating cognitive elements. A systematic review that critically evaluated the efficacy of CBT and MPH(Methylphenidate) in treating ADHD in children and adolescents reported that the findings from 2,098 patients undergoing either or both treatment interventions showed significant improvements in their behavior and functional status and reduced its impact on family and society. Hence, CBT was found to be helpful with behavior management [25].

Another systematic review of non-pharmacological interventions for ADHD proved that CBT leads to improvements in ADHD symptoms. Mindfulness and Cognitive Remediation were also found to be helpful for the management of the core symptoms of ADHD. The use of Group Dialectical Behavioral Therapy was also

found to improve ADHD symptoms significantly [26].

A randomized controlled trial of self-guided internet-delivered psychological interventions for adults with ADHD found that internet-delivered psychological interventions can also be beneficial [27].

Limitations of Research:

1. The current study is a systematic review and hence cannot be used to find solutions for all clinically relevant questions about ADHD.
2. The systematic review has heterogeneous data.

4. CONCLUSION:

Numerous studies have investigated the effectiveness of CBT in treating ADHD, both as a stand-alone therapy and in conjunction with Medication. While research in this area continues to evolve, several key findings stand out:

1. **Symptom Reduction:** CBT has shown promise in reducing ADHD symptoms, particularly in improving executive functioning, attention, and self-regulation.
2. **Long-Term Benefits:** Some studies suggest that the effects of CBT can be sustained over time, contributing to better long-term outcomes than continuing Medication alone.

3. **Comorbidity Management:** CBT can effectively address comorbid conditions often associated with ADHD, such as anxiety and depression, providing a holistic approach to treatment.

4. **Skill Generalization:** Individuals who undergo CBT develop skills beyond symptom management, positively impacting their academic, occupational/vocational, and interpersonal functioning.

A systematic review of non-pharmacological interventions for the cognitive difficulties of ADHD found a moderate effect size of 0.70 [28]. The systematic review of psychological treatments in adult ADHD found the strongest empirical support for the positive effect of CBT on ADHD among the 92% of studies employing non-pharmacological interventions with a positive outcome [29].

Strong empirical evidence was found proving the efficacy of CBT across many domains, as in the many studies carried out earlier. A new 18-week CBT program for ADHD, including strategies from various CBT techniques, for easier use and adaptability for individuals with ADHD in school, college, and the workplace was developed. The 18 sessions are designed to last for an hour every week. A pilot study is planned to evaluate the efficacy of this new program as an extension of the current study.

18-week CBT program for ADHD:

- 1) Accepting the diagnosis and moving away from the denial phase (using systematic desensitization)
- 2) Becoming aware of strengths and weaknesses (using SWOT analysis)
- 3) Setting long-term goals and short-term objectives (Breaking the end goal into easily manageable chunks/portions)
- 4) Becoming aware of negative thought patterns and beliefs
- 5) Cognitive Restructuring/Reshaping
 - a. Superimposing negative self-talk with positive self-talk
- 6) Chunking of tasks into manageable portions and successive task approximations
 - a. Task analysis
- 7) Time management through
 - a. Time scheduling
 - b. Task checklist based on priority
 - c. Time management log
- 8) Planning and Organization
 - a. Implementation of organization system
 - b. Maintenance of the organization system
- 9) Thought surveillance - Overcoming emotional obstacles through,
 - a. Journaling
- b. Mindfulness techniques
- 10) Work completion
 - a. Classwork – reading, writing, and math assignments
 - b. Homework and practice
- 11) Delayed impulse gratification
 - a. Distractibility delays
- 12) Social skills training
 - a. Role-playing scenarios
 - b. Modeling
- 13) Problem-solving skills to find solutions
- 14) Journaling
 - a. Positive affirmations
 - b. Gratitude journals
- 15) Self-regulation and monitoring
 - a. Self-monitor work completion
 - b. Track thoughts and behavior patterns
 - c. Introspection techniques to reflect
- 16) Desensitization of fears
 - a. Exposure to imagined or simulated versions of fear
 - b. Real Exposure
- 17) Mind-body relaxation techniques on negative patterns
 - a. Breathing exercises
 - b. Mindfulness exercises
 - c. Physical and yoga exercises
 - d. Meditation

- 18) Emotional Management /
Introspection Techniques
- a. Becoming aware of thoughts, emotions, and beliefs
 - b. Coping with procrastination
 - c. Anger management
 - d. Overcoming emotional hurdles/obstacles
 - e. Adaptive thinking

The corpus of research on Cognitive-Behavioral Therapy (CBT) for Attention-Deficit/Hyperactivity Disorder (ADHD) highlights its potential as an effective supplementary intervention strategy for people with ADHD. While stimulant medications continue to be the primary line of treatment for ADHD, cognitive behavioral therapy (CBT) has shown promise in treating the behavioral and cognitive aspects of the disorder and equipping people with the necessary skills to control their symptoms effectively. Recent meta-analyses have shown that CBT therapies significantly reduced ADHD-related deficits such as inattention, impulsivity, and hyperactivity. Furthermore, CBT-based psycho-education for people with ADHD and their families has improved comprehension and coping mechanisms. CBT increases the sustained attention of children with the disorder. It also improves their quality of life and their independence. Meta-

analysis studies support the efficacy of CBT in treating adults with ADHD. CBT reduces comorbidities like depression and anxiety [30].

Overall, there is a significant potential for improvement in symptoms of ADHD with the addition of CBT to the comprehensive care of ADHD. Hence, CBT is an efficacious therapeutic modality for ADHD either as a stand-alone treatment modality or as an add-on treatment with ADHD medication. CBT is well known for its continued use and integration into specialized treatments like Pharmacological interventions and behavioral therapies. CBT produces benefits in health-related quality of life, anxiety, depression, and pain outcomes of people with ADHD and equips them to become contributing members of society.

Recommendations for future research:

1. Extending research on the impact of CBT on children and adults with ADHD by implementing the 18-week CBT program developed through this systematic review over a long term to evaluate the impact of CBT.
2. Conduct Double-Blind randomized controlled trials to evaluate the efficacy of CBT.
3. A large and homogenous sample should be used to ensure the reliability

and validity of CBT as a therapeutic intervention.

4. Conduct large-scale meta-analyses to quantify effect sizes of CBT.

Acknowledgments:

Shanjuvigasini acknowledges the guidance of Dr. Swarna Kumari, Research Guide. I am also thankful to Bharatidasan University for the opportunity to conduct research on CBT.

Conflict of Interests:

The authors declare no conflict of interest.

Funding:

The authors received no funding or financial support to conduct this research.

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