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Does Metacognitive Training Improve the Quality of Life in Patients with Schizophrenia?

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Does metacognitive training improve the quality of life in patients with schizophrenia?

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Abstract

Objective: The objective of this selective EBM review is to determine whether or not "Does metacognitive training (MCT) improve the quality of life in patients with schizophrenia?"

Study Design: Systematic review of three randomized controlled trials (RCTs) published in peer-reviewed journals between 2010-2014, all in the English language; two of which were published in 2014 and one in 2010.

Data Sources: Three randomized controlled trials found using PubMed.

Outcomes Measured: Quality of life with a focus on social relationships was assessed using the Brief Quality of Life Questionnaire of the World Health Organization (WHOQOL-BREF) or Quality of Life Scale (QLS).

Results: Briki et al. showed an improvement in the social initiatives variable on the QLS after MCT compared to the control group consisting of Supportive therapy (ST) and antipsychotic medications, however, data was not statistically significant (p-value >0.05). Moritz et al. 2010 showed statistically significant improvement in social functioning after MCT compared to the control of treatment as usual (p-value = 0.03). Moritz et al. 2014 also showed an improvement in quality of life regarding the social variable when compared to the control of COGPACK + antipsychotic medications, however, the results were not statistically significant (p-value = 0.16).

Conclusion: The articles analyzed in this EBM review claim MCT improves quality of life in patients with schizophrenia. Evidence from these studies are inconclusive on whether MCT improves social aspect of quality of life in patients with schizophrenia. Further studies incorporating larger sample size, sufficiently longer reassessment duration, and the effects of MCT on schizophrenia with comorbid substance abuse, are needed in order to determine the validity of MCT on improvement of quality of life in patients with schizophrenia.

Keywords: Metacognitive training, schizophrenia, quality of life

Schizophrenia is a psychiatric disorder defined by symptoms of delusions, hallucinations, disorganized thinking or speech, abnormal motor behavior, and negative symptoms including diminished emotional expression, avolition, alogia, and lack of social interactions.[1] Schizophrenia often negatively affects a person's quality of life and leads to a functional decline.[2] The Downward Drift hypothesis suggests people with schizophrenia are unable to function well in society which results in placement of a lower socioeconomic status.[2] Schizophrenia affects approximately 21 million people worldwide.[3] This disorder affects men and women equally but presents in the mid-to-early 20s in men and late 20s in women.[2] Generally, schizophrenia presents at the age of 15-55.[2] Substance use is often comorbid in schizophrenia, with a substance of choice of nicotine followed by alcohol, cannabis and cocaine.[2] An analysis in 2013 showed an economic burden of schizophrenia to be estimated at $155.7 billion domestically, with indirect costs comprising of $117.3 billion.[4] Individual costs for a patient with schizophrenia is estimated to be $12,885 annually.[5] In 2009-2011, approximately 382,000 emergency department visits were related to Schizophrenia.[6] With today's political debates regarding mental health and stricter gun policies, a greater focus is projected towards treatment of psychiatric disorders in all medical settings. With this in mind, management and improvement in quality of life in patients with schizophrenia is relevant to the physician assistant (PA) profession.

The exact cause of schizophrenia is unknown but there is a strong genetic link.[2] There is a 40% increased risk for an individual to have schizophrenia if both parents have schizophrenia and 12% increased risk if one first-degree relative has schizophrenia.[2] It is hypothesized that schizophrenia is related to an imbalance in dopamine activity in different neuronal tracts in the brain.[2] Decreased dopamine activity in the prefrontal cortical tract produces negative symptoms,

while increased dopamine activity in the mesolimbic tract produces positive symptoms in schizophrenia.[2] Patients with schizophrenia also have decreased gamma-aminobutyric acid (GABA) and decreased levels of glutamate receptors (NMDA receptors) in the hippocampus.[2]

Currently there is no cure for schizophrenia, but symptoms are managed with a multimodal approach using antipsychotic medications combined with cognitive behavioral therapy.[2] Second generation antipsychotics decrease negative symptoms to a greater extent and are preferred over first generation antipsychotics due to better side effect profile.[7] Cognitive behavioral therapy combines cognitive therapy and behavioral therapy and allows for the patient to understand how their feelings and behavior are affected by their thoughts.[2] A combination of pharmacologic treatment with therapy is currently the most effective therapy in the management of schizophrenia.[2]

While antipsychotics are the most effective at decreasing symptoms of schizophrenia, 40-60% of patients remain significantly impaired.[2] Alternative modalities are proposed to better improve quality of life for these patients. Metacognitive training (MCT) is a psychotherapeutic training module that targets cognitive errors and problem-solving biases involved in psychotic symptoms seen in schizophrenia.[8] Patients with schizophrenia who lack insight in their own pathology have comparatively worse social functioning.[9] Improving cognitive biases and symptomology of schizophrenia should improve social functioning. This paper evaluates three randomized controlled trials evaluating the efficacy of MCT.

OBJECTIVE

The objective of this selective EBM review is to determine whether or not " Does metacognitive training improve the quality of life in patients with schizophrenia?"

METHODS

Three randomized controlled trials (RCTs) were used in this review. The population studied included patients in Europe between the ages of 18-65 with a Diagnostic and Statistical Manual of Mental Disorders 4th edition (DSM- IV) criteria for diagnosis of Schizophrenia spectrum disorder. The intervention used in all three studies was metacognitive training (MCT) sessions. Total sessions of MCT varied between each study. The control groups consisted of either neuropsychological training (COGPACK) in addition to the use of antipsychotic medications, supportive therapy (ST) with the use of antipsychotic medications, or treatment as usual (TAU).

Each study analyzed in this review was found using keywords "schizophrenia," "metacognitive training," and "quality of life" in the PubMed database. All articles were published in the English language in peer-reviewed journals. These RCTs were chosen based on relevance to the clinical question and had patient oriented outcomes (POEMs). The inclusion criteria for this review were RCTs analyzing patient oriented outcomes published after 2007. Studies were excluded from this review if studies did not analyze quality of life or if systematic reviews were published with the caveat of RCTs published after given systematic review. The statistical data reported in these studies include p-values, F score, and mean change from baseline.

Table 1: Demographics & Characteristics of Included Studies

Study	Type	# of Pts	Age (yrs)	Inclusion criteria	Exclusion criteria	W/D	Interventions
Briki[9]	A multicenter randomized controlled trial	68	18-65	-Age 18-65 -DSM-IV criteria of schizophrenia spectrum disorder -persistent hallucination or delusions	intellectual disability, poor fluency in French, DSM-IV criteria for substance abuse, unable to give consent	14	Metacognitive training (MCT) sessions 1 hour, twice a week for 8 weeks; a total of 16 sessions
Moritz S (2010)[10]	Randomized controlled trial	36	18-65	-age 18-65, schizophrenia spectrum diagnosis	-age lower than 18 or higher than 65, IQ <70, and inadequate command of the German language	N/A	8 MCT sessions lasting 45-60 min per session
Moritz (2014)[11]	2-center, randomized, controlled, assessor-blind, parallel group trial	150	18-65	-age 18-65, DSM-IV criteria for schizophrenia spectrum disorder according to the Mini-international Neuropsychiatric Interview with a present or prior episode if delusional symptoms	-substance dependence, IQ <70, severe organic brain damage, scores of 5 or higher on PANSS hostility item and of a 6 or higher on the PANSS suspiciousness item	42	MCT sessions of 45-60 min for a total of 16 sessions

OUTCOMES MEASURED

All three studies analyzed changes in quality of life, primarily social life, reported by patients using a Quality of Life scale (QoL). In the Briki et al. study, the social aspect of quality of life was assessed using the Quality of Life Scale (QLS).[9] Participants answered eight specific items regarding the social variable of QoL. QLS was scored using a 6-point scale ranging from 0-5. Patients were assessed initially (less than 4 weeks before MCT) and at the end of training (less than 4 weeks after MCT).[9]

Moritz et al. 2010 also assessed the social aspect of QoL using Brief Quality of Life Questionnaire of the WHO (WHO-QoL-BREF).[10] The WHO-QoL BREF analyzed physical, psychological, social health, and environment. Items were scored 1-5, with 1 representing very dissatisfied and 5 representing very satisfied. Participants were assessed on the final MCT session.[10]

Moritz et al. 2014, analyzed the social variable of quality of life using WHO-QoL-BREF. Participants were assessed before MCT sessions and at 4 weeks, 6 months, and 3 years after MCT sessions.[11]

RESULTS

All three RCTs assessed the efficacy of MCT on patients with schizophrenia. In Briki et al., 68 in-and outpatients with schizophrenia from university and psychiatric hospitals in France were enrolled in this study.[9] Only 50 participants were assessed in the post-test due to refusal for follow-up or inadequate MCT sessions.[9] All patients were on antipsychotic medications which were converted to chlorpromazine equivalents. Patients with comorbid substance abuse were excluded from the study.[9] Participants were randomized into two different groups, either MCT (n=25) or the control (supportive therapy) (ST) (n=25) using an internet interface and QoL was

assessed using QLS.[9] The assessor was blind for the randomization.[9] Participants were assessed at baseline (T0) and after 8 sessions of MCT (T1).[9] Briki et al. showed an improvement in the social initiatives variable on the QLS after MCT but data was not statistically significant.[9] No improvement was found in the social circles variable.[9] Data reported was analyzed using ANCOVA and is displayed in Table 2.

Table 2: Briki et al. Mean Scores Pre and Post MCT[9]

	Control (ST) (n=25)		MCT (n=25)				
	T0(mean)	T1(mean)	T0(mean)	T1(mean)	F-score	Mean change from baseline	p-values
Social circle	2.48	2.48	2.48	2.04	4.48	-0.44	<0.05
Social initiatives	2.28	2.00	1.36	1.88	1.70	0.52	>0.05

In the Moritz et al. 2010 study, 36 participants from in-and outpatient programs for chronic schizophrenia in Germany were enrolled in this study.[10] Patients with substance abuse or dependence were not excluded and comprised of 53% of participants in this study.[10] Participants were assigned to either MCT group (n=18) or the control group which was treatment as usual (TAU) (n=18) by a statistician and were kept blind to trainers and assessors.[10] Both groups had 100% completion rate. QoL was assessed at baseline and after 8 weeks of MCT.[10] The control group (TAU) received MCT after the reassessment.[10] Moritz et al. 2010 showed significant improvement in social functioning after MCT compared to the control (TAU).[10] Data was analyzed using covariate and $t(32)=2.23$ and p-value= 0.03.[10]

In Moritz et al. 2014, 150 participants with schizophrenia from in-and outpatient facilities in Germany were enrolled in this study.[11] Patients with comorbid substance dependence were excluded from the study.[11] Patients were randomly assigned to either MCT (n=76) or the control

(COGPACK) (n=74). Assessors were kept blind to group assignment.[11] Participants were assessed at baseline, at 4 weeks, 6 months, and 3 years after MCT.[11] In the MCT group, 72 people participated in the 4 week reassessment while 4 refused.[11] The control group had 63 people at the 4 week reassessment while 11 people refused.[11] At the 6 month follow-up, 67 people were reassessed while 5 refused in the MCT group.[11] The control group had 62 participants and only 1 refusal. At the 3 year follow-up, only 47 people were reassessed for the MCT group and 45 people were reassessed in the control group.[11] Completion rate at the 3 year follow-up was 61.3%.[11] This study showed an improvement in quality of life regarding the social variable, but data was not statistically significant (p-value= 0.16).[11] The values discussed were analyzed using ANCOVA and are displayed in Table 3.

Table 3: Moritz et al. 2014 Treatment Outcomes[11]

	Mean						
	MCT Group (n=76)		Control group (COGPACK) (n=74)		P-value	F-score	Mean change from baseline
	Pretreatment	Follow-up	Pretreatment	Follow-up			
Social QoL	51.33	55.37	49.14	50.39	0.16	1.98	4

DICUSSION

Schizophrenia is a psychiatric disorder characterized by symptoms of delusions, hallucinations, disorganized thinking or speech, and lack of social interactions.[1] Schizophrenia often negatively impacts quality of life and leads to a functional decline.[2] Although antipsychotics are the most effective at decreasing symptoms of schizophrenia, many remain significantly impaired.[2] Alternative outlets, such as MCT, are proposed to better improve the quality of life for these patients. MCT is a new treatment program that is a mixture of cognitive-

based therapy (CBT) and cognitive remediation (CRT) which work by changing cognitive thoughts that are involved with the formation of delusions.[10] MCT is available online, for free, in 35 different languages.[8] MCT is performed in group setting with 3-10 patients per group. Each MCT session lasts 45-60 min with a total of 8 sessions for a full cycle.[12] Although there are no harmful effects from MCT, there are a few limitations to this type of treatment. MCT is administered by a professional such as a practitioner or a psychotherapist.[8] While MCT is free of charge to administer, patients are fiscally responsible for therapy sessions with their provider. Individuals who cannot work due to their illness, may find it hard to use this therapy. Furthermore, patients with schizophrenia must be willing to participate in training sessions which can involve many weeks.

This review analyzes if MCT improves social quality of life in patients with schizophrenia. Each article analyzed had limitations. The Briki et al. study showed an improvement in social initiatives but no improvement in the social circle variable.[9] The study state patients showed a reduction in cognitive biases, particularly, with preoccupation.[9] The authors justify an indirect improvement in the social aspects of quality of life by explaining how a reduction in preoccupation would allow for patients to be aware of their need for social relationships.[9] Although this is a reasonable statement, more studies are needed before generalizing that MCT improves social relationships. A key limitation for this study was a relatively small sample size of 50 participants that were assessed for post-test effects. Not only did the study contain a small sample size, but participants were assessed at the end of 8 weeks; a duration of time that may not be long enough to foster new relationships or improve their social circle.[9]

Moritz et al. 2010 study also had similar limitations. This study showed significant

improvement in social functioning after MCT when compared to the control group.[10] This study included a small sample size of 36 participants with a short reassessment period of 8 weeks.[10] This study also included participants with a comorbid diagnosis of substance dependence, a variable that was excluded from the other studies.[10] Since the effects of MCT on substance dependence was not directly measured, the improvement in social functioning could be due to an improvement in substance dependence. Unlike the other studies, Moritz et al. 2010 did not mention if participants were concurrently on antipsychotic medications. Another limitation addressed in the Moritz et al. 2010 study was that patients in the TAU group, may have received information regarding MCT and may have indirectly benefited from the training.[10]

The Moritz et al. 2014 study also resulted in an improvement in quality of life regarding the social variable however, data was not statistically significant.[11] The study accredits the improvement in quality of life to improvement in cognitive biases such as a reduction in jumping to conclusions and delusions.[11] The authors state a reduction in these biases can improve social relationships overtime.[11] Unlike the other studies in this review, Moritz et al. 2014, did have a larger sample size (n=150) and a longer follow-up duration of 3 years.[11] Given the number of participants and duration of follow-up, this study is a good representation of whether MCT can improve social relationships. This study, however, was not without limitations. All participants in this study were on antipsychotic medications.[11] The study failed to mention type of antipsychotic used, if these medications were standardized across all participants, and if medication compliance was an issue. The use of antipsychotics could skew the participants perception of improved quality of life. Although this study included a larger sample size, the 3-year reassessment resulted in increased losses to follow-up and a completion rate of only

61.3%.[11] In the end, only 47 participants from the MCT group and 45 participants from the control (COGPACK) were reassessed.[11]

CONCLUSION

The articles analyzed in this EBM review claim MCT improves the quality of life in patients with schizophrenia. Evidence from these studies are inconclusive on whether MCT improves social aspect of quality of life in patients with schizophrenia. Two of the studies (Briki et al., Moritz et al. 2014) argue social life did improve, although data were not statistically significant.[9,11] Moritz et al. 2010, showed improvement in the social aspect of quality of life that was statistically significant, however limitations such as small sample size, and the inclusion criteria of comorbid substance abuse could have skewed the results.

Further studies should include larger sample size during reassessment and a longer duration of time to assess for post treatment effects. The effects of MCT on improvement of substance abuse or dependence should be further investigated in order to properly evaluate participants with a comorbid diagnoses of schizophrenia and substance dependence.

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