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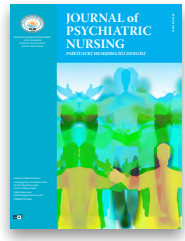

Systematic Review

The effectiveness of the illness management and recovery program in individuals with schizophrenia: A systematic review

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Abstract

Objectives: One of the interventions to increase the functionality of individuals with schizophrenia, to ensure illness self-management, and to achieve recovery goals is the Illness Management and Recovery (IMR) Program. This study is a systematic review to determine the effects of the IMR program applied to individuals with schizophrenia.

Methods: The search was conducted on PubMed, Wiley Online Library, Science Direct, Ovid, Cochrane Library, Web of Science, Springer Link, Ulakbim Turkish Medical Directory, and Turkish Medline databases using three Turkish and three English keywords. The 197 studies accessed were evaluated in accordance with the PRISMA 2020 guideline and inclusion–exclusion criteria. As a result of the evaluation, four articles were included in the review.

Results: It was observed that one of the articles was quasi-experimental, two of them were experimental studies with pre-test and post-test control groups, and one was a randomized controlled follow-up study. The articles were assessed in terms of sample properties, the measurement tools used, application properties, and received results.

Conclusion: As a result of the assessment, the program was observed to have positive effects on the general functionality, activity in self-management, quality of life, life satisfaction, daily life in community life, self-efficacy in social relationships, total psychiatric symptoms, positive symptoms, lack of insight and judgment, social functionality, IMR levels, and left superior temporal gyrus and left inferior frontal gyrus cortical thicknesses of individuals with schizophrenia. In line with these results, it is recommended that nurses who care for individuals with schizophrenia include the program in their daily care to decrease the negative effects of the disease, contribute to the IMR of the patients, and increase their functionality. In addition, it is recommended that psychiatric nurses plan and implement the program and take an active part in new studies with high evidence value.

Keywords: Chronic mental illnesses; chronic psychiatric patients; illness management and recovery program; psychiatric nursing; schizophrenia.

Schizophrenia is a chronic mental illness characterized by a series of symptoms such as delusions, hallucinations, disorganized speech or behavior, and impaired cognitive ability,[1] which negatively affects the areas of affect, thought, perception, interpersonal relations, and behavior.[2–4] With the early onset and chronic course of the disease, it becomes a disease that causes disability for many patients and their families.[1] Schizophrenia causes disability by causing impairment in social, occupational, and other important areas of functionality.[3,5] Therefore, patients need professional support to improve their functionality, recovery, and impaired quality of life and to manage relapses and recurrent symptoms.[1,6] However, it is important for individuals diagnosed with schizophrenia to cooperate with the treatment team in managing the disease and achieving goals for recovery.[7]

While recovery is clinically defined by mental health experts as the reduction or cessation of symptoms and the improvement of social functionality,[7–9] personal recovery refers to

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personal development, personal and social success, recovery, and self-determination expressed by the individual receiving treatment. It is a process that helps individuals develop and maintain their goals and includes the meaning that the individual personally attaches to recovery.[6–10] It is a process that helps individuals develop hope, self-acceptance, awareness, having a say, self-control, self-help, and health. Collaboration with professionals and participation in programs run by mental health experts indicate that recovery is on the way.[6]

Illness management programs are programs designed to help individuals with chronic mental illness collaborate with professionals, reduce susceptibility to the illness, and effectively cope with their symptoms.[10] The aim of illness management in chronic mental illnesses is to develop strategies for the development of patients' skills, increasing their productivity, increasing control over the disease, reducing sensitivity to stress, preventing relapses, and improving their recovery by living a more functional life.[6] Illness management is very important in preventing and reducing psychiatric symptoms, relapse, repeated hospitalizations, and maintaining functionality in individuals diagnosed with schizophrenia.[7,10,11] Psychosocial interventions are among the treatment options that increase functionality and reduce the duration of relapse and hospitalization in individuals diagnosed with schizophrenia.[12] It has been reported that psychosocial interventions applied in addition to psychopharmacological strategies are very effective in the recovery of individuals.[13,14] Psychosocial interventions applied by psychiatric nurses to individuals diagnosed with schizophrenia have positive effects on the patient's functionality, quality of life, medication compliance, coping with symptoms, length of hospital stay, and relapse rates.[15] One of the psychosocial interventions that psychiatric nurses can implement for these purposes is the Illness Management and Recovery (IMR) Program. IMR Program is a recovery-based psychosocial intervention that includes motivation-based psychoeducation, social skill development, prevention of relapses, improvement of treatment adherence, stress and disease symptom management, and helping people achieve and maintain coping goals.[6] The program was developed through a review of research on illness management and based on the Transtheoretical Model and the Stress-Vulnerability Model,[7,11] to help individuals with schizophrenia or major mood disorders learn to manage their illness more effectively in achieving their personal recovery goals. As a result of the review of experimental studies, "psychoeducation about mental illness and its treatment," "cognitive-behavioral approaches for medication compliance," "training to prevent relapses," "social skills training to strengthen social support," and "coping skills training for the management of persistent symptoms." Five strategies have been identified and included in the program.[7,9,16]

What is presently known on this subject?

- It is known that the Illness Management and Recovery Program helps individuals diagnosed with schizophrenia and major mood disorder to achieve their personal recovery goals, prevent relapses, improve treatment adherence, manage stress and disease symptoms, achieve coping goals, and manage their illnesses.

What does this article add to the existing knowledge?

- General functionality of individuals diagnosed with schizophrenia, self-management activity levels, quality of life, life satisfaction, daily life in society, self-sufficiency in social relations, total psychiatric symptoms, positive symptoms, lack of insight and judgment, social functionality of individuals diagnosed with schizophrenia of the Illness Management and Recovery Program. It has been shown to have positive effects on illness management and recovery levels, as well as cortical thickness of the superior temporal gyrus (STG) and inferior frontal gyrus (IFG).

What are the implications for practice?

- The Illness Management and Recovery Program may have an important role in the recovery of individuals diagnosed with schizophrenia, general functionality levels of the patients participating in the program, their level of activity in self-management, quality of life, life satisfaction, daily life in society, self-sufficiency level in social relations, and social functionality. It is thought that illness management and recovery levels may increase; total psychiatric symptoms, positive symptoms, lack of insight and judgment may decrease, superior temporal gyrus (STG), and inferior frontal gyrus (IFG) cortical thicknesses are preserved; and brain structures are supported, and participating in the program may have positive effects on patients.

The program is implemented individually or in groups, once or twice a week, in 45–90 min (approximately 60 min) sessions, for a total of 3–12 months.[6,7,9,17–19] The program has been renewed twice to date and its third version has been published most recently. The program, which previously consisted of nine modules covering different topics in each, has been updated to 11 modules in its third version.[6,7,9,16,17,20] These topics are educational (interactive learning, control of understanding, and listing information), motivational (discovering how learning a skill can help a person achieve their goals, etc.), and cognitive-behavioral teaching strategies (reinforcement, role-playing, modeling, cognitive restructuring, behavior shaping, and relaxation training, etc.) are taught together. Homework assignments are given and developed in collaboration with the patients, and when necessary, significant others (family, friends, etc.) are included in the program with the consent of the patients, helping the patients to learn self-management strategies and achieve their personal goals.[7,9,16] van Langen et al.[21] according to the study by IMR program provides patients with new skills such as determining personal goals, managing symptoms, and sharing information with peers.

In addition, participants have the opportunity to exchange ideas with their peers through verbal communication, share their success experiences, understand themselves, take steps toward their personal goals, and regain a sense of hope and

control.[21] It is known that IMR program contributes to the reduction of patient's psychiatric symptoms, IMR,[10,11] and similar illness management programs contribute to the increase of knowledge about mental illness, the ability to cope with persistent symptoms and medication compliance, and the reduction of disease relapse and rehospitalization.[10] When the literature was examined, it was seen that the studies on the program were limited. Therefore, it is very important to determine the possible widespread effects of the program on individuals diagnosed with schizophrenia. In this systematic review, studies examining the IMR Program and the effects of this program on individuals diagnosed with schizophrenia were evaluated. This systematic review was titled "What are the effects of the Illness Management and Recovery Program applied to individuals diagnosed with schizophrenia?" It started with the question. In this systematic review, randomized controlled, control group experimental, and quasi-experimental studies using the IMR program, which can guide psychiatric nurses in illness management, goal setting, preventing and reducing relapses, and developing effective coping skills in individuals diagnosed with schizophrenia, are discussed. The study results are presented as a whole.

Materials and Method

This study is a systematic review to determine the effects of IMR programs applied to individuals diagnosed with schizophrenia. The review was made in line with the 2020 guide of the PRISMA statement (the preferred reporting ıtems for systematic reviews and meta-analysis), which is a 27-item checklist and flow diagram.[22,23] The study protocol has been registered with PROSPERO (Registration number: CRD42022337359).

Search Strategy

The literature search was made in the databases "PubMed, Wiley Online Library, Science Direct, Ovid, Cochrane Library, Web of Science, Springer Link, Ulakbim Türk Medical Index, and Türk Medline," without any limitation in terms of the years covered. The screening was carried out between June 4 and July 24, 2022, using six keywords, three in English and three in Turkish. In the screening, "şizofreni ve hastalık yönetimi ve iyileşme programı," "kronik ruhsal hastalık ve hastalık yönetimi ve iyileşme programı," "kronik psikiyatri hastaları ve hastalık yönetimi ve iyileşme programı," "schizophrenia and illness management and recovery program," "chronic mental illnesses and illness management and recovery program," and "chronic psychiatric patients and illness management and recovery program" were used.

Selection of Studies

The inclusion criteria of this systematic review are studies whose participants (P) are over 18 years of age and diagnosed with schizophrenia, whose intervention type is (I) IMR Program, studies comparing include treatment as usual or other psychosocial interventions (psychoeducation, social skills training, and cognitive behavioral therapy) with the IMR Program (C), and studies comparing the intervention group in which the IMR Program was applied and a control group in which the program was not applied (C), the effects of the IMR Program (IMR, disease symptoms, functionality, quality of life, etc.) studies were examined (O), research design (S) was randomized controlled, experimental, and quasi-experimental with a control group, and the exclusion criteria were pre-experimental designs, reviews, case/case reports, qualitative and descriptive studies, study protocols, scale validity-reliability studies, and studies involving individuals with other chronic mental illnesses (schizoaffective disorder, psychotic disorder, bipolar disorder, etc.) as well as a diagnosis of schizophrenia has been determined. As a result of the screening conducted independently by two researchers, a total of 197 (PubMed: 83, Wiley Online Library: 12, Science Direct: 32, Ovid: 13, Cochrane Library: 13, Web Of Science: 15, Springer Link: 26, Ulakbim Turkish Medical Index: 3, and Turkish Medline: 0) study was accessed. After duplicate reports were removed, the remaining reports were examined first by title and abstract and then by full texts for compliance with the inclusion–exclusion criteria. As a result of the independent elimination of all records by two researchers in line with the criteria, four studies were included in the scope of the research (Fig. 1). The bibliographies of the four studies to be included in the review were examined in terms of inclusion criteria, but no additional studies were found.

Evaluation of Methodological Quality of Studies

The quality of these four studies to be included in the review was evaluated independently by two researchers using the Joanna Briggs Institute-Meta Analysis Statistic Assessment and Review Instrument (JBI-MAStARI), which enables the evaluation of the methodological quality of experimental and quasi-experimental research. JBI-MAStARI was adapted into Turkish by Nahcivan and Seçginli.[22] Cronbach's alpha coefficient for the Experimental and Quasi-Experimental Research Checklist was 0.68; the test–retest correlation coefficient is 0.87. The total score that can be obtained from this evaluation tool, which consists of 10 items, ranges from 0 to 10. For each item, the answer "Yes" is evaluated as 1 point, and the answers "No," "Unspecified" and "Not applicable" are evaluated as 0 points. A high score indicates that the methodological quality of the studies included in the study is high.[24] The studies to be included in the review received a score of 5 or above (5–9 points) from the quality assessment tool. Thus, four studies were included in the review by the common decision of the researchers.

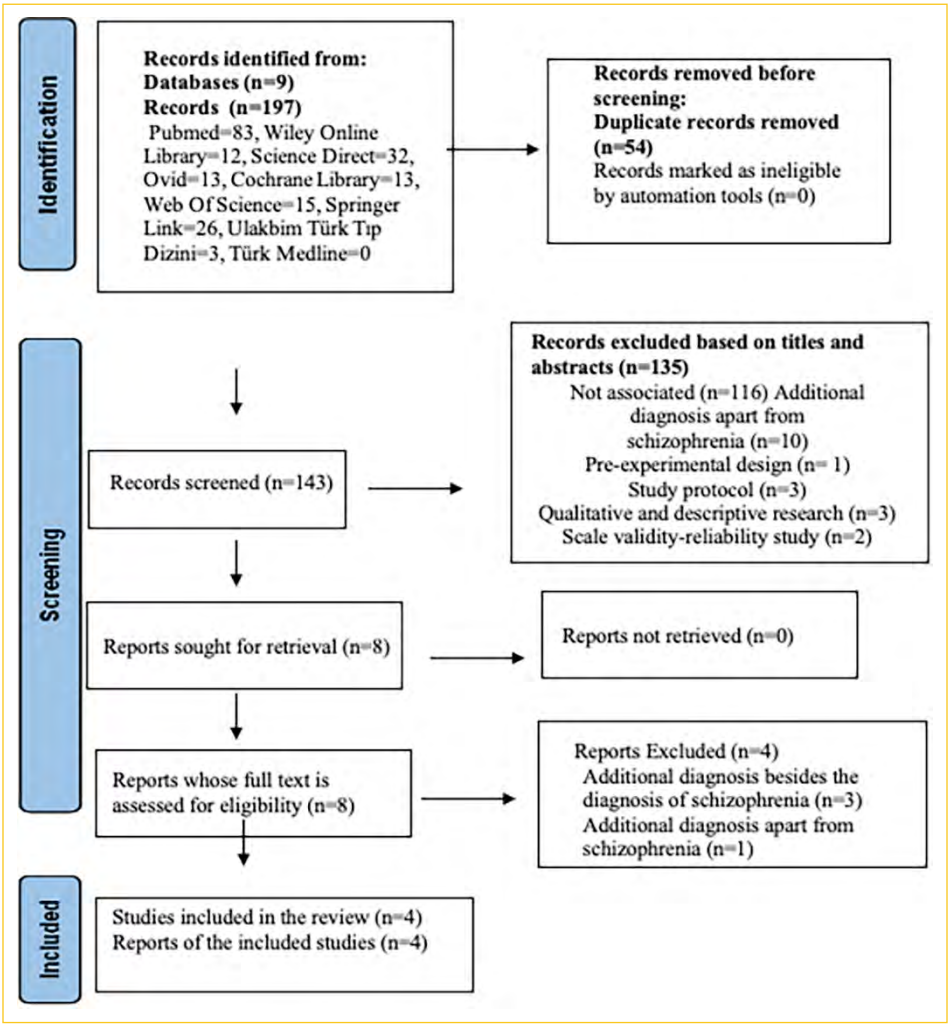

Figure 1. Flow diagram of the selection and ınclusion process of studies according to the PRISMA 2020 statement.[23]

Data Extraction

Data extraction was performed independently by two researchers. The data were extracted into a form created by the authors, each researcher extracted and recorded the data obtained from the studies included in the systematic review, and then, the forms were compared and the data were presented by the mutual decision of the two researchers.

Results

In this systematic review, four research articles selected according to the research criteria were reviewed. It was observed that the studies included in the review were conducted between 2010 and 2021 in Japan (3) and Türkiye (1). One of the studies included in the review is a quasi-experimental study, two are experimental studies with pre-test and post-test control groups, and one is a randomized controlled follow-up study. The findings obtained from the studies are presented in Table 1, grouped under the headings "Sample Characteristics, Measurement Tools Used, Application Features, and Obtained Results."

Sample Characteristics

The sample of the studies included in the review consisted of individuals over the age of 18 diagnosed with schizophrenia. It has been determined that the number of samples in studies is at least 18 (Fujita et al.,[25] 2010) and at most 50 (Polat and Kutlu 2021).[26] In the study conducted by Fujita et al.[25] (2010), eight people were in the intervention group and 10 people were in the control group. In the study of Nakamura et al.,[18] (2019) 19 patients in the intervention group and 17 patients in the control group completed the study. Nakamura et al.[19] (2021), conducted the research with 36 individuals diagnosed with schizophrenia (intervention group: 19, control group: 17) who completed the previous study.[16] In the study of Polat and Kutlu (2021),[26] a total of 50 individuals diagnosed with schizophrenia, 25 in the in-

Table 1. Characteristics of the evaluated studies

Article	Type	Sample characteristics	Measurement tools used	Application features	Results obtained
Fujita et al. [25] (2010)	Quasi-experimental research	18 individuals diagnosed with schizophrenia intervention group: 8, Comparison group: 10	-Global assessment of functioning, -Brief Psychiatric rating scale, -Patient activation measure for mental health, -Short form (SF-36), -Life satisfaction scale, -Self-efficacy for Community Life Scale for schizophrenia, -Client satisfaction questionnaire-8	IMR program was administered in 9 modules in group and individual sessions, once or twice a week for 60 or 90 min. The comparison group continued to receive treatment as usual and daily therapy services.	*The general functionality levels of the patients in the intervention group increased. *The severity of the psychiatric symptoms of the patients in the intervention group decreased. *The level of activity of patients in the intervention group in self-management increased. *The health-related quality of life and social functioning level of patients in the intervention group increased. No difference was found between the two groups in the subscales of physical functionality, physical role difficulty, pain, general health perception, vitality, emotional role difficulty, and mental health. *The life satisfaction of the patients in the intervention group increased in terms of social skills, social relations, psychological functioning sub-dimensions, and scale total score averages. There was no difference between the two groups in general life, physical functionality, and environment sub-dimensions. *Patients in the intervention group increased their self-efficacy for daily living and social relationships in community life. Treatment-related behavior, coping with symptoms, social life sub-dimensions, and total scale There was no difference in mean scores between the two groups. *Participants' satisfaction with the program was found to be high.
Nakamura et al.[18] (2019)	Experimental research with pre-test and post-test control group	36 individuals diagnosed with schizophrenia Intervention group: 19, Control group: 17	-Global assessment of functioning -Positive and negative syndrome scale (PANSS)	IMR program was applied in group sessions for at least 11 months, 43-59 sessions in weekly 60-min sessions, a total of 9 modules. The control group received treatment as usual, including case management, antipsychotic medications, psychotherapy, occupational therapy, and an unstructured psychoeducational program.	*General functionality levels of patients in the intervention group increased. *The total severity of psychiatric symptoms of patients in the intervention group decreased. *The severity of positive symptoms of patients in the intervention group decreased. *The patients' lack of insight and judgment in the intervention group improved. *No difference was found between the two groups in the negative, cognitive, emotional distress, and hostility components of PANSS. *A smaller cortical thinning was observed in the cortical thickness of the left superior temporal gyrus (STG) of the patients in the intervention group compared to the control group; Cortical thickness in the left STG was preserved in the intervention group. There was no difference between the two groups in cortical thickness in the right STG.

Table 1. Cont.

Article	Type	Sample characteristics	Measurement tools used	Application features	Results obtained
Nakamura et al. [19] (2021)	Experimental research with pre-test and post-test control group	36 individuals diagnosed with schizophrenia Intervention group: 19, Control group: 17	-Positive and Negative Syndrome Scale PANSS	IMR program was implemented for 12 months. The control group received treatment as usual.	*The total severity of psychiatric symptoms of patients in the intervention group decreased. *The severity of positive symptoms of patients in the intervention group decreased. *The patients' lack of insight and judgment in the intervention group improved. *Cortical thickness of the left inferior frontal gyrus (IFG), one of the brain structures, was preserved in the intervention group compared to the control group. There was no difference between the two groups in cortical thickness in bilateral IFG.
Polat and Kutlu. [26] (2021)	Follow-up a randomized controlled study	50 individuals diagnosed with schizophrenia Intervention group: 25, Control group: 25	-Questionnaire form -Illness Management and recovery scale -Patient form -Social Functioning Scale-patient form	The Turkish version of the program (IMR) consisting of 20 sessions and 10 modules lasting 60 min was applied to the intervention group as a group session. The control group received routine treatment, including medical treatment, doctor's checks, vocational activities, and a psychoeducation program, and four face-to-face interviews were conducted by the researcher.	*Illness management and recovery levels of patients undergoing IMR program increased immediately after the intervention. *In the follow-up measurements of patients who underwent IMR program 1 month after the intervention, disease management, and recovery levels increased compared to the baseline and post-intervention periods. *Social functionality levels of patients who underwent IMR program increased in the primary social activities sub-dimension after the intervention. *In the follow-up measurements of the patients who underwent IMR program 1 month after the intervention, although the social functioning levels in the primary social activities sub-dimension decreased compared to the post-intervention period, they continued to increase compared to the initial measurements. *No difference was found between the groups in the mean scores of social engagement/social withdrawal, interpersonal behavior, leisure activities, independence-competence, independence-performance, work/profession sub-dimensions, and total scale scores after the intervention and at 1-month follow-up.

IMR: Illness management and recovery.

tervention group and 25 in the control group, were included in the study, and no patient dropped out of the study.

Measurement Tools Used

In the studies included in the review, measurement tools that could evaluate the effectiveness of the IMR Program in individuals diagnosed with schizophrenia were used. Fujita et al.[25] (2010), Global Assessment of Functioning, Brief Psychiatric Rating Scale, Patient Activation Measure for Mental Health, Short Form (SF-36), Life Satisfaction Scale, Self-Efficacy for Community Life Scale for Schizophrenia, and Client Satisfaction Questionnaire-8; Nakamura et al.[18] (2019), Positive and Negative Syndrome Scale and Global Assessment of Functioning; Nakamura et al.[19] (2021), Positive and Negative Syndrome Scale; Polat and Kutlu (2021)[26] used the Questionnaire Form, IMR Scale-Patient Form, and Social Functioning Scale-Patient Form.

Application Features

In all studies included in the review, the IMR Program was applied to individuals diagnosed with schizophrenia in the intervention group. In the study of Fujita et al.[25] (2010), a total of nine modules of the IMR program were applied to the intervention group in group and individual sessions, once or twice a week, in a 60 or 90-min session. The comparison group continued to receive treatment as usual and daily therapy services. In the study of Nakamura et al.[18] (2019), a total of nine modules of the IMR program were applied to the intervention group in the form of group sessions for at least 11 months, consisting of 43–59 sessions in weekly 60-min sessions. The control group received treatment as usual, including case management, antipsychotic medications, psychotherapy, occupational therapy, and an unstructured psychoeducational program. In the study of Nakamura et al.[19] (2021), IMR program was applied to the intervention group of 19 people who completed the previous study[18] for 12 months. The control group received treatment as usual. In the study of Polat and Kutlu (2021),[26] the Turkish version of the program (IMR) consisting of 20 sessions and 10 modules lasting 60 min was applied to the intervention group in the form of a group session. The control group received routine treatment including medical treatment, doctor's checks, professional activities, and a psychoeducation program, and in addition, four face-to-face interviews were held by the researcher.

Results Obtained

In the study of Fujita et al.[25] (2010), the general functionality levels of the patients in the intervention group who received IMR program, their level of activity in self-management, health-related quality of life in the field of social functionality, social skills, social relations, life satisfaction, psychological functioning sub-dimensions and scale total score averages, and their self-efficacy in daily life and social relations in society increased. The severity of psychiatric symptoms of patients in the intervention group decreased. In the physical functionality, physical role difficulty, pain, general health perception, vitality, emotional role difficulty, and mental health subscales of the SF-36 Scale, the Life Satisfaction Scale generally has sub-dimensions of life, physical functionality and environment, and Self-Efficacy for Community Life in Schizophrenia Scale includes treatment-related behavior, coping with symptoms, there was no difference between the two groups in the social life sub-dimensions and scale total score averages.

In the study conducted by Nakamura et al.[18] (2019), the general functionality levels of patients in the intervention group receiving IMR program increased. There was a decrease in the patients' positive symptoms and total psychiatric symptoms. The insight and judgment scores of the patients in the intervention group decreased and the lack of insight and judgment improved. There was no difference between the two groups in the negative, cognitive, emotional distress, and hostility components of PANSS. A smaller cortical thinning was observed in the cortical thickness of the left superior temporal gyrus (STG), one of the brain structures of the patients, compared to the control group. There was more cortical thinning in the control group. In other words, the cortical thickness in the left STG was preserved in patients who underwent IMR program. There was no difference between the two groups in cortical thickness in the right STG.

In the study conducted by Nakamura et al.[19] (2021), the positive symptoms and total psychiatric symptoms of the patients in the intervention group where IMR program was applied decreased. Patients' lack of insight and judgment improved. The cortical thickness of the left inferior frontal gyrus (IFG), one of the brain structures where the language network is located, was preserved in the intervention group compared to the control group. There was a loss in IFG cortical thickness of the control group. There was no difference between the two groups in cortical thickness in bilateral IFG.

In the study conducted by Polat and Kutlu (2021),[26] it was found that the IMR of patients in the intervention group in which IMR program was applied increased. IMR of the patients also increased in the follow-up measurements 1 month later. The social functioning levels of the patients in the intervention group who underwent IMR program increased in primary social activities. In the follow-up measurements 1 month later, the social functioning levels of the patients in the primary social activities sub-dimension decreased compared to the post-intervention period but continued to increase compared to the initial measurements. No difference

was found between the groups in the social engagement/social withdrawal, interpersonal behavior, leisure activities, independence-competence, independence-performance, work/profession sub-dimensions, and total scale score averages of the Social Functioning Scale after the intervention and at the 1-month follow-up.

Discussion

Schizophrenia negatively affects individuals over time in many psychosocial aspects, such as self-care and independent living skills, social relationships, working, going to school or fulfilling parenting roles, difficulty meeting basic needs, and living a satisfactory life.[27,28] After schizophrenia develops, relapses may occur due to stressful effects such as life events, interpersonal conflicts, and poverty.[27,29] Recurrence of symptoms can be reduced by social support given to individuals, coping skills, and stress management. In addition, individuals' acquisition of self-management skills related to the disease, such as achieving personal goals and understanding mental illness, can help individuals recover.[28] Thus, patients who gain and improve their illness management skills can better fulfill their work, home, and social roles by having a say about their own diseases and lives. In addition, by collaborating with the treatment team, they can effectively cope with the symptoms of the disease and contribute to their recovery.[6] For this reason, in this systematic review, "What are the effects of the IMR Program applied to individuals diagnosed with Schizophrenia?" The answer to the question has been sought. Four studies evaluating the effectiveness of the IMR program in individuals diagnosed with schizophrenia were included in the scope of the research. In the studies included in the review, IMR program was conducted by nurses alone or by a multidisciplinary team (psychiatrist, occupational therapist, psychologist, nurse, pharmacist, or social worker). It has been observed that the implemented IMR program has positive results on individuals. IMR program can be applied by social workers, occupational therapists, case managers, counselors, nurses, and psychologists. IMR program can be applied individually or as a group (groups of eight or fewer patients) in centers such as community mental health centers and nursing homes.[9] In the studies included in the review, IMR program was conducted both individually and in groups[25] or only in groups;[18,19,26] in inpatient treatment[18,19,26] and outpatient treatment institutions.[25] In all studies, practitioners implemented the intervention after receiving IMR program training. Accordingly, it turns out that the program can be implemented in the form of individual or group sessions, in inpatient and outpatient treatment institutions, in cooperation with a single professional group such as nurses or a multidisciplinary team.

In the study conducted by Fujita et al.[25] (2010), the general functionality levels of the patients in the intervention group after IMR program, their level of activity in self-management, quality of life in the field of social functionality, life satisfaction and self-efficacy in daily life and social relations in society increased, and their psychiatric symptoms decreased. IMR program has a significant impact on physical functioning, physical role difficulty, pain, general health perception, vitality, emotional role difficulty and mental health-related quality of life, life satisfaction in general, physical functionality and environment-related life satisfaction, and treatment-related behavior; no effect was found on coping with symptoms and self-efficacy in social life. Similarly, in the randomized controlled study of Tan et al.[30] (2017), IMR program was applied to patients with schizophrenia, bipolar disorder, and depression, and as a result of the intervention, the general functionality levels of the patients increased. In the randomized controlled study of Färdig et al.[31] (2011), IMR program was applied to schizophrenia and schizoaffective disorder patients, and as a result of the intervention, the illness management and coping levels (receiving social support, escape-avoidance and planned problem solving) of the intervention group increased; it was found that positive, negative, depression-anxiety, cognitive, lack of insight and total psychiatric symptoms, as well as suicidal ideation decreased. IMR program had no effect on coping levels related to recovery, hospitalization, quality of life, mania symptoms, confrontation, detachment, self-control, taking responsibility, and positive re-evaluation. In another study, IMR program was applied to 24 schizophrenia and schizoaffective disorder patients; at post-intervention and at 3-month follow-up, participants in the intervention group reported that the program was effective in coping with symptoms, that they had greater hope for recovery, and that symptoms were less overwhelming. Perceived social support did not change over time. In addition, moderate improvement was observed in patient's general functioning, knowledge about mental illness, symptom-related distress, hope, and goal orientation.[7]

In the study conducted by Nakamura et al.[18] (2019), the general functionality levels of patients in the intervention group increased after IMR program. Patients' total psychiatric symptoms, positive symptoms, lack of insight, and judgment decreased. IMR program had no effect on the negative, cognitive, emotional distress, and hostility components of PANSS. Similarly, in the randomized controlled study of Tan et al.[30] (2017), it was found that the general functionality levels, as well as the disease management and recovery levels of patients who underwent IMR program, increased, and psychiatric symptoms, hospitalization and length of hospital stay decreased. Differently, in Dalum et al.'s[32] (2018) randomized, assessor-blind, multi-center clinical trial in which IMR program was applied

to schizophrenia and bipolar disorder patients, the program had no effect on general functionality, substance abuse, psychiatric symptom severity, and service use. Another finding obtained in the study by Nakamura et al.[18] (2019) is that the left; STG cortical thickness of the brain structures of the patients in the intervention group was less thinned compared to the control group and the thickness level was maintained. IMR program had no effect on the cortical thickness level in the right STG.[18] STG is an important brain region that plays an important role in speech, language, and communication and provides a connection network to temporal limbic brain regions.[33] Neurons in the STG help recognize auditory and visual words.[34] In many studies, decreases in left STG cortical thickness and gray matter volume have been observed in individuals diagnosed with schizophrenia compared to healthy controls.[35–39] Neuroimaging studies have shown that STG dysfunction is associated with auditory hallucinations and thought disorder, which are among the positive symptoms of schizophrenia. It has been found to be related.[35,40,41] In IMR program, participants have the opportunity to communicate with their peers, exchange ideas, and share their illness and success experiences.[21] Verbal communications in IMR program may have helped preserve the cortical thickness in the left STG, which may have contributed to the improvement of psychiatric symptoms by improving the language-comprehension network of the patients. In addition, it is thought that the program may have positive effects on neuroplasticity, as patients learn new behavioral skills, develop the language-comprehension network, and increase their communication skills, knowledge, adaptation, and coping with stress levels.

In the study conducted by Nakamura et al.[19] (2021), total psychiatric symptoms, positive symptoms, lack of insight, and judgment of the patients in the intervention group decreased after IMR program. In the randomized controlled study conducted by Lin et al.[42] (2013), IMR program was applied to 48 patients diagnosed with schizophrenia and schizoaffective disorder; as a result of the intervention, it was found that the illness management knowledge, attitudes, and insights of the patients in the intervention group increased more than the control group, and their negative symptoms decreased. IMR program had no effect on symptoms of thought disorder, affect, and disorganization. Another finding obtained in the study by Nakamura et al.[19] (2021) is that the IFG cortical thickness, one of the brain structures where the language network is located, was preserved in the intervention group and decreased in the control group. IMR program had no effect on the level of cortical thickness in the bilateral IFG. IFG is a brain region that contributes to motor control and language processing, human behavior, verbal and non-verbal interpersonal communication, and empathy and helps translate what we see into action.[43] In many studies, decreases in left IFG cortical thickness and disruptions in functional connectivity within the IFG network have been observed in individuals diagnosed with schizophrenia compared to healthy controls.[44–46] In individuals diagnosed with schizophrenia, thinning of IFG cortical thickness has been found to be associated with delirium, disorganized behavior, and positive symptoms.[47,48] IMR program provides basic information about mental illnesses and treatment options. In the sessions, participants learn new skills by practicing.[9] In IMR program modules, information is given on areas such as recovery, communication, providing social support, regular medication use, coping with stress, alcohol substance use, recognition of triggering, permanent and persistent symptoms, and coping with symptoms, this includes.[6,7,9] Accordingly, IMR program may have contributed to the preservation of IFG cortical thickness, the reduction of psychiatric symptoms, the increase of patients' communication skills, and the development of language processing-understanding processes.

In the study conducted by Polat and Kutlu (2021),[26] the IMR level of the patients after IMR program increased after the intervention and during the 1-month follow-up period. The social functioning levels of patients who underwent IMR program increased in primary social activities. In the follow-up measurements 1 month later, the social functioning levels of the patients in the preliminary social activities sub-dimension decreased compared to the post-intervention period but continued to increase compared to the initial measurements. IMR program had no effect on the Social Functioning Scale's social engagement/social withdrawal, interpersonal behavior, leisure activities, independence-competence, independence-performance, work/profession sub-dimensions, and total scale score averages after the intervention and at 1-month follow-up. Similarly, in Levitt et al.'s[49] (2009) randomized controlled study, in which IMR program was applied to 54 people with chronic mental illness, it was observed that the illness management, recovery, and psychosocial functionality levels of the intervention group increased, and psychiatric symptoms, depression, and anxiety symptoms decreased. IMR program had no effect on patients' activation, psychosis and retardation symptoms, suicidal tendencies, and alcohol-substance use. The positive results obtained from the studies included in the systematic review are based on the use of educational, motivational, and cognitive-behavioral teaching strategies in teaching the subjects covered in each module of IMR program, homework, the establishment of social support systems, the program's development of patients' personal and social skills, managing their disease, coping with their symptoms. It is thought to contribute to the development of patients by providing them with new skills such as self-control and being able to set recovery goals. In this way, it can be said that patients are able to live a better quality and more satisfied life by improving their social and social functionality and being able to control their own

lives and their disability decreases. In this systematic review, screening the databases with which the university is affiliated and finding a small number of studies on the subject in these databases caused limitations. Although a large number of databases were screened, the results cannot be generalized because the studies obtained as a result of the elimination according to the inclusion and exclusion criteria were conducted in two countries, Japan and Türkiye.

Conclusion

It is known that IMR program has many positive effects on individuals diagnosed with schizophrenia. The results of the studies included in the systematic review also confirm these effects. In the studies included in the systematic review, IMR program was found to be effective in the general functioning of individuals diagnosed with schizophrenia, activity in self-management, quality of life, life satisfaction, daily life in society, self-efficacy in social relations, total psychiatric symptoms, positive symptoms, lack of insight and judgment, social functionality, and IMR levels, and it had positive effects on STG and IFG cortical thickness. As a result, all studies examined were found to have high evidence value. However, it has been revealed that there are still few studies on IMR programs applied to individuals diagnosed with schizophrenia, and more randomized controlled studies are needed. Especially the fact that there is a study in which IMR program is applied in our country points out the need to conduct new studies with high evidence value. It is recommended that new studies should be carried out examining the effects of the program on the protection of brain structures, and psychiatric nurses should be actively involved in the planning and implementation of IMR program and in conducting new research with high evidence value. It is recommended that psychiatric nurses who care for individuals diagnosed with schizophrenia receive training and develop awareness to apply IMR program and add IMR program to their daily care to reduce the negative effects of the disease, increase the functionality levels of patients, contribute to IMR, and support neuroplasticity.

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References

1. Patel KR, Cherian J, Gohil K, Atkinson D. Schizophrenia: Overview and treatment options. P T 2014;39:638–45.
2. Saunders JC. Families living with severe mental illness: A literature review. Issues Ment Health Nurs 2003;24:175–98.
3. Üçok A. Şizofreni ve benzeri psikozlar. In: Kulaksızoğlu İB, Tükel R, Üçok A, Yargıç İ, Yazıcı O, editör. Psikiyatri. İstanbul: İstanbul Üniversitesi Basım ve Yayınevi; 2009. s.130–49. [In Turkish]
4. World Health Organization. Schizophrenia. 2022. Available at: https://www.who.int/news-room/fact-sheets/detail/schizophrenia. Accessed May 25, 2022.
5. Liberman RP. Yetiyitiminden iyileşmeye: Psikiyatrik iyileştirim elkitabı. Çeviri Editörü: Yıldız M. Ankara: Türkiye Sosyal Psikiyatri Derneği; 2011. [In Turkish]
6. Polat S, Kutlu FY. Ruhsal bozukluklarda hastalık yönetimi ve iyileşme programı. İzmir Kâtip Çelebi Üniv Sağlık Bil Fak Derg [Article in Turkish] 2019;4:111–5.
7. Mueser KT, Meyer PS, Penn DL, Clancy R, Clancy DM, Salyers MP. The Illness Management and Recovery program: Rationale, development, and preliminary findings. Schizophr Bull 2006;32(Suppl 1):S32–43.
8. Şenocak SÜ, Arslantaş H, Yüksel R. A new direction to psychiatric wellness: Recovery oriented approach. Arch Med Rev J [Article in Turkish] 2019;28:83–97.
9. Yüksel R, Arslantaş H. An evidence-based psychiatric rehabilitation implementation: Illness management and recovery. Curr App Psychiatr 2021;13:462–77.
10. Mueser KT, Corrigan PW, Hilton DW, Tanzman B, Schaub A, Gingerich S, et al. Illness management and recovery: A review of the research. Psychiatr Serv 2002;53:1272–84.
11. McGuire AB, Kukla M, Green A, Gilbride D, Mueser KT, Salyers MP. Illness management and recovery: A review of the literature. Psychiatr Serv 2014;65:171–9.
12. Ventriglio A, Ricci F, Magnifico G, Chumakov E, Torales J, Watson C, et al. Psychosocial interventions in schizophrenia: Focus on guidelines. Int J Soc Psychiatry 2020;66:735–47.
13. Corrigan PW. Recovery from schizophrenia and the role of evidence-based psychosocial interventions. Expert Rev Neurother 2006;6:993–1004.
14. Chien WT, Yip AL. Current approaches to treatments for schizophrenia spectrum disorders, part I: An overview and medical treatments. Neuropsychiatr Dis Treat 2013;9:1311–32.
15. Çalışkan MB, Ata EE, Dikeç G. Psychosocial rehabilitation programs applied to patients with schizophrenia by psychiatric nurses: Systematic review. Curr App Psychiatr [Article in Turkish] 2021;13:77–92.
16. Mueser KT. Illness management and recovery. 2013. Available at: https://www.usf.edu/cbcs/mhlp/tac/documents/behavioral-healthcare/samh/illness-management-and-recovery.pdf. Accessed Sep 5, 2024.
17. Substance Abuse and Mental Health Services Administration. Illness management and recovery: Building your program. Rockville: Center for Mental Health Services; 2009a. Available at: https://store.samhsa.gov/sites/default/files/buildingyourprogram-imr_0.pdf. Accessed Sep 5, 2024.

18. Nakamura R, Asami T, Yoshimi A, Kato D, Fujita E, Takaishi M, et al. Clinical and brain structural effects of the Illness Management and Recovery program in middle-aged and older patients with schizophrenia. Psychiatry Clin Neurosci 2019;73:731–7.
19. Nakamura R, Asami T, Yoshimi A, Kato D, Fujita E, Takaishi M, et al Illness management and recovery program induced neuroprotective effects on language network in schizophrenia. Schizophr Res 2021;230:101–3.
20. Substance Abuse and Mental Health Services Administration. Illness management and recovery: Practitioner guides and handouts. Rockville: Center for Mental Health Services; 2009b. Available at: https://store.samhsa.gov/sites/default/files/practitionerguidesandhandouts_0.pdf. Accessed Sep 5, 2024.
21. van Langen WJ, Beentjes TA, van Gaal BG, Nijhuis-van der Sanden MW, Goossens PJ. How the illness management and recovery program enhanced recovery of persons with schizophrenia and other psychotic disorders: A qualitative study. Arch Psychiatr Nurs 2016;30:552–7.
22. Çınar N, Hür G. PRISMA 2020 kontrol listesi. 2021. Available at: http://www.prisma-statement.org/documents/PRISMA%20 2020%20checklist- Turkish%20version.pdf. Accessed Jun 5, 2022. [In Turkish]
23. Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: An updated guideline for reporting systematic reviews. BMJ 2021;372:n71.
24. Nahcivan N, Seçginli S. Sistematik derlemeye dahil edilen nicel araştırmaların metodolojik kalitesi nasıl değerlendirilir? Turkiye Klin J Public Health Nurs-Special Topics [Article in Turkish] 2017; 3:10–9.
25. Fujita E, Kato D, Kuno E, Suzuki Y, Uchiyama S, Watanabe A, et al. Implementing the illness management and recovery program in Japan. Psychiatr Serv 2010;61:1157–61.
26. Polat S, Kutlu Y. The effectiveness of illness management and recovery program in patients with schizophrenia. Arch Psychiatr Nurs 2021;35:162–7.
27. Yıldız M. Şizofreni hastaları için ruhsal toplumsal beceri eğitimi, 1. Baskı, Ankara: Türkiye Sosyal Psikiyatri Derneği Yayınları; 2011.
28. Mueser KT, Deavers F, Penn DL, Cassisi JE. Psychosocial treatments for schizophrenia. Annu Rev Clin Psychol 2013;9:465–97.
29. Wang Q, Zhu X, Jiang X, Li M, Chang R, Chen B, et al. Relationship between stressful life events, coping styles, and schizophrenia relapse. Int J Ment Health Nurs 2021;30:1149–159.
30. Tan CHS, Ishak RB, Lim TXG, Marimuthusamy P, Kaurss K, Leong JJ. Illness management and recovery program for mental health problems: Reducing symptoms and increasing social functioning. J Clin Nurs 2017;26:3471–85.
31. Färdig R, Lewander T, Melin L, Folke F, Fredriksson A. A randomized controlled trial of the illness management and recovery program for persons with schizophrenia. Psychiatr Serv 2011;62:606–12.
32. Dalum HS, Waldemar AK, Korsbek L, Hjorthøj C, Mikkelsen JH, Thomsen K, et al. Illness management and recovery: Clinical outcomes of a randomized clinical trial in community mental health centers. PLoS One 2018;13:e0194027.
33. Buchsbaum MS. Frontal lobes, basal ganglia, temporal lobes--three sites for schizophrenia? Schizophr Bull 1990;16:377–8.
34. Chan AM, Dykstra AR, Jayaram V, Leonard MK, Travis KE, Gygi B, et al. Speech-specific tuning of neurons in human superior temporal gyrus. Cereb Cortex 2014;24:2679–93.
35. Rajarethinam RP, DeQuardo JR, Nalepa R, Tandon R. Superior temporal gyrus in schizophrenia: A volumetric magnetic resonance imaging study. Schizophr Res 2000;41:303–12.
36. Kasai K, Shenton ME, Salisbury DF, Hirayasu Y, Lee CU, Ciszewski AA, et al. Progressive decrease of left superior temporal gyrus gray matter volume in patients with first-episode schizophrenia. Am J Psychiatry 2003;160:156–64.
37. Takahashi T, Wood SJ, Soulsby B, Kawasaki Y, McGorry PD, Suzuki M, et al. An MRI study of the superior temporal subregions in first-episode patients with various psychotic disorders. Schizophr Res 2009;113:158–66.
38. Özdemir Hİ, Eker MÇ, Zengin B, Akaydın Yılmaz D, Haznedaroğlu Dİ, Çınar C, et al. Eksiklik sendromu olan ve olmayan şizofreni hastalarında gri madde değişiklikleri. Turk Psikiyatri Derg [Article in Turkish] 2012;23:237–47.
39. Bandeira ID, Barouh JL, Bandeira ID, Quarantini L. Analysis of the superior temporal gyrus as a possible biomarker in schizophrenia using voxel-based morphometry of the brain magnetic resonance imaging: A comprehensive review. CNS Spectr 2021;26:319–25.
40. Shenton ME, Dickey CC, Frumin M, McCarley RW. A review of MRI findings in schizophrenia. Schizophr Res 2001;49:1–52.
41. Allen P, Larøi F, McGuire PK, Aleman A. The hallucinating brain: A review of structural and functional neuroimaging studies of hallucinations. Neurosci Biobehav Rev 2008;32:175–91.
42. Lin EC, Chan CH, Shao WC, Lin MF, Shiau S, Mueser KT, et al. A randomized controlled trial of an adapted Illness Management and Recovery program for people with schizophrenia awaiting discharge from a psychiatric hospital. Psychiatr Rehabil J 2013;36:243–9.
43. Liakakis G, Nickel J, Seitz RJ. Diversity of the inferior frontal gyrus--a meta-analysis of neuroimaging studies. Behav Brain Res 2011;225:341–7.
44. Jeong B, Wible CG, Hashimoto R, Kubicki M. Functional and anatomical connectivity abnormalities in left inferior frontal gyrus in schizophrenia. Hum Brain Mapp 2009;30:4138–51.
45. Kubicki M, Alvarado JL, Westin CF, Tate DF, Markant D, Terry DP, et al. Stochastic tractography study of Inferior Frontal Gyrus anatomical connectivity in schizophrenia. Neuroimage 2011;55:1657–64.
46. Massey SH, Stern D, Alden EC, Petersen JE, Cobia DJ, Wang L, et al. Cortical thickness of neural substrates supporting cognitive empathy in individuals with schizophrenia. Schizophr Res 2017;179:119–24.

47. Bleich-Cohen M, Hendler T, Kotler M, Strous RD. Reduced language lateralization in first-episode schizophrenia: An fMRI index of functional asymmetry. Psychiatry Res 2009;171:82–93.
48. Suga M, Yamasue H, Abe O, Yamasaki S, Yamada H, Inoue H, et al. Reduced gray matter volume of Brodmann's Area 45 is associated with severe psychotic symptoms in patients with schizophrenia. Eur Arch Psychiatry Clin Neurosci 2010;260:465–73.
49. Levitt AJ, Mueser KT, Degenova J, Lorenzo J, Bradford-Watt D, Barbosa A, et al. Randomized controlled trial of illness management and recovery in multiple-unit supportive housing. Psychiatr Serv 2009;60:1629–36.