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A Pilot Study of Brief Eye Movement Desensitization and Reprocessing(EMDR) for Treatment of Acute Phase Schizophrenia*

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급성기 정신분열병의 치료로서 단기적인 안구운동 민감소실 및 재처리요법에 대한 예비연구*

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ABSTRACT

Objectives : Eye movement desensitization and reprocessing(EMDR) is a novel, time-limited psychotherapy originally developed for treatment of psychological trauma. The effectiveness of this therapy has been validated only for posttraumatic stress disorder ; however, EMDR is often applied to other psychiatric illnesses, including other anxiety disorders and depression. This pilot study tested the efficacy of EMDR added to the routine treatment for individuals with acute stage schizophrenia.

Methods : This study was conducted in the acute psychiatric care unit of a university-affiliated training hospital. Inpatients diagnosed with schizophrenia were randomly assigned to either three sessions of EMDR, three sessions of progressive muscle relaxation(PMR) therapy, or only treatment as usual(TAU). All the participants received concurrent typical treatments(TAU), including psychotropic medication, individual supportive psychotherapy and group activities in the psychiatric ward. The Positive and Negative Syndrome Scale(PANSS), the Hamilton Depression Rating Scale and the Hamilton Anxiety Rating Scale were administered by a clinical psychologist who was blinded to the patients' group assignment.

Results : Forty-five patients enrolled and forty patients(89%) completed the post-treatment evaluation. There

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were no between-group differences in the withdrawal rates of patients during the treatment or at the three-month follow-up session. All three groups improved significantly across each of the symptomatic domains including schizophrenia, anxiety, and depressive symptoms. However, a repeated measures ANOVA revealed no significant differences among the groups over time. Effect size for change in total PANSS scores was also similar across treatment conditions, but effect size for negative symptoms was large for EMDR(0.60 for EMDR, 0.39 for PMR and 0.21 for TAU only).

Conclusion : These findings supported the use of EMDR in treating the acute stage of schizophrenia but the results failed to confirm the effectiveness of the treatment over the two control conditions in three sessions. Further studies with longer courses of treatment, more focused target dimensions of treatment, and a sample of outpatients are necessary.

KEY WORDS : Schizophrenia · Eye movement desensitization and reprocessing(EMDR) · Clinical trial · Psychotherapy.

Introduction

Despite standard treatment with antipsychotic medication, many individuals with schizophrenia continue to suffer from significant residual symptoms and functional disabilities. In a recent large scale study of nearly 3,000 outpatients, less than half of the patients experienced a symptomatic remission at an assessment two year following treatment with antipsychotic medication, and even fewer, only one fourth of the patients experienced a functional remission(i.e., independent living and occupational/vocational status).[1] As this study suggests, psychosocial treatment in conjunction with psychopharmacotherapy are important components of the treatment and management of this difficult illness.[2)3)]

Empirically supported psychosocial treatments for schizophrenia include cognitive behavioral therapy (CBT), which has been related to symptomatic improvement and early remission, psychoeducation for medication compliance, assertive community treatment and family therapy, which have been associated with reductions in both relapse rates and readmission, social skills training, and cognitive remediation therapy, which has been linked to enhanced cognitive performance among patients with schizophrenia.[3-5)] However, with the exception of CBT, the evidence for other individual psychotherapies is inadequate.[4)]

Recently, individual CBT emerged as a standard adjunctive treatment for the management of the symptoms of schizophrenia. In the United Kingdom, CBT has been endorsed as a routine, standard treatment for schizophrenia by the National Institute for Clinical Excellence(NICE).[6)] However, despite the support of CBT for the treatment of schizophrenia, some advocacy and clinical groups have taken a stand against premature acceptance of this technique as a standard of care in the treatment of schizophrenia.[7)8)] Several meta-analyses of the efficacy of CBT for the treatment of schizophrenia suggest that individual CBT generally reduces the positive and probably negative symptoms of this disorder.[9-11)] However, one of meta-analyses noted that when only methodologically sound trials were taken into account, the overall effect sizes for the reduction of positive symptoms were only modest, while reductions in negative symptoms were not significant.[11)] With respect to the stability of the treatment effects of CBT, several studies have found that beneficial effects of CBT can last up to two years.[3)] However, some studies have noted a disappearance in these therapeutic gains five years after the completion of therapy.[12)] Additionally, some research outcomes question whether CBT actually reduces relapse rates and rates of rehosptialization among patients with schizophrenia.[3)]

Additional research is also needed to confirm the efficacy of CBT in treating the acute phase of the illness. Four randomized clinical trials including patients with non-affective schizophrenia spectrum disorders have been published ; two studies favored the use of

CBT over both treatment as usual (TAU)[13] and attention placebo treatment,[14] while the other two studies found no significant differences between CBT and supportive counseling.[15][16] Additionally, these studies included patients with schizoaffective and delusional disorders, thus, reducing the external validities of the these studies. These studies also only focused on the positive and negative symptoms of schizophrenia while other domains of this disorder, such as depression and anxiety, were not assessed. Moreover, 29－68% of the patients who were initially recruited for these studies were either excluded or refused to participate, raising concerns about generalizability. To establish a validated psychosocial treatment for acute schizophrenia, these issues must be addressed and handled in a clinical trial.

Recently, eye movement desensitization and reprocessing (EMDR), a novel psychotherapy developed for treatment of psychological trauma, has gained support among both clinicians and researchers.[17] The clinical application of this therapy ranges from the treatment of depression[18] to body dysmorphic disorder.[19] When compared to CBT, EMDR requires fewer sessions and no client homework is required.[20] This efficiency of EMDR and importance of trauma treatment in schizophrenia lead us to test the feasibility and effectiveness of brief EMDR with inpatients and assess whether EMDR provides additional benefits in the improvement of symptoms and remission over and above that of an attention placebo and treatment as usual. To our knowledge, no data on the use of EMDR in the treatment of schizophrenia have been published to date.

Methods

1. Study setting and design

This randomized controlled trial examined the effects of EMDR as a treatment of the acute phase of schizophrenia. All of the participants were recruited from the pool of admitted patients in a 27-bed, acute inpatient unit for severe mental illness at the Hanyang University Guri Hospital, Gyeonggi, South Korea, and the study protocol was approved by the institutional research review board of this institution. All participants signed an informed consent prior to being entered into the study. Recruited inpatients were randomly assigned to receive either EMDR+treatment-as-usual (TAU), progressive muscle relaxation (PMR) as an attention placebo treatment+TAU, or TAU. Additionally, participants were followed up for any readmissions during the next 24 months after the completion of the therapy.

2. Subjects

Inclusion criteria required inpatient status with a hospital stay of more than one week, an age of 18 to 65 years, a diagnosis of schizophrenia confirmed by the Structured Clinical Interview for DSM-IV axis I disorders (SCID-I)[21] and the on-call psychiatrists' judgment that the patient was capable of giving an informed consent.

Exclusion criteria included IQ less than 70, presence of any cognitive disorder, active alcohol or drug dependence, or the presence of any serious comorbid medical illness.

3. Assessment

The Positive and Negative Syndrome Scale for schizophrenia (PANSS),[22] the Hamilton Depression Rating Scale (HAM-D),[23] and the Hamilton Anxiety Rating Scale (HAM-A)[24] were administered by a clinical psychologist, who was blind to the treatment condition of the patient, at the baseline assessment (Week 0), after treatment (Week 4) and at follow-up (Week 16). The PANSS is a 30-item semi-structured rating interview which assesses the severity of the symptoms of schizophrenia in three domains : positive symptoms, negative symptoms, and general psychopathology. Individual item scores range from 1－7 and total scores range from 30 to 210.

The HAM-D is a 17-item clinical rating scale which assesses depressive symptoms, and the items are rated on either a five-point (0－4) or a three-point (0－2) scale. For the HAM-D, total scores rage from 0 to 54. The HAM-A is a 14-item clinical interview which is used to evaluate anxiety symptoms, and the total scores of the HAM-A range from 0－56. Each item is sco-

red on a scale of 0 (not present) to 4 (severe).

4. Intervention

1) Eye Movement Desensitization & Reprocessing (EMDR)

An eight-phase standard protocol of EMDR was delivered by two psychiatrists, who have received Part 2 training by the EMDR institute. The therapists had at least six months of clinical experience with EMDR treatment. Targets for EMDR were selected following discussion with the participants, and these targets included stressful life events which may have contributed to the patient's current admission, traumatic incidents from childhood or adulthood, treatment-related adverse events (e.g., involuntary admission or seclusion), or the experience of distressing psychotic symptoms (i.e., delusions or hallucinations). Three consecutive weekly sessions of EMDR were performed, with a typical session lasting 60 to 90minutes depending upon the patient's clinical need (i.e., time needed to process chosen target memories).

To maintain treatment fidelity, the third author examined the full series of videotapes of the EMDR from seven of the patients (54%) and rated the sessions' acceptability with a checklist. This checklist which was developed by the first author included ten yes-no formatted questions : an explanation of EMDR, seven items on the procedure of the session, and two for incomplete sessions. If more than three negative evaluations, the session was regarded as unacceptable. None of tested sessions were as such.

2) Progressive Muscle Relaxation (PMR)

For the attention placebo control, progressive muscle relaxation (PMR) using an abbreviated progressive relaxation technique (APRT),[25] was administered by two therapists. Three weekly sessions were provided. The first session lasted 90minutes, and the other two sessions lasted 60minutes.

The first session consisted of explaining the model of stress and anxiety (20minutes), teaching the rationale and the procedure muscle relaxation training (40minutes), and then performing a round of APRT with the patient (20minutes). At the end of the session, the therapist provided a self-teaching APRT cassette tape and a recorder so that the participant could practice the procedure as they listened to the tape later and complete a homework checklist of daily practice. The second and third session involved a review of the homework and feedback and/or a discussion of the procedure, followed by two rounds of APRT which were practiced with the therapist.

APRT involves tensing and relaxing 16 different muscle groups, including seven bilateral groups in the extremities, the shoulders and the hips. The entire process was completed with the therapist both instructing and simultaneously demonstrating the procedure to the patient. Each muscle group was tensed for seven seconds and then relaxed with the 'release' cue, while the participant's attention was directed toward the resulting sensations in the muscle group for an additional 30seconds. This sequence was repeated for each of the muscle groups.

3) Treatment-as-usual (TAU)

The third group received no experimental treatments but received a routine treatment at the ward, both of which the EMDR and PMR groups also received. This treatment included the use of psychotropic medication, group treatment and activities, and individual psychotherapy from their charging psychiatrists.

5. Statistical analysis

For the baseline comparison, a one-way ANOVA with post-hoc Scheffe test and a Chi square test were used. The baseline, after treatment, and 12-week follow-up scores were compared between the treatment groups using repeated measures ANOVA. The scores of HAM-A and HAM-D were rank-transformed to perform repeated measures ANOVA. For the variables that were not normally distributed, non-parametric tests were used instead (i.e., Kruskal Wallis test). Effect size was analyzed in each group using Cohen's d.

Statistical tests were two-tailed and the alpha level was set at 0.05. All of the data analyses were conducted using the Statistical Package for the Social Sciences (SPSS) software version 17.0 (SPSS Inc,

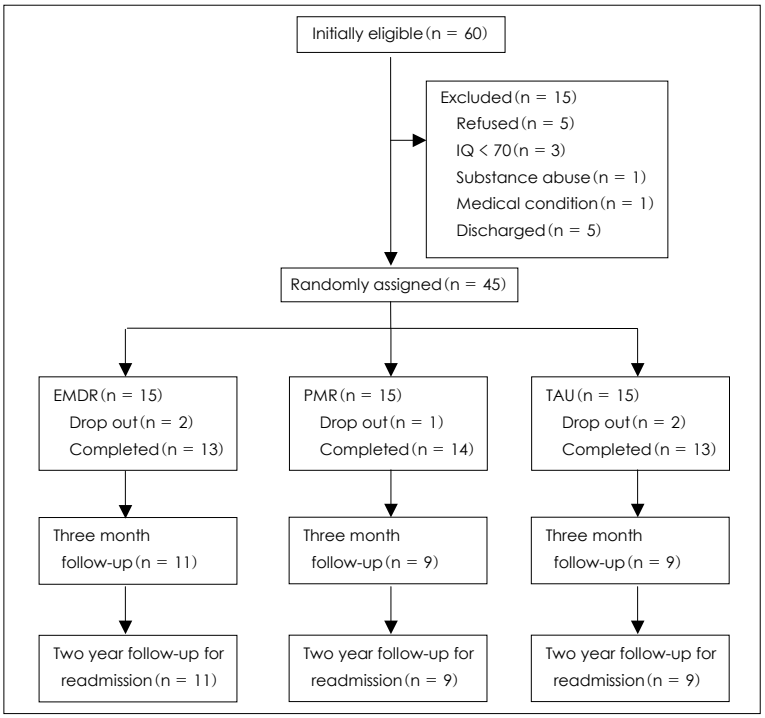

Fig. 1. Flow diagram : recruitment, allocation and follow-up of participants. EMDR : eye movement desensitization and reprocessing, PMR : progressive muscle relaxation, TAU : treatment as usual.

Chicago, IL, USA) for Windows.

Results

1. Baseline characteristics of participants

Fig. 1 illustrates the loss and continuation of participants throughout the study. Of the 45 patients who completed the baseline assessment, five(11%) dropped out and the remaining 40 finished the post-treatment evaluation. Four of the five patients who dropped out discharged abruptly and could not be scheduled for further sessions at the outpatient unit and one of the patients withdrew informed consent. The percentages of patients who did not complete the study were not different among groups : EMDR(n = 2, 13%) PMR(n = 1, 7%), and TAU(n = 2, 13%).

At three month following treatment, 11(28%) of the participants had left the study, and were 29 completed follow-up assessment. All of these patients were monitored for readmission and discontinuation of outpatient treatment for two years. None of these patients dropped out of the study during this period. There were no significant differences in the rates of drop-outs between the groups in any of the assessment intervals.

The majority of patients in this study were women (73%), in their early thirties(M = 32.6, SD = 8.7), and with a high school degree or higher(M = 12.5, SD = 2.1). Roughly half of the patients were admitted for psychiatric care for the first time(53%), and the other patients had had between two and five previous ad-missions for psychiatric care. The mean duration of the illness experienced by the patients in this study was 27.6months(median = 13.0, range 2-160), and they were receiving a mean of 520mg of chlorpromazine equivalent of antipsychotics(SD = 195) at the time of entry into the study.

The mean PANSS score for the full sample was 73.2 (SD = 13), which is comparable to mean score reported by a standardization study by Kay et al.[26] With re-spect to the depressive symptoms, the HAM-D mean (M = 10.9, SD = 5.9, median = 10) was consistent with a sample mean experience of mild de

Table 1. Baseline characteristics of patients randomly assigned to the EMDR, PMR, and TAU groups

Characteristics	EMDR(n = 15)		PMR(n = 15)		TAU(n = 15)		p
	Mean	SD	Mean	SD	Mean	SD	
Age(years)	29.9	7.4	36.0	9.5	31.8	8.4	0.15
Education	12.9	2.3	12.5	2.2	12.1	1.9	0.62
Illness(years)*	33.7	34.9	21.1	30.6	27.6	46.4	0.34
No of admissions*	2.1	1.4	1.5	0.9	1.8	1.2	0.34
Chlorpromazine equivalent*	562.5	205.4	467.9	147.6	516.4	229.1	0.35
Hospital days*	20.6	9.3	19.6	9.3	18.0	6.7	0.78
PANSS	73.1	7.6	69.8	16.6	76.8	13.3	0.35
HAM-D*	11.9	6.6	9.6	6.2	11.1	5.1	0.48
HAM-A*	10.3	7.9	8.6	7.3	8.8	6.0	0.72
	n(%)		n(%)		n(%)		
Gender							
Men	3(20)		6(40)		3(20)		0.36
Women	12(80)		9(60)		12(80)		
First onset							
Yes	6(40)		10(67)		8(53)		0.34
No	9(60)		5(33)		7(47)		

By one-way ANOVA and Chi square test. * : Kruskal Wallis rank test was used for variables violating the normal distribution. EMDR : eye movement desensitization and reprocessing, PMR : progressive muscle relaxation, TAU : treatment as usual, PANSS : Positive and Negative Syndrome Scale for Schizophrenia, HAM-D : Hamilton Depression Rating Scale, HAM-A : Hamilton Anxiety Rating Scale, SD : standard deviation

Table 2. Means and SDs for symptom variables at baseline(n = 45), post-treatment(n = 40) and follow-up(n = 34)

Variable	EMDR						PMR						TAU					
	Baseline		Posttreatment		Follow-up		Baseline		Posttreatment		Follow-up		Baseline		Posttreatment		Follow-up	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
PANSS	73.1	7.6	62.7	12.7	47.3	10.4	69.8	16.6	61.7	15.9	47.2	7.9	76.8	13.3	67.2	15.9	54.7	13.8
Positive	16.9	3.5	12.2	3.5	10.0	2.4	15.9	3.2	12.9	4.2	9.0	1.6	18.8	5.2	15.4	5.5	11.6	4.1
Negative	18.7	3.7	16.2	4.6	12.6	4.4	18.5	5.9	17.4	5.7	14.1	4.2	18.5	5.4	17.4	3.7	15.1	6.6
General	37.5	5.7	34.4	8.5	24.7	6.0	35.5	9.4	31.4	8.5	24.1	4.4	39.5	7.4	34.4	7.8	28.0	6.2
HAMD	11.9	6.6	10.9	8.3	4.7	4.1	9.6	6.2	7.5	5.7	3.3	2.2	11.1	5.1	7.3	3.3	4.0	1.0
HAMA	10.3	7.9	8.9	8.3	3.6	2.8	8.6	7.3	5.9	6.2	2.7	1.7	8.8	6.0	6.2	4.7	3.0	2.1

Each of the treatment groups improved significantly over time in all measures. However, the between group differences were non-significant by the repeated measures ANOVA. EMDR : Eye Movement Desensitization and Reprocessing, PMR : progressive muscle relaxation, TAU : treatment as usual, PANSS : Positive and Negative Syndrome Scale for Schizophrenia, HAMD : Hamilton depression rating scale, HAMA : Hamilton anxiety rating scale, SD : standard deviation

pression Similarly, the HAM-A mean suggests a sample mean experience of mild anxiety(M = 9.2, SD = 7.0, median = 7).

As shown in Table 1, the EMDR, PMR, and TAU groups were matched according to their demographics, clinical histories and variables, and baseline symptoms profiles.

2. Group difference after treatment and 12-week follow-up

Table 2 presents the mean baseline scores, post-treatment scores, and 12-week follow-up scores for each of the groups. The repeated measures ANOVA revealed that each of the treatment groups improved significantly over time ; however, there was no sig-

Table 3. Two year follow-up of patients randomly assigned to EMDR, PMR, and TAU

Characteristic	EMDR (n = 15)	PMR (n = 15)	TAU (n = 15)	p
	n(%)	n(%)	n(%)	
Two year follow-up				
Yes	11(73)	9(60)	9(60)	0.75
No	9(82)	6(40)	6(40)	
Readmission				
Yes	2(18)	5(42)	3(33)	0.47
No	4(16)	7(58)	6(67)	

EMDR : eye movement desensitization and reprocessing, PMR : progressive muscle relaxation, TAU : treatment as usual

nificant time by treatment group interaction for the total or subscale scores of the PANSS : total PANSS score(F = 0.73, p = 0.49) ; positive scale score(F = 1.61, p = 0.22) ; negative scale score(F = 0.23, p = 0.79) ; general scale score(F = 0.98, p = 0.39).

For HAM-D and HAM-A scores, each group showed significant effect of treatment over time but no significant group-by-time interaction : HAM-D(F = 0.41, p = 0.67) ; HAM-A(F = 0.70, p = 0.51).

3. Post-treatment effect size analysis

The effect sizes for change in total PANSS scores between baseline and three month follow-up were 0.82 in EMDR, 0.66 in PMR, and 0.63 in TAU only group : For positive symptoms, 0.75, 0.81, and 0.61 ; negative symptoms 0.60, 0.39, and 0.27 ; general psychopathology scores, 0.74, 0.61, and 0.64.

4. Two year follow-up

As seen in Table 3, two of nine patients in EMDR group, five of 12 in PMR, three of nine in TAU readmitted during the two year period : however, there was no statistical difference between groups.

Discussion

In this first clinical study of EMDR for schizophrenia, it was found that EMDR is both a feasible treatment and acceptable to individuals experiencing an acute schizophrenic episode. Two patients out of the fifteen(13%) withdrew before the end of treatment period in the EMDR group and eleven(73%) patients in EMDR group were followed-up after three months ; this percentage was not statistically different from those of the other conditions. Similar or higher rates of attrition have been recorded in studies examining the efficacy of CBT in the treatment of patients with acute psychosis.[13-16)27)] Additionally, there may be a concern for the safety of the patients undergoing treatments that may involve emotionally-charged materials, especially for patients in the early stage of psychosis. The results of this study suggest that when carefully executed, this is not the case. No patients in this study showed any exacerbation of symptoms due to the treatment, and no patient had to withdraw due to a worsening of their condition. Similarly, a recent study outlined the successful application of exposure-based CBT for PTSD among patients with schizophrenia and schizoaffective disorder.[28)]

This study was unable to demonstrate the superiority of EMDR over either the attention placebo treatment(PMR) or the treatment as usual conditions with respect to symptom improvement when followed-up for three months post-therapy and when examining the readmission rates during a two year follow-up. It could be that each of the group improved tremendously in their symptoms from the early stage of hospitalization (as the second or third week in this study) to the follow-up three months later. As such, it could be that there was little room for further improvement over and above these therapies with the use of brief sessions of EMDR. This finding is comparable to a study by Haddock et al.[15)] in which ten sessions of CBT were given to inpatients with acute psychosis, and no differences were found between those patients receiving CBT and those receiving the attention control treatment. However, each of these studies had was small sample sizes. As such, type II error cannot be ruled out due to inadequate statistical power.

Previous research examining CBT for the treatment of chronic medication-resistant schizophrenia consistently has supported the efficacy of CBT, particularly for the positive symptoms of the disorder. However, studies on acute stage of psychosis showed mixed results.[29)] This appears to be especially true when the

treatments are concentrated in early stage such as within five weeks, CBT was no better than the control groups.[15][16] Rather, longer duration of CBT which continue from the early phase of the disorder over several months appear to have benefits. Therefore, the dose of treatment (i.e., time and length of EMDR) may in part explain the results of this study. Most studies on the effects of CBT have provided at least ten sessions over the course of five weeks, with booster sessions often being added.[27]

The typical number of sessions that are required in EMDR is not known ; however, based on the PTSD literature, this value likely ranges between three (in single event related-PTSD)[30] to 12 (in combat veterans).[31] However, no information is available with respect to the use of EMDR for the treatment of schizophrenia or psychotic disorders. As such, it may require a longer duration of therapy than three sessions. It is likely that six to 12 sessions would be beneficial, given the complexity of this disorder.

This study objectively measured anxiety and depressive symptoms, another important area of symptom profiles which has often been neglected in studies of schizophrenia. Interestingly, a study of CBT for PTSD among patients with schizophrenia spectrum disorders did not find an improvement in depression and anxiety symptoms although symptoms of PTSD symptoms had improved.[28] This study did not cover post-traumatic symptom evaluation. Further studies will be necessary to develop EMDR strategies for specific area of interests (e.g., treatment adherence, functional outcome, or quality of life) and for specialized domains of schizophrenic symptomatology (e.g., delusion, hallucinations, or negative symptoms).

Finally, the targets of EMDR in our study were arbitrary and broad. Given the limitations of time, it was better to focus on specific elements of the patients' experiences. EMDR in this study targeted the wide range of patient concerns including stressful life events, psychotic symptom-related distress, treatment-related adversities (medication side effects or involuntary admission), social stigma of the illness, and individual traumas. This may be rational in a clinical sense ; however, to improve the internal validity of the study, increased constraints should be implemented in the future and future studies may benefit form a more specific and focused targeting of patient-related concerns.

Additional limitations of this study include the possible exclusion of more severe, psychotic patients at the entrance of the study. This study relied on the attending psychiatrist's decision with respect to the patients' capability to give an informed consent ; as such, there may have been a selection bias at this point. However, this is a more general problem associated with studying patients with acute phase psychosis, and the mean scores of the PANSS of patients in this study indicate that more stable patients were not overly represented in this sample. Additionally, the results of this study will need to be replicated with a study involving a longer duration of therapy, and studies of outpatients who are stable but continue to display persistent symptoms are also needed. Studies that are focused on PTSD symptoms among patients with schizophrenia as well as other important domains of schizophrenia, such as quality of life, treatment adherence and vocational function are also needed.

Finally, EMDR group in this study showed large effect size for negative symptoms while the other groups demonstrated moderate level. Further studies with larger sample size are needed to confirm this finding.

Despite no group difference was found, this study confirmed the safety and feasibility of the use of EMDR in the treatment of acute psychotic illness. This pilot study opens up many areas of interesting research, as well as elucidating various questions for future research.

References

1. **Lambert M, Schimmelmann BG, Naber D, Schacht A, Karow A, Wagner T, et al.** Prediction of remission as a combination of symptomatic and functional remission and adequate subjective well-being in 2960 patients with schizophrenia. J Clin Psychiatry 2006;67:1690-1697.
2. **Huxley NA, Rendall M, Sederer L.** Psychosocial treatments in schizophrenia: a review of the past 20 years. J Nerv Men Dis 2000;188:187-201.
3. **Patterson TL, Leeuwenkamp OR.** Adjunctive psychosocial therapies for the treatment of schizophrenia. Schizophr Res 2008;100:108-119.

4. **Bustillo J, Lauriello J, Horan W, Keith S.** The psychosocial treatment of schizophrenia: an update. Am J Psychiatry 2001;158:163-175.
5. **Lauriello J, Bustillo J, Keith SJ.** A critical review of research on psychosocial treatment of schizophrenia. Biol Psychiatry 1999;46:1409-1417.
6. National Institute for Clinical Excellence: Clinical Guideline: Schizophrenia-Core Interventions in the Treatment and Management of Schizophrenia in Primary and Secondary Care. London: National Institute for Clinical Excellence;2002.
7. **Jones C, Cormac I, Silveira da Mota Neto JI, Campbell C.** Cognitive behaviour therapy for schizophrenia. Cochrane Database Syst Rev 2004;(4):CD000524.
8. **Marlowe K.** Over-optimism of cognitive behavior therapy for schizophrenia. Am J Psychiatry 2006;163:1294.
9. **Pfammatter M, Junghan UM, Brenner HD.** Efficacy of psychological therapy in schizophrenia: conclusions from meta-analyses. Schizophr Bull 2006;32 Suppl 1:S64-S80.
10. **Zimmermann G, Favrod J, Trieu VH, Pomini V.** The effect of cognitive behavioral treatment on the positive symptoms of schizophrenia spectrum disorders: a meta-analysis. Schizophr Res 2005;77:1-9.
11. **Wykes T, Steel C, Everitt B, Tarrier N.** Cognitive behavior therapy for schizophrenia: effect sizes, clinical models, and methodological rigor. Schizophr Bull 2008;34:523-537.
12. **Durham RC, Chambers JA, Power KG, Sharp DM, Macdonald RR, Major KA, et al.** Long-term outcome of cognitive behaviour therapy clinical trials in central Scotland. Health Technol Assess 2005;9:1-174.
13. **Startup M, Jackson MC, Bendix S.** North Wales randomized controlled trial of cognitive behaviour therapy for acute schizophrenia spectrum disorders: outcomes at 6 and 12 months. Psychol Med 2004;34:413-422.
14. **Drury V, Birchwood M, Cochrane R, Macmillan F.** Cognitive therapy and recovery from acute psychosis: a controlled trial. I. Impact on psychotic symptoms. Br J Psychiatry 1996;169:593-601.
15. **Haddock G, Tarrier N, Morrison AP, Hopkins R, Drake R, Lewis S.** A pilot study evaluating the effectiveness of individual inpatient cognitive-behavioural therapy in early psychosis. Soc Psychiatry Psychiatr Epidemiol 1999;34:254-258.
16. **Lewis S, Tarrier N, Haddock G, Bentall R, Kinderman P, Kingdon D, et al.** Randomised controlled trial of cognitivebehavioural therapy in early schizophrenia: acute-phase outcomes. Br J Psychiatry Suppl 2002;43:s91-s97.
17. **Maxfiled L.** Current status and future directions for EMDR research. J EMDR Res Prac 2007;1:6-14.
18. **Bae H, Kim D, Park YC.** Eye Movement desensitization and reprocessing for adolescent depression. Psychiatry Investing 2008;5:60-65.
19. **Brown KW, McGoldrick T, Buchanan R.** Body dysmorphic disorder: Seven cases treated with eye movement desensitization and reprocessing. Behav Cogn Psychother 1997;25:203-207.
20. **van Etten ML, Taylor S.** Comparative efficacy of treatment for posttraumatic stress disorder: a meta-analysis. Clin Psychol Psychother 1998;5:126-144.
21. **First MB, Gibbon M, Spitzer RL, Williams BW.** Structured Clinical Interview for DSM-IV Axis I Disorders, research version. New York: Biometric Research;1996.
22. **Kay SR.** Positive and negative syndrome in schizophrenia: assessment and research. Vol 5. New York: Brunner/Mazed;1991.
23. **Hamilton M.** A rating scale for depression. J Neurol Neurosurg Psychiatry 1960;23:56-62.
24. **Hamilton M.** The assessment of anxiety states by rating. Br J Med Psychol 1959;32:50-55.
25. **Bernstein DA, Borkovec TD.** Progressive Relaxation Training. Champaign, IL: Research Press;1973.
26. **Kay S, Fiszbein A, Opler LA.** The positive and negative syndrome scale(PANSS) for schizophrenia. Schizophr Bull 1987;13:261-276.
27. **Jackson HJ, McGorry PD, Killackey E, Bendall S, Allott K, Dudgeon P, et al.** Acute-phase and 1-year follow-up results of a randomized contolled trial of CBT versus Befriending for first-episode psychosis: the ACE project. Psychol Med 2008;38:725-735.
28. **Frueh BC, Grubaugh AL, Cusack KJ, Kimble MO, Elhai JD, Knapp RG.** Exposure-based cognitive-behavioral treatment of PTSD in adults with schizophrenia or schizoaffective disorder: a pilot study. J Anxiety Disord 2009;23:665-675.
29. **Munro SL, Baker JA, Playle J.** Cognitive behaviour therapy within acute mental health care: a critical appraisal. Int J Ment Health Nurs 2005;14:96-102.
30. **Shapiro F.** Eye Movement Desensitization and Reprocessing(EMDR) and the anxiety disorders: clinical and research implications of an integrated psychotherapy treatment. J Anxiety Disord 1999;13:35-67.
31. **Carlson JG, Chemtob CM, Rusnak K, Hedlund NL, Muraoka MY.** Eye movement desensitization and reprocessing(EDMR) treatment for combat-related posttraumatic stress disorder. J Trauma Stress 1998;11:3-24.