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The Effect of Psychosocial Skills Training and Metacognitive Training on Social and Cognitive Functioning in Schizophrenia

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ABSTRACT

Introduction: The aim of this study is to investigate the effects of Psychosocial Skills Training (PSST) and Metacognitive Training (MCT) programs on general psychopathology, cognitive functioning, and social functioning in patients with schizophrenia.

Methods: Twenty patients with schizophrenia who were treated at the Kocaeli University Psychiatry Department outpatient clinic between January and June 2016, accepted to participate in the study and met inclusion criteria were included in this study. Patients were randomized as two groups of 10 people. The management of each group was carried out by a trainer and a co-trainer. The Positive and Negative Symptom Scale (PANSS) and Clinical Global Impression Scale-Severity (CGI-S) to assess psychopathology, the General Assessment of Functioning (GAF) and the Quality of Life Scale in Schizophrenia (QoLS) to assess social functioning, the Cognitive Assessment Interview (CAI) to assess cognitive functioning were used by the clinicians blinding to groups in the first two weeks before and after the intervention. After the training, first and last test scale scores were compared.

Results: All patients who participated in the study completed the study (male: 13, female: 7). There was no significant difference in age, gender, marital status, years of education, duration of illness, the age of onset, and the number of hospitalizations in comparison of individual and clinical characteristics of the groups ($p>0.05$). When the scores were compared of the groups before and after the intervention, there was a significant difference concerning psychopathology, social and cognitive functioning in both groups ($p<0.05$). There were no significant differences between the groups in terms of effect size.

Conclusion: The study showed that both programs aiming to improve psychopathology and functioning in the treatment of schizophrenia have positive results. Improvement in cognitive functioning should also be tested by neurocognitive tests in the large-scale studies with control groups.

Keywords: Psychosocial Skills Training (PSST), Metacognitive Training (MCT), schizophrenia, social functioning, cognitive functioning, psychopathology

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INTRODUCTION

Schizophrenia is a lifelong disease that causes impairments in interpersonal relationships, social and occupational functioning with the impairment of cognitive functions (neurocognition and social cognition) due to neuroanatomical and neurochemical disturbances (1-3). Along with the fact that medical treatment is the essence of schizophrenia treatment, psychosocial treatments (psycho-education, skills training, cognitive behavioral therapy, cognitive rehabilitation, metacognitive training, case management, family interventions, assertive community treatment, supported employment, etc.) have a significant place as complementary interventions. Various studies have shown that psychosocial treatments (PST) have positive effects on disease symptoms, treatment compliance, rehospitalization rates, quality of life, social cognition and social functioning (4-9). PST interventions contribute to different psychosocial functions to get better according to their area of interest and the techniques used. For this reason, various PSTs can be implemented sequentially with joint or hybrid models in compliance with the needs of the patients (10-12).

Psychosocial skills training (PSST), an interactive treatment approach that uses cognitive-behavioral group therapy techniques based on social skills training modules (13-15), is also implemented in a way including family training (16). In PSST, patients are aimed to become competent in illness management, strengthen interpersonal relations and increase social functions. Regarding these objectives, training is provided in 16 skill areas: improving communication skills, improving problem solving skills, learning to cope with attention and memory problems, understanding psychosis and schizophrenia, learning antipsychotic drug therapy, learning and coping with drugs side effects, evaluating the treatment, learning to cope with persistent symptoms, recognizing warning signs and monitoring them, avoiding alcohol and substance use, staying away from unnecessary treatment seeking, learning to cope with stress, enhancement of self-confidence, leisure time and daily living activities, developing friendship, and participation in social activities. Cognitive-behavioral treatment techniques such as psychoeducation, sharing experiences, role-playing, problem-solving, exercise, and homework are

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used in the processing of these skill areas. It is showed with controlled studies that PSST program implemented on schizophrenic patients in Turkey is effective on the reduction of patients' psychopathology and the increase in social functioning (17-19). However, the effect of PSST on cognitive functioning has not yet been investigated. It is thought that the PSST program may have an effect on cognitive functioning due to cognitive skill practices in the context.

Exercises are being made to improve the areas of neurocognition (attention, memory, problem-solving, executive functions) and social cognition (affect perception, skills of the theory of mind, and attribution styles) in the cognitive rehabilitation practices carried out to eliminate the cognitive problems that play an essential role in the functional impairment of schizophrenia. Social functioning (independent life, social life, and working life) is aimed to be increased with cognitive skill development (20,21). Often studied recently, Metacognitive Training (MCT) is a mixture of psychoeducation, cognitive rehabilitation, and cognitive behavioral treatment approaches and it focuses on the elimination of cognitive biases that lead to the continuation of delusional thinking (20,22). It wholly consists of 8 modules and can be implemented in the form of individual or group training. Through training, it is aimed to inform the patients with schizophrenia about the cognitive biases, to make them aware of the dysfunctional cognitive biases through exercises and to change the biased thoughts that form the basis for the development of the false believes and/or delusions. Within the exercises, presenting corrective experiences, alternative coping and development of information processing strategies are taught to the patients. Each module of MCT aims to improve problematic ways of thinking that are known to contribute to the development of delusions through content that includes different cognitive biases and areas that are assessed in the context of social cognition. The subjects discussed in the modules of MCT are: Attribution biases (module 1), jumping to conclusions (module 2 and 7), changing beliefs (module 3), theory of mind and social cognition deficits (module 4 and 6), memory (module 5), and mood and self-esteem (module 8) (20). The results of the study conducted with MCT have shown that the training program is effective on reducing the severity of delusional thinking, supporting insight development, improving jumping to the conclusion which is a cognitive bias and increasing social functioning (22-27).

Although both PST programs are known to be effective in reducing psychopathology and improving social functioning, there is not any enough data about their effects on cognitive functioning. With this study, it was aimed to examine the effect of PSST and MCT programs on general psychopathology, cognitive functioning and social functioning in patients with schizophrenia.

METHOD

Permission from the Ethics Committee of Non-Invasive Clinical Investigations of Kocaeli University was taken for the research (Kocaeli GOKAEK 2016/60).

Participants

From the patients following in outpatient service in Kocaeli University Department of Psychiatry, those were found to be suitable to receive group training were informed about the research. Patients who met the inclusion criteria agreed to participate in the study and signed the consent form were included in the study. Patients who agreed to participate in the study were randomly distributed between two groups. Each patient groups consisting of ten people, the first group received PSST and the second group received MCT. Groups training were held once a week in two sessions, each lasting 40-50 minutes. Each group was run by a trainer and a co-trainer. The trainers were experienced trainers who had previously run PSST (Aİ) and MCT (ZÖ) groups. The groups training was held for a total of 20×2=40 sessions between January and June 2016.

Participation Criteria

Being between the ages of 18 and 60, diagnosed with schizophrenia or schizoaffective disorder according to DSM-IV (28), not having visual, hearing or other physical impairments, having CGI severity point 5 and below, being on a regular medication for the last 3 months, not having mental retardation, not having alcohol-substance dependence, not having organic brain syndrome, being at least elementary school graduate, not having previous participation in a group therapy, and not receiving ECT in the last 6 months.

Applied measurements

Within two weeks before and after the training, positive and negative syndrome scale (PANSS) and clinical global impression-severity (CGI-S) to assess psychopathology, global assessment of functioning (GAF) and quality of life scale (QLS) to assess social functioning, cognitive assessment interview (CAI) to assess cognitive functioning were applied on the participant patients. CAI was applied by a researcher (AK) who participated in Turkish reliability and validity study of this scale and was experienced in applying it, PANSS, CGI-S, GAF, and QLS were applied by a researcher (FK) who is an experienced psychiatrist in applying these scales. The evaluators were blind to the groups.

Socio-demographic form: This form was prepared to evaluate the information about the diseases of the patients and the characteristics of the population which consists of information as age, gender, education, marital status, age of onset, duration of illness, number of hospitalizations, family history of psychotic disorder, suicide attempt, whether ECT is received, etc. The data were completed by referring to hospital records, information provided by patients and their relatives.

Positive and Negative Syndrome Scale (PANSS): It is a 30-point semi-structured interview scale developed by Kay et al. (29) with a seven-point rating of severity. PANSS consists of 30 psychological symptoms, 7 of which belong to the positive symptom subscale, 7 to the negative symptoms subscale, and 16 to the general psychopathology subscale. Turkish reliability and validity study of the scale was conducted by Kostakoğlu et al. (30).

Global Assessment of Functioning (GAF): It is an 'Axis V' assessment placed in DSM-IV (28). In a range of 0-100 for global functionality, the impact of the disease on mental, social and occupational/academic functioning is assessed. The high score indicates that functionality is better.

Clinical Global Impression-Severity (CGI-S): The clinical global impression (31) is a scale used for the global assessment of mental diseases and consists of 3 sections including severity of disease, improvement, and severity of side effects. In this study, only the severity assessment section was used. The interviewer scores each field between 1 (normal) and 7 (most extremely ill) based on their global experience with the disease. The high score indicates that the clinical symptoms are severe.

Quality of Life Scale (QLS): It was developed by Heinrich et al. (32), its Turkish validity and reliability study was conducted by Soygür et al. (33). It is a measure developed to assess the quality of life of patients with schizophrenia undergoing maintenance treatment. The scale is applied in a semi-structured interview format and is scored by the interviewer. Each item is rated with a seven-point Likert type scoring on the scale consisting of four sub-scales and 21 questions. The scale assesses the

richness of the patients' personal experiences, the quality of interpersonal relationships and their productivity in occupational roles.

Cognitive Assessment Interview (CAI): It was developed by Ventura et al. (34), its Turkish validity and reliability study was conducted by Boşgelmez et al. (35). It is a seven-point Likert type measurement tool developed to assess the cognitive functions of patients diagnosed with schizophrenia. It consists of 6 sections:

1. working memory,
2. attention/vigilance,
3. verbal learning and memory,
4. reasoning and problem solving,
5. speed of processing,
6. social cognition.

The interviewer assesses with the information obtained from both the patient and the patient's relative. The score received from the scale shows the degree of cognitive impairment and as the score increases, the severity of the cognitive impairment increases. CAI has not been developed to replace standard neurocognitive testing but is found to be adequate concerning the interview-based assessment of the cognitive functions. The internal consistency coefficient of the Turkish version of the scale was calculated as 0.97.

Statistical Analysis

The analysis of the data was done with SPSS package software (IBM SPSS Statistics for Windows, version 22.0, Armonk, NY: IBM Corp.). Mann Whitney U Test and Chi-square test were used to compare the descriptive characteristics of the groups. Paired Sample T-test was used for intra-group comparison of the mean scores before and after the intervention, and mixed design ANOVA was used for inter-group comparisons. Statistically, the p-value is smaller than .05 was accepted as significant.

RESULTS

A total of 20 patients with schizophrenia (male:13, 65%, female:7, 35%) participated in the study. All patients completed group training. The training lasted a total of 20 weeks. There was no exacerbation of the clinical status of the patients during the training period. None of the patient groups were different regarding demographic and clinical characteristics (Table 1).

The scores of the patients before and after the intervention and the intra-group and inter-group comparisons are presented in Table 2. In the comparison of pretests and posttests, decrease in PANSS and CAI scores and increase in GAF and QLS scores were detected. In inter-group comparisons, the difference between both pretests and posttests was not detected.

Table 1. Baseline sociodemographic characteristics of the groups

Characteristics	PSST	MCT	*P*
Age in years (mean±SD)	37.4±10.7	33.1±4.6	0.255
Years of education (mean±SD)	11.4±1.6	11.7±3.2	0.935
Onset of illness (mean±SD)	24.2±8.6	19.7±5.2	0.159
Illness duration, years (mean±SD)	13.2±8.4	13.6±6.1	0.495
Number of hospitalizations (mean±SD)	1.7±2.1	1.7±0.9	0.364
Gender/Male (number, %)	7 (70)	6 (60)	1.000
Single (number, %)	8 (80)	8 (80)	1.000

PSST, Psychosocial Skills Training; MCT, Metacognitive Training.

Table 2. Comparisons of the mean pretest and posttest scores within the group and between groups

		PSST	MCT	ANOVA **		Effect Size
		Mean ± SD	**Mean ± SD**	**F**	**P**	η_p^2***
Positive and Negative Syndrome Scale	Pre-test	85.3±25.7	78.4±21.3	0.013	0.911	0.001
	Post-test	79.0±22.8	72.4±21.2			
	*P**	**0.001**	**0.038**			
Clinical Global Impression-Severity	Pre-test	4.2±1.1	4.0±0.9	2.000	0.174	0.100
	Post-test	4.1±1.1	4.1±1.0			
	*P**	**0.317**	**0.317**			
Global Assessment of Functioning	Pre-test	55.0±12.6	60.0±10.8	1.000	0.331	0.053
	Post-test	60.0±11.5	63.0±11.1			
	*P**	**0.001**	**0.111**			
Cognitive Assessment Interview	Pre-test	23.3±4.8	19.9±4.5	1.392	0.253	0.072
	Post-test	15.0±4.7	13.8±2.8			
	*P**	**0.005**	**0.008**			
Quality of Life Scale	Pre-test	50.6±18.3	54.1±22.7	1.058	0.317	0.056
	Post-test	53.6±17.3	56.0±22.1			
	*P**	**0.004**	**0.027**			

PSST: Psychosocial Skills Training, MCT: Metacognitive Training, * Within group (paired sample t-test), **Mixed Design ANOVA, ***η_p^2: Partial eta squared.

DISCUSSION

In this study, improvements were observed in psychopathology, social functioning, and cognitive functioning after the training in two different study groups consisting of patients with schizophrenia. Clinical global impression did not change in both groups. Both programs include sessions for reducing symptom severity and developing insight and aim to improve the interpersonal skills of patients and increase their quality of life and functioning, such as level of daily living activities (16, 20, 25). Both programs have plenty of exercises to direct patients to alternative thinking, to teach patients that they can be mistaken in their own decisions and to improve their ability to understand others. In this respect, a general decrease in the psychopathology of the participating patients in both groups and a general increase in their quality of life are expected situations, and it is a consistent result with the previous studies (17-19,22-26).

The significant decrease in PANSS total scores can be explained by the effect of group training and group interactions. The fact that the training has been applied for 20 weeks and 40 sessions may have contributed to the development of interpersonal relationships in patient groups, trusting other people through sharing of experiences and developing insight through psychoeducation. Despite the decrease in psychopathology levels and an increase in quality of life, the unchanging CGI can be explained by the moderate level of clinical severity in both groups. It is clear there is a need for more extended training and treatment to have a significant clinical change.

Although the overall assessment of functioning increased in both groups after the training, achieving statistical significance in the PSST group can be explained by the fact that more role-playing and exercises were performed in this group. However, the statistical significance can be ignored because CGI assessment is a more general assessment than QLS. The fact that there was an increase in both groups and that there was no difference between the groups both at the beginning and after the training supports this argument. Conventional MCT interventions generally last for 8 weeks, but to provide an equal number of sessions in our study, MCT was applied in accordance with the practice guideline for 20 weeks in concordance with PSST group in the way of increasing the exercises. Among the studies of MCT, this study is the first to be applied for more than four months. The therapeutic effect of the group therapies on patients is well known (36,37). Both groups training may have contributed to the therapeutic features with the healing factors provided by group interactions. When the skill practices of MCT such as developing cognitive flexibility, not jumping to conclusions, alternative thinking, and understanding thoughts and feelings of others are assessed together with practices such as role-playing, problem-solving, and relationship development exercises in PSST, it is understandable that group interactions have improved interpersonal relationships and therefore social functioning. PSST is a long-term program based on skill development. While MCT program is predominantly based on the change of delusional thinking, it can be explained as finding a chance to develop relationship skills through the increase in the level of functionality of the patients participating in the program, being in a prolonged program and thus more interaction.

Both programs included cognitive improvement practices and contributed positively to cognitive functioning. In this study, cognitive functioning was assessed with a measurement tool (34) based on interviews rather than performance-based measuring. Since CAI directly assesses cognitive functioning with social reflections, it may have shown improvement in cognitive functions in parallel with the increase in social functioning and quality of life. Although the relation of this assessment tool with neurocognitive tests and social functioning was shown (34,35), findings in this study should be considered as findings to be examined with performance-based neurocognitive tests.

This research is essential in terms of evaluating the effects of two different training programs aimed at improving cognitive and social functioning in the treatment of schizophrenia. However, the results of the study should be evaluated within the following limitations. The fact that the study was conducted in a single center and with few patients made it difficult to generalize the data. Besides, the absence of the control group is also a significant drawback. Repeating the study by including different centers with larger sampling will provide us to achieve more convincing results. The fact that the medicines taken by the patients are not compared in terms of type and dose is another drawback. Cognitive assessment being carried out with an interview-based assessment tool rather than with performance-based neurocognitive tests can be considered as a limitation. Despite everything, this study has shown that both programs are two important tools that can be used in the management of schizophrenia alongside with medical treatment.

Ethics Committee Approval: Permission from the Ethics Committee of Non-Invasive Clinical Investigations of Kocaeli University was taken for the research (Kocaeli GOKAEK 2016/60).

Informed Consent: Patients who met the inclusion criteria agreed to participate in the study and signed the consent form were included in the study.

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