Effectiveness of Recovery-Oriented Cognitive Therapy on Emotion Recognition and Quality of Life in Patients with Schizophrenia

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ABSTRACT

The purpose of this study was to examine the effectiveness of recovery-oriented cognitive therapy on emotion recognition and the quality of life in patients with schizophrenia. The research method was a quasi-experimental design with pre-test, post-test, and follow-up with a control group. The study population included all schizophrenia patients hospitalized in the 24-hour mental health centers of Tehran in 2022. The sample size consisted of 30 individuals (15 in the experimental group and 15 in the control group) selected through convenience sampling and were placed into the experimental and control groups. For the experimental group, recovery-oriented cognitive therapy was implemented, while the control group remained on the waiting list. The research tools included the Facial Emotion Recognition Test (Ekman & Friesen, 1976) and the Quality of Life Questionnaire (World Health Organization, 1996). The results indicated that recovery-oriented cognitive therapy had a significant effect on emotion recognition and quality of life in the post-test and follow-up stages. The findings provide useful information regarding recovery-oriented cognitive therapy, and psychologists and psychiatrists can use this intervention to improve emotion recognition and quality of life in patients with schizophrenia.

Keywords: *Recovery-oriented cognitive therapy, emotion recognition, quality of life, schizophrenia.*

1. Introduction

Schizophrenia is a severe mental illness that affects over 21 million people worldwide and often leads to chronic disability and disruptions in cognitive, social, and emotional functioning (1). Currently, schizophrenia is recognized by a range of symptoms, including positive symptoms (such as delusions and hallucinations), negative symptoms (including anhedonia, poverty of speech, avolition, and social

withdrawal), and cognitive symptoms (such as deficits in attention, processing speed, verbal learning, visuospatial learning, problem-solving, working memory, and cognitive flexibility) (2, 3). This disorder may occur due to genetic factors, neurodevelopmental factors, pathological changes in brain regions, immune system dysfunction, neuroinflammation, and abnormalities in neurotransmitter pathways, including dopaminergic and glutamatergic pathways (1, 4). Patients with schizophrenia are at increased risk of metabolic syndrome, cardiovascular disease, diabetes, endocrine disorders, immune diseases, and particularly, chronic obstructive pulmonary disease (5-7). Additionally, impairments in social cognition (including emotional intelligence, facial emotion recognition, emotion appraisal, and social inference) may significantly affect interpersonal relationships, community adaptation, and professional functioning, thereby substantially impacting functional recovery in patients with schizophrenia (8).

Studies have shown that one aspect of social cognition, emotion recognition, is impaired in patients with schizophrenia (9, 10). Emotion recognition, defined as the ability to distinguish different emotional states in facial expressions, body postures, and verbal expressions in oneself or others, is considered a crucial factor in social functioning that forms the basis of interactions (11). Rather than a general deficit encompassing all emotions, schizophrenia may be associated with a more specific impairment in processing a subset of negative emotions such as anger, disgust, sadness, and/or fear (12). In this regard, Bulgari et al. (2020) found that the inability to recognize emotions is one of the reasons for aggressive behavior often seen in this disease (13). In another study, Gao et al. (2021) demonstrated that the ability to recognize emotions is a crucial component and a determinant factor influencing social cognition and social functioning in patients with schizophrenia (14).

Impairments in social processing can create challenges in interpersonal interactions for patients with schizophrenia, leading to poor quality of life (15). Quality of life specifically reflects an individual's mental perception and encompasses effective interpersonal relationships, the ability to engage in positive and purposeful activities, and a sense of happiness in life (16). Quality of life in patients with schizophrenia is affected by the presence of clinical

symptoms, especially negative symptoms and depression. For example, in a study of patients with chronic schizophrenia, clinical symptoms explained 50% of the variance in quality of life, and social variables explained 16% (17). Carpinello et al. (2012) showed that younger people, women, married individuals, and those with lower educational levels reported better quality of life (18). Similarly, findings by Karow et al. (2022) indicated that the longer the duration of the illness in individuals with schizophrenia, the worse the quality of life (19).

Currently, the foundation of schizophrenia treatment involves pharmacotherapy. However, the effectiveness of antipsychotic drugs has shown limitations (Leucht, Komossa, Rummel-Kluge, Corves, Hunger, Schmid et al., 2009). Most individuals do not show a clinically significant response to antipsychotics in the short term (2, 20), and significant side effects, which reduce quality of life and shorten lifespan, are common (2). Given that drugs are a useful but limited tool for promoting recovery in schizophrenia, there is a need for non-pharmacological approaches to this disorder. Meta-analyses have identified cognitive-behavioral therapy for schizophrenia as the most effective psychotherapy for this disorder (21). However, a trial by Garety et al. (2008) found limitations in this approach, as individuals with schizophrenia who had a history of relapse did not show a significant reduction in relapse compared to the control group (22). Based on these empirical findings, researchers have developed an alternative cognitive-behavioral approach that is strongly influenced by the principles of the recovery movement (23). Cognitive therapy based on recovery empirically neutralizes negative beliefs and attitudes while activating each individual's inherent positive attitudes to promote sustainable adaptive living in the community (24). Key components of recovery-oriented cognitive therapy include: regaining hope, empowerment, social connection, having meaning and purpose in life, identity change, regaining responsibility and control, symptom management, and combating stigma (25, 26). In line with the effectiveness of this therapeutic approach, findings by Grant et al. (2012) indicated the success of recovery-oriented cognitive therapy compared to standard treatment in the community for outpatient individuals with low-functioning schizophrenia or schizoaffective disorder (27). Grantet al. (2018) also showed

in their study that recovery-oriented cognitive therapy is effective in reducing negative and positive symptoms and enhancing overall functioning in patients with chronic schizophrenia (28). In another study, Nowak et al. (2019) found that recovery-oriented cognitive therapy improved self-confidence, hope, and psychosocial functioning in patients with schizophrenia (26).

Therefore, given the side effects of pharmacological treatments and the lesser effectiveness of cognitive behavioral therapy in improving symptoms of schizophrenia, recovery-oriented cognitive therapy has been recognized as a new therapeutic approach, which studies have shown to be effective in improving symptoms of schizophrenia. Additionally, due to the necessity of paying attention to patients with schizophrenia and reintegrating them into society and families and their social acceptance and adaptation, conducting such research can scientifically contribute to understanding mechanisms and optimal methods in counseling and therapeutic activities and provide a basis for improving symptoms in these patients. Therefore, given the importance and necessity of treating positive and negative symptoms and reducing psychological harms, and since no research in Iran has yet examined the effectiveness of recovery-oriented cognitive therapy on patients with schizophrenia, this study was conducted with the aim of determining the effectiveness of an intervention program of recovery-oriented cognitive therapy on emotion recognition and quality of life of schizophrenia patients hospitalized in 24-hour mental and neurological health centers.

2. Methods and Materials

2.1. Study Design and Participants

The research method was a quasi-experimental design with a pre-test, post-test, and follow-up with a control group. The study population included all schizophrenia patients hospitalized in 24-hour mental health centers in Tehran in the year 2022. Based on the inclusion criteria, 30 individuals who had previously been diagnosed with schizophrenia by a psychiatrist were selected through convenience sampling and then assigned to either the experimental or control groups. The inclusion criteria included: voluntary consent to participate in the research, no other chronic physical or psychological diseases, age between 24 and 45 years

(information obtained from patient files and a demographic questionnaire), and not participating in other treatment programs during the research period. The exclusion criteria included: having a psychiatric illness requiring medication during the study and absence from more than two therapy sessions.

After selecting participants based on ethical principles, brief information about the research topic and objectives was provided to them. Participants were assured that the research findings would be published as general conclusions, and they were free to withdraw at any stage of the study. Written consent was obtained from the participants. The Facial Emotion Recognition Test and Quality of Life Questionnaire were administered during the pre-test phase to both experimental and control groups. After the training period, assessments were repeated with both groups during the post-test phase and a 1-month follow-up period.

2.2. Measures

2.2.1. Emotion Recognition

This test consists of 36 black-and-white photographs of facial emotions, developed and collected by Ekman and Friesen in 1976. Scoring is binary, zero (incorrect response) and one (correct response), and the total score is derived from the sum of correct responses. The higher the score, the better the emotion recognition and vice versa. The minimum score in this test is zero and the maximum is 36. The reliability of the test has been established through cross-cultural studies. In these studies, Japanese and American participants were shown films that elicited feelings of happiness or sadness. Subsequently, they were shown images of emotional faces to which both groups responded correctly. Another study used physiological responses to different emotions, recording heart rate and galvanic skin response in Japanese and American groups when presented with emotional images. Results showed that physiological reactions to the presented images were consistent across groups and varied between different images (29). In the Iranian sample, the test-retest reliability coefficient reported over one week was 0.85. Concurrent validity with the Wechsler Memory Scale was 0.40, with the Information Processing Questionnaire it was 0.32, and with the Response Inhibition it was -0.25 (30).

2.2.2. Quality of Life

This 26-item questionnaire measures overall and general quality of life. The scale was developed in 1996 by a team from the World Health Organization by adjusting items from a 100-question form. The response scale is Likert-type, ranging from very poor (1) to very good (5). In Iran, Nejat and colleagues (2006) found the content validity of the questionnaire satisfactory and reported its test-retest reliability as 0.84 and internal consistency of its different sections ranging from 0.52 to 0.84 using Cronbach's alpha method (31).

2.3. Intervention

2.3.1. Recovery-Oriented Cognitive Therapy

For the experimental group, recovery-oriented cognitive therapy was conducted in 8 sessions of 60 minutes each over four weeks, twice per week (24).

Session 1: Introduction and Psychoeducation

The first session focuses on introducing the therapy program and establishing rapport with the participants. The therapist explains the principles of recovery-oriented cognitive therapy, including its focus on personal recovery and empowerment. Participants are introduced to the concept of schizophrenia not just as a chronic illness but as a condition that can be managed with the right strategies. The session also covers psychoeducation about schizophrenia, discussing symptoms, common challenges, and the importance of emotion recognition and quality of life in the management of the disorder.

Session 2: Understanding Emotions

This session aims to enhance participants' understanding of different emotions and their expressions. Using interactive activities, such as analyzing facial expressions from photographs or video clips, participants learn to identify basic emotions like happiness, sadness, anger, and fear. The therapist helps participants explore how these emotions manifest in themselves and others, discussing the impact of schizophrenia on emotional perception and expression.

Session 3: Cognitive Restructuring - Identifying Negative Thoughts

Participants are guided through the process of cognitive restructuring, starting with the identification of negative,

automatic thoughts that can influence emotional recognition and personal interactions. Through group discussions and individual reflections, participants learn to recognize patterns of negative thinking that may distort their perception of social cues and emotional contexts.

Session 4: Cognitive Restructuring - Challenging and Modifying Thoughts

Building on the previous session, this session focuses on challenging and modifying the negative thoughts identified. Participants practice techniques to dispute irrational or unhelpful thoughts and replace them with more balanced and realistic ones. This practice aims to improve their emotional understanding and reduce cognitive biases affecting their social interactions.

Session 5: Enhancing Social Cognition

This session is dedicated to enhancing social cognition skills. Participants engage in exercises that focus on better interpreting social cues, such as body language, tone of voice, and facial expressions. Role-playing scenarios are used to practice these skills, emphasizing the importance of context in understanding others' emotions and intentions.

Session 6: Stress Management and Relaxation Techniques

Participants learn stress management and relaxation techniques to help control emotional responses and improve their overall quality of life. Techniques such as deep breathing, progressive muscle relaxation, and mindfulness are introduced and practiced. The therapist discusses how managing stress can help mitigate the impact of negative symptoms on daily functioning and emotional well-being.

Session 7: Developing Coping Strategies

This session focuses on developing personalized coping strategies to deal with the challenges of schizophrenia, particularly in managing negative and cognitive symptoms that affect quality of life. Participants work on creating a personal toolkit of strategies such as problem-solving, scheduling enjoyable activities, and setting realistic goals.

Session 8: Review and Future Planning

The final session reviews the skills and concepts covered throughout the therapy. Participants reflect on their progress and discuss how to apply the learned skills to their daily lives. Future planning is emphasized, where participants set long-term goals for their recovery and continued practice of

the skills. The therapist also provides information on continuing support and resources available post-therapy.

2.4. Data Analysis

Data analysis was performed using descriptive statistics methods and analysis of variance with repeated measures in SPSS version 26.

3. Findings and Results

Based on the demographic data, the average age of the experimental group was 38.1 ± 1.38 years, and the average age of the control group was 32.5 ± 0.50 years. In the experimental group, 20% (3 participants) had a high school diploma, 26.6% (4 participants) had an associate degree, 40% (6 participants) had a bachelor's degree, and 6.6% (2 participants) had a master's degree. In the control group, 26.6% (4 participants) had a high school diploma, 26.6% (4 participants) had an associate degree, and 46.6% (7 participants) had a bachelor's degree. Descriptive statistics for the pre-test and post-test scores of the research variables by group are reported in Table 1.

Table 1

Descriptive Indices of Research Variables by Experimental and Control Groups

Variable	Group	Pre-test	SD Pre-test	Post-test	SD Post-test	Follow-up	SD Follow-up
Emotion Recognition	Experiment	18.67	1.49	21.73	1.16	21.53	0.91
	Control	19.40	1.40	19.66	1.44	19.53	1.50
Quality of Life	Experiment	37.46	2.16	43.73	3.21	43.26	3.12
	Control	36.67	3.08	37.20	2.78	37.40	2.55

As observed in Table 1, the mean scores for emotion recognition and quality of life in the experimental group increased more from the pre-test to the post-test phase compared to the control group. For data analysis, a repeated measures analysis of variance was utilized. First, the assumptions underpinning this test were examined. The Kolmogorov-Smirnov test was used to check for normal distribution of scores. Results showed that the assumption of normal distribution was not rejected in both groups (P > 0.05). Levene's test was used to check the homogeneity of variances, and results showed homogeneity of variances in the components of emotion recognition (F = 0.123, P > 0.05) and quality of life (F = 3.140, P > 0.05). Also, the Mauchly's Test of Sphericity showed significance levels less than 0.05, thus the sphericity assumption was violated and Greenhouse-Geisser corrections were used in the repeated measures model.

Table 2

Results of Multivariate Tests (Wilks' Lambda) for Dependent Variables

Variable	Wilks' Lambda	F	Hypothesis df	Error df	Sig	Eta
Emotion Recognition	0.211	50.340	2	27	0.001	0.789
Quality of Life	0.456	16.137	2	27	0.001	0.544

Wilks' Lambda statistics in the multivariate analysis of covariance showed that there was a significant difference between groups in at least one of the dependent variables (P < 0.001).

Table 3

Repeated Measures Analysis of Variance for Within-Group and Between-Group Effects

Component	Sum of Squares	df	Mean Square	F	P	Effect Size
Emotion Recognition						
Stages	50.556	1.587	31.855	93.402	0.001	0.769
Interaction	38.289	1.587	24.126	70.739	0.001	0.716

Group Quality of Life	27.778	1	27.778	5.740	0.024	0.170
Stages	222.489	1.187	187.406	41.153	0.001	0.595
Interaction	147.467	1.187	124.214	27.277	0.001	0.493
Group	435.600	1	435.600	23.032	0.001	0.451

The results in Table 3 indicate that the F-value for the interaction of stages and group for dimensions of emotion recognition (F = 70.739) and quality of life (F = 27.277) are significant (P < 0.001). Additionally, pairwise comparisons of adjusted mean stages (pre-test, post-test, and follow-up) are presented in Table 4.

Table 4

Bonferroni Post Hoc Test Results for Research Variables Across Three Measures

Component	Stages	Mean Difference	Significance Level
Emotion Recognition	Pre-test to Post-test	-1.667	0.001
	Pre-test to Follow-up	-1.500	0.001
	Post-test to Follow-up	0.167	0.304
Quality of Life	Pre-test to Post-test	-3.400	0.001
	Pre-test to Follow-up	-3.267	0.001
	Post-test to Follow-up	0.133	0.0001

According to Table 4, the mean scores for emotion recognition and quality of life in the experimental group significantly increased from the pre-test to the post-test and follow-up phases (P < 0.01), while the differences between the post-test and follow-up phase were not significant (P > 0.01). However, no significant differences were observed between the pre-test, post-test, and follow-up in the control group (P > 0.01). This finding suggests that recovery-oriented cognitive therapy not only improved components of emotion recognition and quality of life in the experimental group but also maintained this effect during the follow-up phase.

4. Discussion and Conclusion

The current study aimed to determine the effectiveness of a recovery-oriented cognitive therapy intervention program on emotion recognition and quality of life in schizophrenia patients hospitalized in round-the-clock mental health centers. The results showed that the recovery-oriented cognitive therapy intervention program was effective in improving emotion recognition in schizophrenia patients. This finding is consistent with some of the prior results (24-26, 32). To explain this finding, it can be stated that to facilitate more effective emotion recognition in recovery-oriented cognitive therapy, the therapist performs several actions. Firstly, emotional face icons (emojis) help patients share their emotions, as the patient can touch (or draw) the face that best reflects their emotional state. Secondly, the repeated use of verbal reinforcement (e.g., "It's very helpful to know you might feel sad, and I bet there are many things that could make you feel this way") helps the patient become aware that the therapist values their emotions. Thirdly, moving away from open-ended questions (e.g., "Name three of the saddest things from last week" instead of "Why are you so sad?") reduces pressure on neurocognitive resources. Fourth, guessing emotional states and allowing the patient to choose the most appropriate options when they cannot respond to a question (32) seems to help schizophrenia patients in recognizing emotions. One of the important techniques of recovery-oriented cognitive therapy is resilience (24). Psychological resilience enables individuals to plan for achieving goals, develop a positive self-view, have confidence in their abilities, acquire skills in assertiveness, readiness to listen to others, respect for the feelings and beliefs of others, create order, stability, and security in their personal life, feel capable of facing problems, and confront challenges in a problem-solving manner; using these adaptive strategies may reduce negative emotions and consequently improve cognitive and emotional functioning (33). Additionally, psychological resilience involves training in the concept of change, familiarization with the process of confronting change, adopting a flexible outlook in dealing with life changes, learning to recognize and control emotions and feelings in

crisis and difficult conditions, enabling individuals to have greater control over their unpleasant feelings at the time of a negative event occurrence, engage more effectively in planning for resolving the negative event, and instead of focusing on negative emotions and feelings caused by the situation, focus on the positive and bright aspects of the situation and their positive emotions (9, 12, 13).

Another finding of this research showed that the recovery-oriented cognitive therapy intervention program was effective in improving the quality of life of schizophrenia patients. This finding is somewhat consistent with the prior results (8, 24, 28, 34). To explain this finding, it can be stated that increased connection, beginning to trust, developing more energy, and having greater access to motivation, all these factors in recovery-oriented cognitive therapy shift the focus towards a life that the person truly wants, such as having a home, a job, starting a family; recovery-oriented cognitive therapy uses the term "dreams" for these life goals; dreams are big, meaningful, and motivational (24). Acting towards the realization of dreams naturally involves challenges for the individual; however, recovery-oriented cognitive therapy emphasizes that at times of striving to achieve dreams, the key point is to maintain focus on what is most valuable (such as dreams, connections, and their personal meanings). The cognitive model helps us understand the negative beliefs that cause challenges, but it also helps us understand and focus on the positive beliefs that can help shift focus to adaptive life states; in fact, recovery-oriented cognitive therapy by creating a shift from a challenge-focused to an adaptive state leads to the enhancement of quality of life in individuals with schizophrenia (Beck et al., 2020). In other words, recovery-oriented cognitive therapy helps individuals strengthen their adaptive state, experience their best selves, and reinforce positive beliefs, especially those related to energy, ability, control, and connection. By creating these positive beliefs, the adaptive state becomes the individual's dominant state, and the person navigates their path towards a desirable life (8). This therapeutic approach strives to help the individual understand their ineffective cognitive and behavioral responses and create functional responses that lead to life satisfaction and better mental health (34). Moreover, recovery-oriented cognitive therapy is not a reflective process but an active one. By understanding the meaning of

a person's dreams, we help them realize it every day through positive and daily actions that reach their highly valuable meaning, and we promote this activity with others so that the patient takes steps towards realizing their dreams and ultimately flourishes and enlivens their living space (8, 28).

Among the limitations of this study was the use of convenience sampling. Therefore, it is recommended that future research be conducted using random sampling to enhance the external validity of the study. It is also suggested that this therapy method be compared with other psychological therapy methods on these patients to examine its effectiveness and efficiency in comparison to other approaches.

Authors' Contributions

M.S. led the project design and supervised the overall conduct of the study, including overseeing the therapy sessions and ensuring ethical compliance. P.S., the corresponding author, played a key role in data analysis and interpretation, contributed significantly to the manuscript's preparation, and led the revision process. G.S. was involved in the recruitment of participants, administered the assessment tools, and participated in data collection and preliminary analysis. All authors contributed to the manuscript and approved the final version for publication.

Declaration

In order to correct and improve the academic writing of our paper, we have used the language model ChatGPT.

Transparency Statement

Data are available for research purposes upon reasonable request to the corresponding author.

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Declaration of Interest

The authors report no conflict of interest.

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Ethics Considerations

The study placed a high emphasis on ethical considerations. Informed consent obtained from all participants, ensuring they are fully aware of the nature of the study and their role in it. Confidentiality strictly maintained, with data anonymized to protect individual privacy. The study adhered to the ethical guidelines for research with human subjects as outlined in the Declaration of Helsinki.

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