Jurnal Keperawatan Global
Vol. 11, No. 1, June 2026
https://doi.org/10.37341/jkg.v11i1.1260

Systematic Review

The Effectiveness of Cognitive Behaviour Therapy on Relapse in Schizophrenia Patients with Hallucinations

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ABSTRACT

Background: *Schizophrenia is a chronic mental disorder characterized by psychotic symptoms such as hallucinations and delusions. Relapses in schizophrenia patients often occur even after undergoing pharmacological treatment. Cognitive Behaviour Therapy (CBT) has been reported to be effective in reducing relapses through cognitive restructuring and improving patients' coping with psychotic symptoms. This systematic review aims to assess the effectiveness of CBT on reducing relapse rates in patients with schizophrenia, especially in hallucination.*

Methods: *The systematic review was conducted using the JBI approach. The included articles were primary studies with an RCT or quasi-experimental design, published between 2015 and 2024, and available in full text. The selection process was conducted using the PRISMA method, and the final results consisted of 7 articles that met the inclusion criteria.*

Results: *Most studies show that CBT is effective in reducing relapse, improving quality of life or social functioning, and reducing positive and negative psychotic symptoms. Culturally-based CBT and CBT by videoconference have been reported to expand access to intervention. The side effects of CBT are relatively low, but some studies report a decline in impact after therapy is discontinued.*

Conclusion: *CBT is effective in preventing relapse in schizophrenia patients with hallucinations by reducing psychotic symptoms and improving patient coping. Further research is needed to evaluate the long-term effectiveness of CBT.*

ARTICLE HISTORY
Received: August 6th, 2025
Accepted: January 8th, 2026

KEYWORDS
cognitive behavioral therapy, hallucinations, readmission, relapse, schizophrenia;

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Cite this as: Khasanah, U., Putri, Y. S. E., & Mustikasari, M. (2026). The Effectiveness of Cognitive Behaviour Therapy on Relapse in Schizophrenia Patients with Hallucinations. *JKG (JURNAL KEPERAWATAN GLOBAL)*, 11(1), 1-14. https://doi.org/10.37341/jkg.v11i1.1260

INTRODUCTION

Schizophrenia is a psychotic disorder with significant disability, and can affect all aspects of life, including personal, family, social, educational, and occupational functioning (WHO, 2025). Schizophrenia is defined as a severe and persistent

neurobiological brain disorder that is one of the mental disorders (Stuart, 2023). According to the National Institute of Mental Health (NIMH) in 2024, Schizophrenia is a chronic mental disorder that affects how a person thinks, feels, and behaves. Schizophrenia is defined not only by psychotic symptoms such as hallucinations and delusions but also by cognitive impairments that emerge long before psychosis develops (Kahn, 2020). Another definition of schizophrenia is a chronic and severe mental disorder characterized by positive (psychotic) symptoms, such as delusions and hallucinations; disorganized speech and behavior; negative symptoms, such as social withdrawal, emotional depression, and lack of motivation; and cognitive impairment (Volk et al., 2025).

Schizophrenia affects approximately 23 million people, or 1 in 345 people worldwide (WHO, 2025). In Indonesia, the prevalence of schizophrenia in 2018 reached 6.7 per thousand households. Meanwhile, according to the Indonesian Health Survey (SKI) in 2023, in Indonesia the prevalence of households with symptoms of schizophrenia reached 4.0 per mile and around 3.0 per mile of households with symptoms and diagnosed with schizophrenia. This rate indicates that schizophrenia requires serious attention to prevent an increase in the number of cases in the future.

Schizophrenia manifestations according to the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5), include characteristic symptoms and functional impairment. Characteristic symptoms include positive symptoms of delusions and hallucinations, disorganized speech (slurred or incoherent speech), grossly disorganized behavior, catatonic behavior, and negative symptoms (e.g., decreased emotional expression, alogia, or avolition). Meanwhile, functional impairment consists of impaired work performance, impaired interpersonal relationships, and impaired self-care (Valle, 2020; Onitsuka et al., 2022; Volk et al., 2025).

Establishing a diagnosis of schizophrenia requires the presence of two or more characteristic symptoms for most of the time within a one-month period (Volk et al., 2025). Hallucinations are one of the positive symptoms in schizophrenia patients, where there is a distortion of false perceptions in maladaptive neurobiological responses. Approximately 70% of people with schizophrenia experience hallucinations (Stuart et al., 2023). Auditory hallucinations are the most common type, often involving hearing voices that can significantly impair daily functioning and quality of life.

According to Stuart et al. (2023), relapses are defined as the reappearance of symptoms severe enough to interfere with daily activities. Relapse in the spectrum of schizophrenia refers to the return of symptoms after a period of improvement marked by the worsening of acute psychotic symptoms. The relapse rate for psychotic disorders is 31% after one year and 43% after two years of treatment. In another study, the relapse rate in the first few years after the onset of schizophrenia was estimated to be around 34–37%, and the lifetime risk of relapse reached 70% regardless of pharmacological treatment (Moges et al., 2021).

WHO data from 2016 indicate that 35% of all individuals with schizophrenia experience relapse, and the relapse rate has increased annually from 28.0% in 2018 to 43.0% and 54.0% in 2020 (Tanjung et al., 2022). Research indicates a relationship between medication adherence, healthcare provider support, family support, and genetic history with relapse in individuals with schizophrenia (Tanjung et al., 2022). The other studies show a link between medication adherence and relapse in schizophrenia patients. Appropriate interventions to improve medication adherence among clients are necessary to prevent relapse in individuals with schizophrenia (Pasaribu & Hasibuan, 2020).

Research shows that combining Cognitive Behaviour Therapy (CBT) with the antipsychotic Olanzapine is more effective in reducing schizophrenia symptoms, lowering relapse rates, and minimizing side effects compared to using Olanzapine or CBT alone. Olanzapine is effective in reducing symptoms but has side effects, including weight gain and motor disturbances, whereas CBT helps patients manage symptoms and improve treatment adherence (Tolentino & McMahon, 2021). CBT is a method for modifying clients' thought processes, behaviors, and emotions. CBT enhances patients' coping mechanisms with schizophrenia through medication adherence and symptom management. Success in managing relapse depends on being aware of the emergence of behaviors that indicate recurrence. The awareness includes the inability to recognize trigger symptoms and apply effective strategies to address them (Stuart et al., 2023).

Previous research has demonstrated that CBT groups for schizophrenia have several advantages over standard care or other psychosocial interventions for overall mental health at the end of treatment, as measured by the total PANSS (Positive and Negative Syndrome Scale). CBT groups appear to have little or no effect on positive PANSS symptoms and negative PANSS symptom scores at the end of treatment. Additionally, the CBT group appears to have advantages over standard treatment or other psychosocial interventions in terms of global functioning, as measured by the Global Assessment of Functioning. However, these studies did not report the incidence of recurrence or side effects of Cognitive Behaviour Therapy in Schizophrenia (Guaiana et al., 2022).

Some studies have found that CBT can help reduce the severity of hallucinations, but it has not been proven to significantly reduce the risk of relapse. Previous research on CBT does not directly address the impact of CBT on patient insight; however, CBT helps patients understand and interpret their psychotic experiences in a more adaptive manner, which can indirectly improve insight (Jauhar et al., 2019). Previous research states that there is insufficient evidence to conclude that CBT is more effective than other psychosocial therapies in reducing recurrence, improving mental status, or improving social functioning in patients with schizophrenia (Jones et al., 2019).

Although CBT has been widely used as an intervention for patients with schizophrenia, the available evidence remains inconsistent, particularly regarding its effectiveness on clinical symptoms, social functioning, and relapse prevention. Therefore, this systematic review aims to provide a clearer picture of its clinical benefits in preventing relapses in patients. The findings of this review are expected to contribute to evidence-based mental health practice by informing clinicians and policymakers about the potential role of CBT in relapse prevention among individuals with schizophrenia.

MATERIALS AND METHOD

This systematic review utilized the procedures outlined by the Joanna Briggs Institute (JBI) to evaluate the effectiveness of CBT in preventing relapse in patients with schizophrenia and hallucinations. The systematic review has been listed in PROPERO yet. The inclusion criteria consisted of primary quantitative studies with a quasi-experimental or randomized controlled trial (RCT) framework published between 2015 and 2024, were fully accessible, and written in Indonesian or English.

The studies were appraised for the effect of CBT on the relapse rate, severity of psychotic symptoms, and other relevant clinical measures in the schizophrenia patients with hallucinations, emphasizing the results from RCTs and quasi-experimental studies.

Excluded articles include review articles or systematic reviews, editorials, opinions, non-quantitative studies, those not available in full text, or those not reporting results related to relapse or psychotic symptoms. The article search was conducted in the PubMed and Google Scholar databases using the keywords “Schizophrenia AND (Hallucinations OR Positive Symptom) AND (Cognitive Behaviour Therapy OR CBT) AND (Relapse OR Readmission OR Recurrent OR Rehospitalization)”.

Article selection was conducted in four stages, following the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines: identification, screening, eligibility checking, and inclusion. Duplicates were removed using Mendeley software. Initial screening was based on titles and abstracts, and was followed by a full-text review to ensure compliance with the inclusion criteria. A total of 7 articles met the criteria and were analyzed further. The methodological quality of the articles was assessed using the JBI critical appraisal tool, adapted to the design of each study.

The assessment process was conducted independently by two researchers with the assistance of AI. The researcher used GPT chatbot to formulate the research problem using the PICO framework and develop a search strategy using synonyms. AI was used as a tool, but the final decision is taken by the researcher based on critical thinking. Disagreements arose during the selection of articles for review. The two reviewers discussed these differences to reach a mutual agreement based on the established inclusion criteria. A third reviewer made the final decision.

Data from the included articles were extracted using a modified JBI extraction form. The data collected included author names and year of publication, country, study design, sample size and characteristics, intervention and comparator, instruments used, and study outcomes. Data synthesis was performed using descriptive narrative analysis due to heterogeneity in study design, intervention duration, and instruments across studies. The extracted results were synthesized thematically and presented in narrative and tabular form. The synthesis focused on several main themes, namely reduction in relapse, improvement in psychotic symptoms, improvement in quality of life, social functioning, and side effects and safety of the intervention.

RESULTS

Research Characteristics

The study was conducted in various countries, including China, Pakistan, the United Kingdom, Japan, Canada, and the United States. Out of the seven articles reviewed, six of the analyzed articles were published in Q1-ranked journals, while one analyzed article was published in a Q2-ranked journal. Most used the RCT method (n = 5), and two studies employed a quasi-experimental design.

The sample size ranged from 10 to 487 participants, all of whom were adults aged between 23 and 43 years. The primary intervention in the studies was cognitive behavioral therapy (CBT), administered individually, in group settings, or via virtual media. Furthermore, certain investigations have employed antipsychotics in conjunction with Virtual Reality Therapy (VRT) as supplementary treatment modalities.

Different assessment tools were applied in the course of this study. The majority of research evaluated the severity of psychotic symptoms with PANSS (Positive and Negative Syndrome Scale) and the PSYRATS (Psychotic Symptom Rating Scales) for measuring hallucinations and delusions both in terms of prevalence and intensity. Furthermore, some studies use quality of life measurement tools like the WHOQOL (World Health Organization Quality of Life) and EQ-5D-5L.

For measuring social functioning, some studies apply the PSP (Personal and Social Performance Scale). In contrast, the CORE-10 and MHCS (Mental Health Confidence Scale) both curl the the scope of psychological distress for evaluation. Side effects and personal recovery assessment are gauged through the SAI (Schedule for the Assessment of Insight), QPR (Questionnaire about the Process of Recovery), and BAVQ-R (Beliefs About Voices Questionnaire Revised). There are also studies that measure anxiety with GAD-7 (Generalized Anxiety Disorder) and depression with BDI-II (Beck Depression Inventory II).

All studies show a significant reduction in psychotic symptoms, both positive and negative. Meanwhile, several studies have shown improvements in social functioning, quality of life, and a reduction in psychological distress. Side effects of CBT were reported to be low and were considered safe for use in various populations of patients with psychotic disorders.

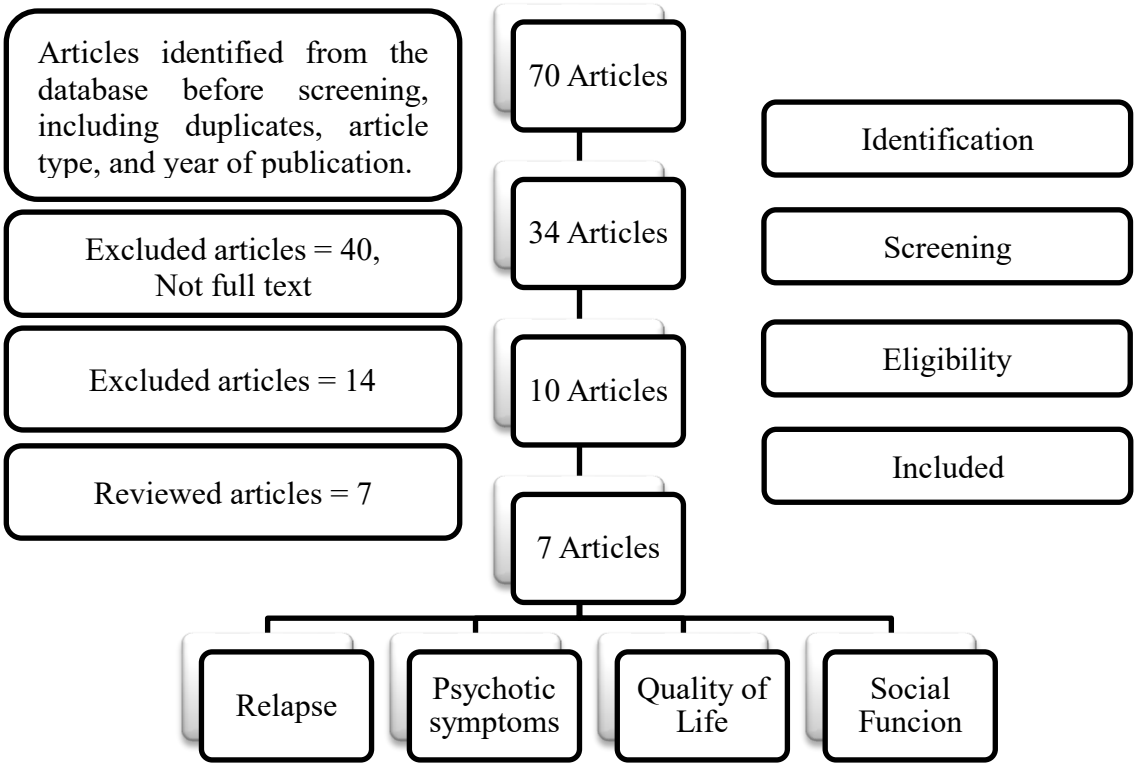

Figure 1. Prisma flowchart for the article search and selection process

Table 1. Characteristics of Selected Articles

Author (Year)	Country	Methods	Sample					Intervention	Comparison	Instruments	Outcome
			Responden (Intervention Group (IG) / Control Group (CG))	Age		Gender					
				IG $\bar{x} \pm s$	CG $\bar{x} \pm s$	IG (%)	CG (%)				
(Liu et al., 2019).	China	RCT	80 (40/ 40)	26,35±7,41	28,60 ± 5,71	M : 26 (65 %) F : 14 (35 %)	M : 20 (50%) F : 20 (50%)	CBT 10 session + TAU	TAU	PANSS PSYRATS SAI PSP	Relapse, Improvement of symptoms, Social functioning, Insight, Employment status
(Naeem et al., 2015)	Pakistan	RCT	116 (59/ 57)	31,7 ± 8,4	31,1 ± 7,4	M : 39 (66,1 %) F : 20 (33,9 %)	M:31 (54,4%) F:26 (45,6 %)	TAU + CBT (6 sessions) cultural approach	TAU	PANSS PSYRATS SAI	Positive Symptoms, Negative Symptoms, Psychopathology, Delusions, Insight
(Morrison, Law, et al., 2018)	England	RCT	75 CBT : 26 Anti-psychotics:24 Combination: 25	CBT : 23,19 ± 6,32 Anti-psychotics: 23,21 ± 4,97 Combination: 24,44 ± 6,86	-	CBT: M : 16 (62 %) F:10(38%) Antipsychotic: M: 13 (54 %) F: 11 (46 %) Combination: M :14 (56 %) F: 11 (44 %)	-	CBT : 26 session + 4 session booster Antipsychotic Combination : CBT+Anti-psychotic	Not Control Group	PANSS PSYRATS WHOQOL	Psychotic symptoms, Side effects, Hospitalization, Quality of life.
(Owen et	North-	Quasi -	113	42,15	38,60	M: 42(59,2%)	M: 38	TAU+ 4	TAU	CORE-10	Psychological

Author (Year)	Country	Methods	Sample					Intervention	Comparison	Instruments	Outcome
			Responden (Intervention Group (IG) / Control Group (CG))	Age		Gender					
				IG $\bar{x} \pm s$	CG $\bar{x} \pm s$	IG (%)	CG (%)				
al., 2015)	West England	experiment	(71/ 42)	±12,43	±11,65	F: 29 (40,8%)	90,5%) F: 4 (9,5%)	session group CBTp		MHCS PSYRATS	Distress, Self-confidence, Symptoms of Psychosis
(Morrison, Pyle, et al., 2018)	United Kingdom	RCT	487 (242/245)	42,2 ±10,7	42,8 ±10,4	M: 176 (73%) F : 66 (27%)	M: 173 (71%) F: 72 (29%)	CBT 26 session + 4 session booster	TAU	PANSS PSYRATS QPR	Psychotic Symptoms, Personal Recovery, Side Effects and Safety
(Katsushima et al., 2025)	Japan	RCT	24 (12/ 12)	34,7 ± 8,98	32,3 ±12,26	M : 7 (58%) F : 5 (42%)	M : 7 (58%) F : 5 (42%)	7 sessions of CBT based on videoconferencing	UC (Usual Care)	PANSS GAD-7 EQ-5D-5L	Psychotic symptoms, Anxiety, Quality of life
(Dellazizzo et al., 2020)	Canada	Quasi-Eksperiment	10	43,4 ± 14,6)	-	M : 8 (80%) F: 2 (20%)	-	CBT + VRT 9 session	-	PSYRATS BDI II BAVQ-R	Psychotic Symptoms, Depressive Symptoms, Belief in hallucinations

Reduction in Relapse

The study by Liu et al., (2019) showed that CBT significantly reduced relapse rates compared to routine care. Two studies reported the effectiveness of CBT in significantly improving patient insight, as measured by the SAI score (Liu et al., 2019; Naeem et al., 2015). In the study by Owen et al., (2015) a significant increase in self-confidence was reported based on MHCS. The results of Morrison, Pyle, et al., (2018) reported that personal recovery, as measured by QPR scores, was significantly improved at follow-up, 21 months after CBT intervention. Dellazizzo et al., (2020) reported changes in beliefs about voices, as measured by the BAVQ-R, where there was a significant decrease in persecutory beliefs and active involvement in hallucinations, and all beliefs about hallucinations had a moderate effect.

Improvement in Psychotic Symptoms

Most studies reported a decrease in positive symptoms (hallucinations and delusions), negative symptoms (apathy, limited speech, and blunted affect), and general psychopathology (depression, anxiety, and confusion) based on PANSS scores after CBT intervention (Liu et al., 2019; Naeem et al., 2015; Morrison, Pyle, et al., 2018; Katsushima et al., 2025; Dellazizzo et al., 2020). Meanwhile, a study conducted by Morrison Law et al., (2018) demonstrated that the combination of CBT with antipsychotics significantly reduced psychotic symptoms compared to the CBT alone group. Several studies have shown that the intensity and frequency of hallucination and delusion symptoms have decreased, as indicated by the PSYRATS score (Naeem et al., 2015; Owen et al., 2015; Morrison, Pyle, et al., 2018; Dellazizzo et al., 2020).

As noted in Owen et al., (2015) psychotherapy, specifically cognitive behavioral therapy, decreases psychological distress as evidenced by a reduction in CORE-10 scores. Furthermore, in a more recent study, Katsushima et al., (2025) reported significant decreases in anxiety levels as measured by the GAD-7. In addition, Dellazizzo et al. (2020) reported a significant reduction in depressive symptoms measured by the BDI-II, with large effect sizes in patients who received cognitive behavioral therapy in conjunction with virtual reality therapy.

Improved Quality of Life

One study demonstrated that all participants, which consisted of a CBT group, an antipsychotic group, and a combined CBT and antipsychotic group, had an improved quality of life measured by WHOQOL scores (Morrison Law et al., 2018). This is consistent with Katsushima et al.'s (2025) study which showed improvement in patients' quality of life post CBT intervention, as measured by EQ-5D-5L scores. These findings suggest that CBT may enhance patients' overall well-being by improving their ability to manage symptoms and engage more effectively in daily activities.

Improved Social Functioning

One investigation demonstrated that individuals in the CBT intervention group achieved marked improvements in social functioning as evidenced by 24 individuals returning to work post-CBT intervention (Liu et al., 2019). In a separate investigation, CBT was found to be a safe intervention with few side effects when compared with other treatment options, particularly pharmacotherapy (Morrison Law et al., 2018). Such findings are consistent with research by Morrison, Pyle, et al., (2018) stating that CBT is not associated with an increase in serious side effects. In contrast, other

researchers have found that although CBT appears to have a powerful effect during the course of treatment, much of the impact fades after treatment is stopped (Morrison, Pyle, et al., 2018).

DISCUSSION

This systematic review's findings suggest that CBT is effective in mitigating the risk of relapse in the schizophrenic population, specifically in those patients who have hallucinations. This therapy successfully reduces psychotic symptoms and improves patients' ability to manage and cope with the hallucinatory experiences that they encounter. Most studies show a consistent reduction in positive symptoms, including hallucinations and delusions.

This reduction supports the basic principle of CBT, which focuses on cognitive restructuring and increased self-control over the interpretation of internal experiences such as hallucinatory voices. This result is supported by another systematic review, which showed that CBT can significantly reduce positive symptoms and negative symptoms in patients with schizophrenia (Mayer et al., 2024). Insight increased in patients who received CBT or metacognitive therapy, with a small but consistent effect. In contrast, patients who received a combination of psychopharmacological therapy and psychosocial interventions demonstrated a significant increase in insight (Phelan & Sigala, 2022). Adequate insight can improve patient adherence to treatment and reduce the risk of relapse.

Another study reported that CBT has the effect of increasing self-confidence and changing beliefs about voice, resulting in a significant decrease in persecutory beliefs and increased active involvement in voice (Owen et al., 2015; Dellazizzo et al., 2020). The study by Morrison, Pyle, et al., (2018) reported that personal recovery, as measured at follow-up 21 months after CBT intervention, experienced a significant increase. These effects suggest that CBT effectively improves patients' coping with hallucinatory beliefs and engagement with hallucinations, which can reduce relapse rates.

Culturally adapted CBT approaches (Naeem et al., 2015) and technology-integrated CBT, such as videoconference-based CBT (Katsushima et al., 2025), have also shown significant effectiveness. The CBT approach of adapting therapeutic methods to the culture, language, beliefs, and social structure of the local community is important because CBT was initially developed in Western countries and is based on specific cultural assumptions. Naeem et al., (2015) showed that CBT worked well within culturally tailored frameworks because the study was conducted in Pakistan.

From the study's conclusions, we may infer that Indonesia could adopt culture-based CBT not only to enhance therapeutic relevance but also to boost local community acceptance of the therapy. Katsushima et al., (2025)'s study which utilised CBT through videoconference calls, showed great possibilities for the therapy's expansion, especially for patients who struggle to attend face-to-face therapy sessions. CBT conducted via videoconferencing has been shown to be safe, accessible, effective, and a cost-saving alternative for patients who would otherwise need to travel for sessions.

Multiple studies have shown that patients' quality of life is significantly improved after CBT interventions (Morrison Law et al., 2018; Katsushima et al., 2025). Earlier studies have also shown that the group receiving CBT intervention demonstrably improved in social functioning with 24 participants successfully returning to employment (Liu et al., 2019). The results of this systematic review support the conclusion that CBT is more effective than conventional care in enhancing quality of

life (Mayer et al., 2024). From this, it follows that CBT intervention assists in the marked enhancement of patients' quality of life.

CBT is proven to be safe and to have far fewer side effects when compared to pharmacological treatment options (Morrison Law et al., 2018; Bighelli et al., 2024). As per Morrison, Pyle, et al., (2018) CBT is safe as it does not lead to an increase in serious side effects. In addition, the results from a systematic review support the notion that CBT administered without the use of antipsychotics is associated with fewer side effects than the CBT plus antipsychotics (Bighelli et al., 2024). CBT is significant during the intervention period; however, the long-term effects tend to fade from a period of time after therapy is discontinued (Morrison, Pyle, et al., 2018). Thus far, we discussed the evidence supporting the use of CBT. In conclusion, it is safe and effective with far fewer side effects compared to pharmacological treatment. In order to retain the positive impact of CBT, follow-up strategies such as maintenance sessions and support are required post primary therapy.

The goal of all nursing interventions is to assist patients in behavioral change to improve health and enable adaptive functioning. CBT is based on collaboration with patients in defining problems, identifying goals, formulating effective strategies, and evaluating progress. The focus of therapy is on the patient's self-control, thus CBT is seen as an educational tool for skill-building. CBT begins with an assessment of the patient's behavior, thoughts, and feelings in specific situations to assess their experience. The interaction of the human behavioral system includes how feelings influence thoughts, thoughts influence behavior, and behavior influences feelings. CBT strategies can be used by nurses specializing in psychiatric nursing. CBT strategies include cognitive restructuring and learning new behaviors (Stuart et al., 2023).

CBT is a specialized psychiatric nursing therapy provided to patients with psychosocial problems or mental disorders (Keliat et al., 2019). The goal of CBT is to transform negative automatic thoughts that lead to negative behaviors into positive, adaptive thoughts and behaviors. Mental health nurses provide direct care to patients in healthcare settings, from hospital care to community outreach. CBT provides benefits throughout the continuum of care, encompassing coping responses ranging from health promotion and acute care to improving conditions during the recovery or rehabilitation phase (Stuart et al., 2023).

Research indicates that CBT is effective in preventing relapse and in reducing psychotic symptoms, improving quality of life, enhancing social functioning, and aiding recovery. However, these studies have been critiqued for limitations such as small sample sizes, inconsistent length of interventions, and insufficient longitudinal data. A major limitation of this systematic review is the literature search strategy, which was limited to the PubMed and Google Scholar databases. This limitation may increase the risk of selection bias and publication bias, as relevant studies indexed exclusively in other databases (e.g., Scopus, Embase, CINAHL, and the Cochrane Library) may have been missed. Therefore, the findings of this review may not represent the full range of available scientific evidence.

CONCLUSION

The effectiveness of CBT is well documented as easing the burden of attendant psychotic symptoms in schizophrenia while improving the individual’s quality of life, social functioning, supporting recovery, and having minimal side effects. For these reasons, CBT deserves to be part of the management plan tailored to each schizophrenia

patient and within the scope of practice of a specialised nurse. CBT is not only adaptable to different cultural settings, but it can also be technologically supported through videoconferencing or integrated into VRT (Virtual Reality Therapy) sessions. However, to adequately document the long-term benefits of this approach, studies with larger populations are needed urgently, especially focusing on technology use, consistency of intervention duration, and long-term follow-up evidence.

ACKNOWLEDGEMENT

The successful and practical completion of the systematic review can be attributed to the unwavering supportive guidance received from the faculty members of the Master's Programme in Mental Health Nursing, Faculty of Nursing, Universitas Indonesia, which the authors sincerely acknowledge and appreciate.

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