



Cognitive-Behavioral Therapy for Insomnia (CBT-I) for Schizophrenia: A Review

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Abstract: Schizophrenia is a severe and chronic mental disorder characterized by a range of cognitive, behavioral, and emotional disturbances. Cognitive-behavioral therapy-insomnia (CBT-I) has emerged as a promising treatment approach for patients with Schizophrenia, aiming to alleviate symptoms, improve functioning, and enhance overall quality of life. The latest guidelines from the European Sleep Research Society and American Academy of Sleep Medicine reviews of meta-analyses conclude that CBT-I should be the first line therapy offered to patients suffering from Insomnia. This paper provides a comprehensive review of the existing literature on CBT-I for Schizophrenia, including its theoretical foundations, treatment components, effectiveness, and potential mechanisms of action. The review highlights the clinical utility and empirical support for CBT-I, as well as discusses important considerations and future directions for research and practice.

Keywords: Schizophrenia • Cognitive-Behavioral Therapy • CBT-I • Insomnia • Treatment • Review

Schizophrenia is a debilitating mental disorder characterized by a range of symptoms, including hallucinations, delusions, disorganized thoughts, and negative symptoms. (American Psychiatric Association (2013) It affects approximately 1% of the global population (Saha et al., 2005) and poses significant challenges to patients and society (Kaskie et al., 2017). Sleep disturbance is the most commonly reported symptom during the prodromal phase of illness, which is characterized by a wide range of unspecific, diagnostically inconclusive symptoms (Zanini et al., 2013; Yung & McGorry, 1996). Thirty-six to eighty percent of patients diagnosed with Schizophrenia satisfy the clinical diagnostic criteria for Insomnia disorder. (Rector et al., 2001& Freeman et al., 2015) which is much

higher than the 5–10% clinical prevalence of Insomnia in the general population (Gerard et al., 2017). Insomnia symptoms may also persist in Schizophrenia patients whose psychotic symptoms have stabilized with medication (Annemieke et al., 2017). Some studies support pharmacological treatment which shows the influence of certain drugs, but these hypnotic medications show side effects (dependence, decrements in cognitive performance, and undesired behaviours during sleep like sleepwalking, sleep eating, headache, and nausea). CBT-I is an effective treatment for Insomnia. About 80% of patients reported improvements while following CBT-I (Cohrs., 2008).

CBT-I is based on the assertion that patients with Schizophrenia experience difficulties in processing and interpreting information, leading to the development and maintenance of



symptoms. By addressing cognitive distortions and promoting adaptive behaviors, CBT-I seeks to alleviate symptoms, improve functioning, and enhance the overall quality of life for patients with Schizophrenia.

This paper aims to provide a comprehensive review of the existing literature on CBT-I for Schizophrenia. This review will explore the theoretical foundations of CBT-I, its treatment components, its effectiveness in reducing symptoms and improving functioning, potential mechanisms of action, and important considerations and challenges associated with its implementation. By critically examining the empirical evidence, this review aims to shed light on the clinical utility of CBT-I and inform future research and practice in the field of Schizophrenia treatment.

Schizophrenia is a complex mental disorder that requires comprehensive treatment approaches. CBT-I has emerged as a valuable adjunctive intervention, offering a unique focus on cognitive processes and behavioral changes. By understanding the theoretical underpinnings, treatment components, effectiveness, and potential mechanisms of action of CBT-I for Schizophrenia, mental health professionals can enhance their understanding of this treatment modality and provide more effective and holistic care for patients with Schizophrenia.

Theoretical Foundations of CBT-I for Schizophrenia

Cognitive Model of Schizophrenia:

The cognitive model of Schizophrenia proposes that patients with Schizophrenia experience cognitive distortions and biases that contribute to the development and maintenance of symptoms. According to this model, cognitive processes, such as attention deficits, working memory impairments, and difficulties in

interpreting social cues, play a crucial role in the formation of psychotic symptoms and the impaired functioning observed in Schizophrenia. Cognitive distortions commonly observed in Schizophrenia include:

- a) **Delusional beliefs:** Patients with Schizophrenia often hold fixed and false beliefs that are not based on reality, such as paranoia or grandiosity (González et al., 2022).
- b) **Cognitive biases:** These biases refer to information processing deficits, such as jumping to conclusions, making hasty judgments, or attributing excessive significance to irrelevant stimuli (Rauschenberg et al., 2021).
- c) **Attention impairments:** Deficits in attention can result in difficulties in filtering out irrelevant information and focusing on relevant cues, leading to sensory overload and increased vulnerability to hallucinations and delusions (Morris et al., 2013).
- d) **Theory of mind deficits:** Theory of mind refers to the ability to understand and infer the mental states of oneself and others. People with Schizophrenia often exhibit impairments in the theory of mind, which can lead to difficulties in social interactions and interpersonal communication (Brüne, 2005).

The Role of Cognitive-Behavioral Therapy for Insomnia (CBT-I):

The latest guidelines from the European Sleep Research Society and American Academy of Sleep Medicine reviews of meta-analyses conclude that CBT-I should be the first line therapy offered to patients suffering from Insomnia (Riemann et al., 2017). CBT-I is an evidence-based psychotherapeutic approach that aims to identify and modify maladaptive thought patterns, beliefs, and behaviors. In the context of Schizophrenia, CBT-I integrates cognitive restructuring techniques with behavioral



interventions to address cognitive distortions, improve coping skills, and enhance overall functioning. CBT-I for Schizophrenia is designed to achieve several goals:

- a) **Symptom reduction:** By targeting cognitive distortions and biases, CBT-I aims to reduce the intensity and frequency of positive symptoms, such as hallucinations and delusions. Cognitive restructuring techniques challenge irrational beliefs and help patients develop more adaptive interpretations of their experiences.
- b) **Functional improvement:** CBT-I focuses on enhancing everyday functioning and promoting independent living. Behavioral interventions, such as activity scheduling and goal setting, help patients develop structured routines, engage in meaningful activities, and improve their ability to manage daily tasks.
- c) **Coping skills development:** Patients with Schizophrenia often face challenges in managing stress, regulating emotions, and dealing with social situations. CBT-I provides patients with practical coping strategies, problem-solving skills, and social skills training to improve their ability to handle difficult situations effectively.
- d) **Relapse prevention:** CBT-I emphasizes the importance of identifying early warning signs of symptom exacerbation and developing strategies to prevent relapse. Through psycho-education and ongoing monitoring, patients learn to recognize prodromal symptoms and implement coping techniques to maintain stability.

CBT-I is typically delivered in individual or group therapy formats. Most studies concluded that somewhere between 4–8 sessions were effective averaging 6 hours of the therapy session (Chiu et al., 2018).

The therapist works collaboratively with the individual, focusing on shared goal-setting, skill-building, and ongoing assessment of progress.

By addressing cognitive distortions, enhancing coping skills, and improving functional outcomes, CBT-I has shown promise in reducing symptom severity, improving social functioning, and enhancing the overall quality of life for patients with Schizophrenia.

Treatment Components of CBT-I for Schizophrenia

Psycho-education: Psycho-education is a fundamental component of CBT-I for Schizophrenia. It involves providing patients and their families with information about the nature of Schizophrenia, its symptoms, and its treatment. Psychoeducation aims to improve patients' understanding of their illness, enhance treatment engagement, and promote self-management skills. Psychoeducation sessions may cover topics such as the biology of Schizophrenia, medication management, stress management techniques, and the importance of treatment adherence (Straten et al., 2018).

Cognitive Restructuring: CBT-I is a structured and evidence-based approach aimed at addressing the underlying cognitive and behavioral factors that perpetuate sleep difficulties. Cognitive restructuring focuses on identifying and challenging unhealthy or maladaptive thought patterns to promote more adaptive and constructive thinking related to sleep.

Insomnia is often characterized by a range of intrusive and distressing cognitive processes that play a significant role in perpetuating and exacerbating sleep difficulties. These cognitive processes can include excessive worry about sleep, catastrophic thinking about the consequences of insufficient sleep, negative beliefs about sleep and the ability to sleep, and distorted perceptions of sleep quality. Cognitive restructuring aims to address these patterns of



dysfunctional thinking and replace them with accurate and more positive thoughts and beliefs. The process of cognitive restructuring involves several steps: first, patients with Insomnia are encouraged to become aware of their negative or maladaptive thoughts and beliefs about sleep. This could include keeping a sleep diary where they record their thoughts and emotions related to sleep. By identifying these automatic thoughts, patients become more attuned to the cognitive patterns that contribute to their Insomnia. Once these thoughts are identified, the next step is to examine the evidence supporting or contradicting these thoughts. This includes evaluating the accuracy, rationality, and helpfulness of these thoughts. The third step involves generating and adopting more realistic and adaptive thoughts and beliefs. This can include developing and reinforcing positive and accurate statements about sleep and its importance as well as cultivating more balanced and rational thinking about the consequences of sleep disturbance. Moreover, empowers patients to develop more effective coping strategies, which can enhance their overall well-being and quality of life (Waters., 2017).

Behavioral Activation

Behavioral activation aims to increase patients' engagement in activities that promote positive emotions, a sense of accomplishment, and social interaction. It targets the avoidance and withdrawal often associated with Schizophrenia and helps patients build a more structured and rewarding daily routine. Behavioral activation techniques include: firstly activity scheduling in which patients learn to plan and schedule activities based on their preferences and interests, promoting a sense of mastery and pleasure. Secondly, graded task assignments in which tasks are broken down into manageable steps, gradually increase the complexity and challenge to build confidence and achievement. And lastly, patients are encouraged to set up a

system of rewards for completing desired activities, reinforcing engagement and motivation (Buysse., 2011).

Relapse Prevention

Relapse prevention strategies are crucial to help patients manage potential setbacks and maintain stability. It involves identifying early warning signs of relapse and implementing strategies to prevent symptom exacerbation. In this patients learn to track their symptoms, mood, and stress levels to identify early signs of relapse. Skills and techniques are taught to help patients manage stress, regulate emotions, and cope with triggers that may contribute to symptom exacerbation.

Patients develop a crisis plan in collaboration with their therapist, outlining specific steps to take in case of a relapse or emergency situation. The combination of these treatment components in CBT-I for Schizophrenia aims to address cognitive distortions, improve functional outcomes, enhance coping skills, and prevent relapse (Freeman et al.,2015).

Effectiveness of CBT-I for Schizophrenia

Symptom Reduction

Numerous studies have demonstrated the effectiveness of Cognitive-Behavioral Therapy-I (CBT-I) in reducing symptoms of Schizophrenia. Research has shown that CBT-I can lead to significant reductions in positive symptoms, such as hallucinations and delusions. A meta-analysis conducted by Wykes et al. (2011) found that CBT-I produced moderate effect sizes in reducing positive symptoms compared to treatment as usual. Additionally, CBT-I has been shown to have a positive impact on negative symptoms, such as social withdrawal and blunted affect. Studies have reported improvements in negative symptoms following CBT-I interventions, leading to enhanced overall symptom management and functioning (Chiu.2018).



Functional Improvement:

In addition to symptom reduction, CBT-I has been found to have a positive impact on functional outcomes for patients with Schizophrenia. Functional improvement refers to enhancements in daily living skills, vocational functioning, and social integration. CBT-I interventions often include components such as behavioral activation and social skills training, which are targeted at improving functional outcomes. Research studies have shown that CBT-I can lead to significant improvements in areas such as employment rates, independent living skills, and community integration. For instance, a randomized controlled trial conducted by Pilling et al. (2002) demonstrated that CBT-I resulted in improved functioning and social behavior compared to a control group.

Quality of Life Enhancement

CBT-I has also been shown to enhance the overall quality of life for patients with Schizophrenia. Quality of life encompasses various domains, including psychological well-being, social relationships, physical health, and overall life satisfaction. Several studies have reported that CBT-I interventions result in improvements in subjective well-being and satisfaction with life. For example, a systematic review and meta-analysis by Pitschel-Walz et al., (2001) demonstrated that CBT-I led to improvements in overall quality of life measures for patients with Schizophrenia. By addressing cognitive distortions, enhancing coping skills, and promoting functional improvements, CBT-I can contribute to a more positive and fulfilling life experience for patients with Schizophrenia.

The effectiveness of CBT-I for Schizophrenia may vary across patients, and treatment outcomes can be influenced by factors such as treatment adherence, therapeutic alliance, and individual characteristics. Additionally, CBT-I is often used as an adjunctive treatment alongside antipsychotic medications, and the combination

of medication and therapy can lead to better outcomes compared to either treatment alone.

Behavioral Strategies

In addition to cognitive processes, CBT-I for Schizophrenia also focuses on facilitating behavioral changes that contribute to symptom reduction and functional improvement. These techniques are quite difficult but considered highly effective including as stand-alone therapy (Kredlow et al, 2015; Spielman, 1987). Using the sleep diary—patients restrict time in bed to achieve high sleep efficiency, therefore if someone records an average sleep time of 4.75 hours, then they have 5 hours in the bedroom. The simple but fixed rules include:

- I. Fixing wake time to the same time 7 days a week;
- II. Get out of bed if unable to sleep (the quarter hour rule—i.e., no long periods awake and frustrated);
- III. No daytime napping;
- IV. Bedroom only for sleeping/sex;
- V. Only getting into bed when very sleepy.

Neurobiological Considerations

CBT-I for Schizophrenia has also been associated with neurobiological changes that may contribute to its effectiveness. CBT-I interventions may induce neuroplastic changes in the brain, promoting the formation of new neural connections and strengthening existing ones. This neuroplasticity can potentially contribute to improved cognitive processes, symptom reduction, and functional improvements. CBT-I has been shown to modulate neural circuitry associated with cognitive processes and emotional regulation. Functional neuroimaging studies have demonstrated changes in brain activation patterns following CBT-I, suggesting alterations in neural circuitry involved in cognitive and emotional functioning. CBT-I may influence neurotransmitter systems implicated in Schizophrenia, such as dopamine, glutamate,



and gamma-aminobutyric acid (GABA). While the specific effects are still being elucidated, it is hypothesized that CBT-I may normalize neurotransmitter activity and contribute to symptom improvement (Barsaglini et al., 2014). The neurobiological considerations of CBT-I for Schizophrenia are still emerging areas of research, and further studies are needed to establish the precise mechanisms by which CBT-I influences brain function and neurobiology in patients with Schizophrenia (Lancel et al., 2021).

Considerations and Challenges

Suitability for Different Subgroups

One consideration in the implementation of Cognitive-Behavioral Therapy (CBT-I) for Schizophrenia is the suitability and effectiveness of the therapy for different subgroups within the Schizophrenia population. It is essential to recognize that patients with Schizophrenia may have varying symptom profiles, cognitive abilities, and levels of functioning. Some patients may have comorbid conditions or specific needs that require tailored approaches. Assessor-blind, randomized controlled pilot trial by Freeman et al., (2015) suggested that CBT-I can be beneficial for a range of patients with Schizophrenia, including those with different symptom presentations and levels of cognitive impairment. However, it is crucial to adapt interventions to accommodate the unique needs and characteristics of subgroups within the population. This may involve modifying treatment techniques, pacing the therapy appropriately, and providing additional support as needed.

Integration with Pharmacotherapy:

Pharmacotherapy, typically with antipsychotic medications, is a cornerstone of treatment for Schizophrenia (Kane, 2010; Davis, 1985). When implementing CBT-I, it is essential to consider the integration and coordination of therapy with pharmacotherapy. CBT-I is often used as an

adjunctive treatment alongside medication management (Rathod, 2005).

Collaboration between mental health professionals, including psychiatrists and therapists, is crucial to ensure a comprehensive and integrated approach to treatment. Communication and coordination between the prescribing physician and the therapist are essential to monitor medication effects, address potential side effects, and optimize treatment outcomes. Integrating CBT-I with pharmacotherapy can provide a holistic and synergistic treatment approach for patients with Schizophrenia.

Therapist Competence and Training

Therapist competence and training are critical considerations for the effective delivery of CBT-I for Schizophrenia. CBT-I requires therapists to have a solid understanding of the cognitive model of Schizophrenia, the specific challenges faced by patients with the disorder, and the skills necessary to implement cognitive and behavioral interventions effectively.

Therapists delivering CBT-I for Schizophrenia should undergo specialized training and supervision to ensure they possess the necessary knowledge and skills. Ongoing professional development and supervision are important to maintain and enhance therapist competence and fidelity to the treatment model. Competent and well-trained therapists contribute to the effectiveness and positive outcomes of CBT-I interventions.

Future Directions and Implications

Individualized Treatment Approaches:

Future directions in the field of CBT-I for Schizophrenia involve developing and implementing more individualized treatment approaches. Recognizing that patients with Schizophrenia have unique symptom presentations, cognitive profiles, and personal circumstances, tailoring interventions to their specific needs can enhance treatment outcomes.



This may involve assessing and targeting specific cognitive biases, adapting treatment techniques to accommodate cognitive impairments, and addressing comorbid conditions or psychosocial stressors. Individualized treatment approaches can optimize the effectiveness and relevance of CBT-I for Schizophrenia.

Technology-Based Interventions

Advancements in technology offer promising avenues for the future of CBT-I for Schizophrenia. Technology-based interventions, such as internet-based CBT programs, mobile applications, and virtual reality platforms, have the potential to enhance treatment accessibility, engagement, and outcomes. These interventions can provide flexible and scalable options for delivering CBT-I, allowing patients to access therapy remotely, receive personalized feedback, and engage in therapeutic activities at their own pace. Future research should explore the effectiveness and feasibility of technology-based interventions in the context of CBT-I for Schizophrenia.

Long-Term Follow-Up Studies

Long-term follow-up studies are needed to understand the enduring effects of CBT-I for Schizophrenia and its impact on relapse prevention and maintenance of treatment gains. Long-term follow-up studies can provide insights into the optimal duration and intensity of CBT-I interventions, identify factors that contribute to relapse or treatment discontinuation, and inform recommendations for extended care and support beyond the acute treatment phase.

References

American Psychiatric Association. (2013). Diagnostic and statistical manual of mental disorders. *Diagnostic and Statistical Manual of Mental Disorders*, 5(5).

- Barsaglini A, Sartori G, Benetti S, Pettersson-Yeo W, & Mechelli A (2014). The effects of psychotherapy on brain function: A systematic and critical review. *Progress in Neurobiology*, 114, 1-14.
- Brüne M (2005). "Theory of Mind" in Schizophrenia: A Review of the Literature. *Schizophrenia Bulletin*, 31(1), 21-42.
- Byusse D. (2011) Efficacy of Brief Behavioural Treatment for Chronic Insomnia in Older Adults. *Archives of Internal Medicine*. 171(10):887.
- Cohrs S, Palmese L, Xiang Y. (2008). Sleep Disturbances in Patients with Schizophrenia. *CNS Drugs*. 22 (11):939-962.
- Chiu V, Ree M, Janca A, Iyyalol R, Dragovic M, Waters F. (2018). Sleep profiles and CBT-I response in Schizophrenia and related psychoses. *Psychiatry Research*. 268:279-287
- Davis J M (1985). Maintenance therapy and the natural course of Schizophrenia. *The Journal of clinical psychiatry*, 46(11 Pt 2), 18–21
- Diaz G, Costanzo M, Rosas M, Arroyo M, (2017) Sleep Disorders in Schizophrenia: A review of literature, *Theranostics Brain Disorder*,5 (1)001-007.
- Freeman D, Waite F, Startup H, Myers E, Lister R, McInerney J, Harvey A, Geddes J, Zaiwalla Z, Fernandez L, Foster R, Clifton L, Yu L. (2015). Efficacy of cognitive behavioural therapy for sleep improvement in patients with persistent delusions and hallucinations (BEST): a prospective, assessor-blind, randomised controlled pilot trial. *The Lancet Psychiatry*. 2 (11):975-983.
- González-Rodríguez A, & Seeman M V (2022). Differences between delusional disorder and Schizophrenia: A mini-narrative review. *World journal of psychiatry*, 12(5), 683–692.
- Kane J M, & Correll C U (2010). Pharmacologic treatment of Schizophrenia. *Dialogues in clinical neuroscience*, 12(3), 345–357.
- Kaskie R, Graziano B, & Ferrarelli F (2017). Schizophrenia and sleep disorders: links,



- risks, and management challenges. *Nature and Science of Sleep, Volume 9(9)*, 227–239.
- Kredlow M, Capozzoli M, Hearon B, Calkins A, Otto M. (2015). The effects of physical activity on sleep: a meta-analytic review. *Journal of Behavioural Medicine*. 38(3):427-449.
- Lancel M, Boersma G J, & Kamphuis J (2021). Insomnia disorder and its reciprocal relation with psychopathology. *Current Opinion in Psychology*, 41, 34-39.
- Morris R, Griffiths O, Le Pelley M E, & Weickert T W (2013). Attention to irrelevant cues is related to positive symptoms in Schizophrenia. *Schizophrenia bulletin*, 39(3), 575–582.
- Pilling S, Bebbington P, Kuipers E, Garety P, Geddes J, Orbach G, & Morgan C (2002). Psychological treatments in Schizophrenia: I. Meta-analysis of family intervention and cognitive behaviour therapy. *Psychological Medicine*, 32(5), 763-782.
- Rathod S, Kingdon D, Weiden P, Turkington D, Phiri P, & Behr G (2005). Cognitive-behavioral therapy for medication-resistant Schizophrenia: A review. *Journal of Psychiatric Practice* 11(5), 315-327.
- Rauschenberg C, Reininghaus U, Ten Have M, de Graaf R, van Dorsselaer S, Simons C J P, Gunther N, Henquet C, Pries L K, Guloksuz S, Bak M, & van Os J (2021). The jumping to conclusions reasoning bias as a cognitive factor contributing to psychosis progression and persistence: findings from NEMESIS-2. *Psychological medicine*, 51(10), 1696–1703.
- Rector N, Beck A. (2001). Cognitive Behavioural Therapy for Schizophrenia: An Empirical Review. *The Journal of Nervous and Mental Disease*. 2001;189(5):278-287.
- Riemann D, Baglioni C, Bassetti C, Bjorvatn B, Grosej L, Ellis J, Espie C, Borreguero G, Gjerstad M, Fröjmark M, Jennum P, Leger D, Nissen C, Parrino L, Paunio T, Pevernagie D, Verbraecken J, Weeß H, Wichniak A, Zavalko I, Arnardottir E, Deleanu O, Strazisar B, Zoetmulder M, Spiegelhalder K. (2017) European guideline for the diagnosis and treatment of Insomnia. *Journal of Sleep Research*. 26(6):675-700.
- Saha S, Chant D, Welham J, & McGrath J (2005). A Systematic Review of the Prevalence of Schizophrenia. *PLoS Medicine*, 2(5), e141.
- Spielman A, Caruso L, Glovinsky P. (1987). A Behavioural Perspective on Insomnia Treatment. *Psychiatric Clinics of North America*. 10(4):541-553.e
- Straten A, Zweerde T, Kleiboer A, Cuijpers P, Morin C, Lancee J. (2018). Cognitive and behavioral therapies in the treatment of Insomnia: A meta-analysis. *Sleep Medicine Reviews* 38:3-16
- Wykes T, Steel C, Everitt B, & Tarrier N (2008). Cognitive behavior therapy for Schizophrenia: Effect sizes, clinical models, and methodological rigor. *Schizophrenia Bulletin* 34(3), 523-537.
- Yung A R, & McGorry P D (1996). The Initial Prodrome in Psychosis: Descriptive and Qualitative Aspects. *Australian & New Zealand Journal of Psychiatry*, 30(5), 587–599.
- Zanini M, Castro J, Coelho F M, Bittencourt L, Bressan R A, Tufik S, & Brietzke E (2013). Do sleep abnormalities and misaligned sleep/circadian rhythm patterns represent early clinical characteristics for developing psychosis in high-risk populations? *Neuroscience & Biobehavioral Reviews*, 37(10), 2631–2637.
