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Original Article

The effectiveness of mindfulness-based cognitive therapy for reducing rumination and improving mindfulness and self-compassion in patients with treatment-resistant depression

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Abstract

Introduction: Depression is one of the most important psychiatric disorders, and the rate of recurrence is high. The heavy cost burden of depression is probably due to treatment-resistant depression. The purpose of this study was to determine the effectiveness of mindfulness-based cognitive therapy (MBCT) in patients with treatment-resistant depression (TRD).
Method: The present study was a quasi-experimental study conducted with twenty-four patients with treatment-resistant depression. Participants were selected by purposive sampling and randomly assigned to two groups, an experimental group and a control group. The experimental group received MBCT and antidepressants, while the control group received antidepressants only. The Hamilton and Beck Depression Inventory, Self-Compassion Scale, Thought Rumination Scale, and Mindfulness Scale were administered. The treatment program was conducted in eight sessions; with a follow-up period of one month subsequent to treatment termination. Data were analyzed using descriptive statistics (mean and standard deviation) and inferential statistics (analysis of variance for repeated measures and Bonferroni's post-hoc test).
Results: The results showed that MBCT significantly reduced depression and ruminative thinking in the experimental group and also improved mediators such as mindfulness and self-compassion. Patients maintained gains over the one month follow-up period ($p < 0.01$).
Conclusion: The present study provides additional evidence for the effectiveness of MBCT for TRD.
Keywords: Mindfulness-based cognitive therapy, acceptance, rumination, self-compassion, depressive disorder, treatment resistant.

Introduction

Depression is one of the most devastating of all psychiatric disorders. It is the leading cause of mental and physical problems, affecting more than 300 million people.[1] Additionally, depression is considered a serious threat to the health of the community and is associated with significant mortality, disability, and economic burden.[2] Epidemiological studies have shown that the prevalence of this disorder is 27%.[3] Studies show that the prevalence of clinical depression in Iran is higher than in other countries and that women are more likely to be depressed than men.[4,5]

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Treatment-resistant depression (TRD) is an overriding public health problem.[5] Different definitions and models of TRD have been proposed. An overall agreement is that the lack of response to two or more different antidepressant medications represents TRD.[4] In TRD, the patient considers depression to be a part of himself or part of his self-concept; which can lead to total hopelessness and helplessness.[6] The high cost of depression may be due to TRD[7] and there are several explanations for this. First, TRD is common; if we consider the response to treatment as the criterion, 35% to 40% of the patients do not respond to treatment, and if we consider improvement as the criterion, 60 to 75 percent of patients do not improve.[8] Secondly, the duration and severity of depression are high. Thirdly, patients with TRD are more likely to exhibit both physical and mental signs and symptoms that lead to evident and persistent dysfunction and impose a heavy cost burden on health systems.[8] Therefore, a better understanding of the consequences of TRD is an important objective in the field of mental health.

Combinations of antidepressants are often used as a treatment strategy when initial antidepressants are not effective. Despite the popularity of this approach, the Food and Drug Administration has not approved any antidepressants as an effective and persistent method of combined treatment strategy for TRD.[4] Moreover, psychological interventions are more stable and longer lasting, because patients learn how to cope with their problems.[9] Depression is a multidimensional disorder with biological, psychological, social, and spiritual components.[10] Antidepressants only put emphasis on the biological aspects; therefore, antidepressants alone do not have sufficient effect for treatment of depression (especially TRD) and there is a high rate of relapse after patients stop taking antidepressants.[11] Although cognitive behavioral therapy is an effective treatment for depression, relapse remains a significant problem. Over recent years, a new cognitive behavioral therapy approach has emerged, known as the third wave and mostly based on acceptance and mindfulness. These treatments, which began in the early 1990s, have incorporated behavioral and cognitive components into new elements such as dialectical philosophy, mindfulness, acceptance, and spirituality.[11] Mindfulness-based cognitive therapy (MBCT) is one of these treatments, integrating training in mindfulness meditation with cognitive behavioral therapy. It is a relapse prevention intervention specifically for people who have a history of perennial major depressive disorder.[10] MBCT includes four well-known mediators that can positively affect TRD: mindfulness, reduced depressive rumination, increased acceptance and self-compassion, and reduced avoidance.[10] Mindfulness is referred to as non-judgmental awareness of present-moment current experience.[12] Kabat-Zinn defined mindfulness as a state of paying attention in a particular way which has three features: focusing purposefully and non-judgmentally on the present moment.[13]

The primary aim of this study is to determine the effect of MBCT on TRD and secondary objective include to determine the potential mediators of MBCT effects on TRD, including mindfulness, self-compassion, and rumination. Self-compassion is the main mediator of the effects of MBCT in preventing relapse of depression. Neff (2003b) defines self-compassion as consisting of three main components (each component has two aspects); self-kindness versus self-judgment, a sense of common humanity versus a feeling of isolation, and mindfulness versus over-identification with experience.[14] Research has shown that self-compassion correlates with psychological well-being and serves as a protective factor against depression.[15,16] Increasing self-compassion in depressed patients and reducing avoidance of unpleasant situations can help to lessen overall emotional suffering.[17,18]

Rumination is another main mediator of the effects of MBCT in preventing relapse of depression. Depressive rumination is the most likely factor mediating the relationship between self-compassion and depression.[19,20] Depressive rumination indicates a cognitive symptom of depression that is generally considered to be maladaptive. Diagnostically, rumination does not exist in all types of depression. In fact, it is a prolonged depressed mood and predicts maintenance of clinical depression.[19,20] Rumination is usually regarded as repetitive, involuntary, and distressing experiences with a negative cognitive focus on the symptoms and consequences of depression.[21]

Several national clinical guidelines have proposed MBCT as a preventative and affordable treatment for relapse of major depressive disorder (such as the National Institute for Health and Care Excellence, 2009).[22] There are theoretical considerations which suggest the MBCT is effective for reducing the rate of depression relapse and for primary maintenance of the effects of treatment for chronic depression that is more specifically used in TRD.[10] Research has repeatedly shown that some patients prefer psychological treatments to taking antidepressants and it has also been shown that the combination of psychological therapies and antidepressants is more effective and persistent for treatment of psychological disorders.[23] Considering that MBCT has been shown to be effective for preventing and treating depression, it seems likely to be effective for treating TRD too. Therefore, the main objective of this

study was to determine the effectiveness of MBCT for depression symptoms in patients with TRD. The specific objectives of the present study were to determine the effectiveness of MBCT for mindfulness, self-compassion, and rumination in patients with TRD.

Methodology

Participants

The study design is experimental research (pre-test, post-test, and follow-up) with experimental and control groups. The study populations were all patients with TRD from Farabi Psychiatric Hospital. Means and standard deviations reported in previous studies were used to determine the required sample size.[24] Participants were selected with a purposive sampling method and randomly assigned to experimental or control groups. First, a list of all participants was prepared and then, drawing names out of a bowl, names were removed at random. The first name drawn was assigned to the experimental group and the second to the control group, and so on for all participants.

Procedure

The experimental group received MBCT and antidepressants, but the control group only received antidepressants. The MBCT sessions were held at Farabi Psychiatric Hospital and all of the patients were outpatients. The medication process was as follows: patients were initially treated with a dose of 60 mg citalopram for four to six weeks. Due to the lack of response during this period, they were given Sertraline at a maximum dose of 200 mg for four to six weeks. In addition to sertraline, bupropion was also prescribed. Anti-depressant medications were administered with appropriate dosages and durations, but no clinical response was observed, and so these patients were diagnosed as having treatment-resistant depression. The MBCT was conducted by a Master of Clinical Psychology (the corresponding author), who was trained in this field, and the supervisor (the lead author) monitored all of the treatment sessions.

The inclusion criterion was major depressive disorder diagnosed by psychiatrists and a clinical psychologist on the basis of structured clinical interviews. Additional criteria were lack of therapeutic response to adequate doses of two antidepressants for sufficient time (18 weeks); a moderate level of depression (score 17 or higher) according to the Beck Depression Inventory – Second Edition; minimum and maximum ages of 18 and 50 years old, respectively; the minimum educational level necessary to complete the questionnaire and; finally, patient's consent to participate in the study and signature of written consent. The exclusion criteria were severe suicidal thoughts, psychiatric disorder, and acute phases of mental disorders (e.g. signs and symptoms of psychosis, bipolar disorder, comorbid anxiety disorders, panic disorder, posttraumatic stress disorder, seasonal depression, or depressive disorder due to substance abuse or medical condition) lack of treatment assignments, absence from more than two sessions, or patient's unwillingness to continue taking part in the research (Figure 1).

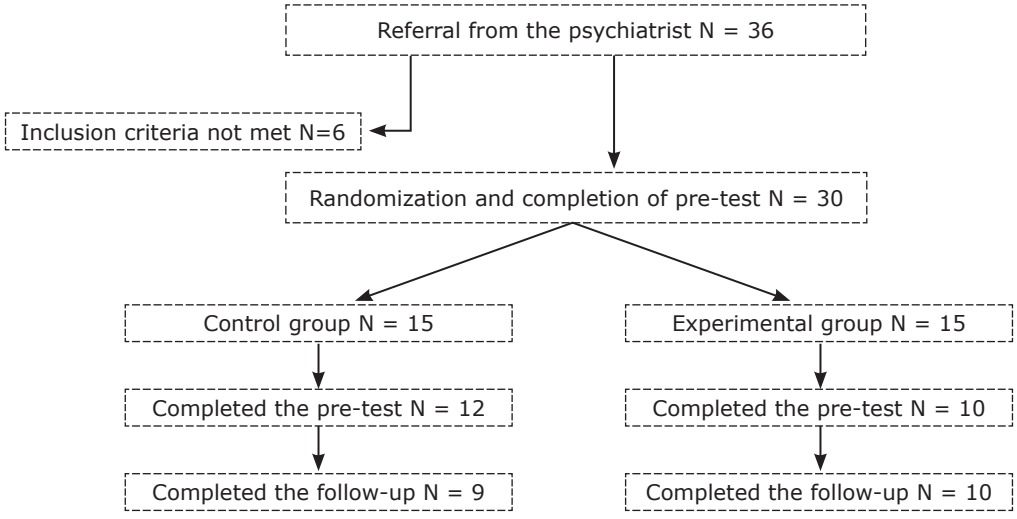

Figure 1 - Study flowchart

Ethical considerations

The study was conducted in accordance with the Declaration of Helsinki and approved by the Ethics Committee at Kermanshah University of Medical Sciences (clinical trial code: IR.KUMS.REC.1396.586). Participants gave their consent to participation in the study by signing the consent form.

Statistical analysis

Data were coded, input to the Statistical Package for the Social Sciences (SPSS), version 18, and analyzed using descriptive statistics (mean and standard deviation) and inferential statistics (mixed analysis of variance for repeated measures). It should be noted that the data analysis process was blinded.

Instruments

Structured Clinical Interview for DSM-IV Disorders (SCID)

This is a semi-structured interview guide that is administered by a mental health professional who is familiar with mental health standards and criteria. The Persian version of the SCID was normalized by Sharifi V et al. The kappa coefficient for general agreement was 0.6 and overall weighted kappa equaled 0.52 for current diagnoses and 0.55 for lifetime diagnoses.[25]

Beck Depression Inventory – Second Edition (BDI-II)

The BDI is a 21-item self-report inventory that measures cognitive, emotional, physical, and vegetative symptoms of depression.[26] The BDI-II is positively correlated with the Hamilton depression rating scale (r = 0.71), with good agreement, and it has also shown high one week test retest reliability (alpha coefficient = 0.91)

Hamilton Depression Rating Scale (HDRS)

The HDRS is the most widely used clinician-administered depression assessment scale. Recent studies have indicated an internal reliability coefficient of 0.83 for the 17-item HDRS and 0.88 for the 24-item HDRS.[23] A study has recently been conducted to fully investigate the HDRS' psychometric properties. In that article researchers reviewed 70 studies and found that the majority of HDRS items had a good reliability.[27] The reliability of the HDRS has been reported with a range from 0.65 to 0.91 for the general scale of depression severity.

Self-Compassion Scale – Short Form (SCS-SF)

The SCS-SF consists of 12 items and scores are based on how often an individual responds to feelings of inadequacy or suffering with self-kindness, self-judgment, mindfulness, isolation, common humanity, and over-identification. The short form has a high correlation (r = 97%) with the long scale and retest reliability has been reported to be 0.92%.[28] In Iranian samples, reliability and validity of this test have shown negative and meaningful correlations with perfectionism (0.33), negative affect (0.38), and external shame (0.21). Furthermore, the Cronbach's alpha coefficient for the whole scale was estimated to be 0.86 and coefficients for the sub-scales of "self-judgment vs. self-kindness," "common humanity vs. isolation" and "mindfulness vs. over-identification" were 0.68, 0.71, and 0.86 respectively.[29]

Ruminative Response Scale

The RRS consists of 22 items and measures individual responses to depressed mood. Reliability and validity were satisfactory for the scale's two dimensions. Analysis of external validity indicated that RRS scores correlated with BDI, State-Trait Anxiety Inventory, and 36-Item Short Form Health Survey scores (SF-36).[30] The psychometric properties of the Persian version have been reviewed and confirmed in several studies.[31]

Southampton Mindfulness Questionnaire (SMQ)

The SMQ has 16 items and measures mindful awareness of distressing thoughts and images (responding mindfully to unpleasant thoughts and images). Cronbach's alpha coefficient was reported as 0.89 in the normal population and 0.82 in a clinical group. Validation of the SMQ revealed a positive and significant correlation between it and the Mindful Attention Awareness Scale (MAAS).[32] For the Persian version of the SMQ, confirmatory factor analysis identified three factors (comparative fit index [CFI] = 0.9; normed fit index [NFI] = 0.83; root mean square error of approximation [RMSEA] = 0.08). The results also showed that the SMQ had good convergence with self-compassion (0.59) and positive affect (0.40) and good divergent validity when tested against negative affect (-0.35), depression scale (-0.36), anxiety (-0.30), and stress (-0.50).[33]

Treatment protocol

The instructions for treatment sessions are presented in Table 1. They are based on the guideline for mindfulness-based cognitive therapy for depression.[32]

Results

Comparisons of the demographic and clinical variables of experimental and control groups showed

that there were no differences in sex, educational level, marital status, or age (Table 2). Descriptive analysis of the variables was performed (Table 3). The Kolmogorov-Smirnov test was used to test the distribution of data. The results indicated that data were normally distributed for all variables ($p > 0.05$). Additionally, the Levene test was used to assess equality of variances for variables in treatment and control groups. The results showed that there was no difference between the variances of the groups ($p > 0.05$).

Table 1 - MBCT themes and content

Session	Themes	Home practice
Orientation session	Explaining the rationale of MBCT in relation to a person's history and expectations for attending MBCT	
Session one	Introducing "automatic pilot" and how it contributes to depression. Attending to direct experience through the five senses and body	Body scan and mindfulness of a regular activity
Session two	Doing and being mode. Awareness of unpleasant, pleasant, and neutral experiences, using the body to stay present	Body scan, mindfulness of breathing, pleasant events and mindfulness of regular activity
Session three	Staying with the present experience. Using breathing and body as an anchor to connect to the present moment	Mindful movement, stretch and breath. Regular breathing spaces
Session four	Linking habitual reactions to the unpleasant event with depression. Staying present with experience.	Sitting meditation breathing space
Session five	Needing no things to be different from how they are. Relating differently to experiences, accepting experience. Choice and responding.	Sitting meditating and working with difficulty breathing spaces
Session six	Seeing thoughts as product of mind. Thoughts are not facts. Relating differently to thought	Selection of guided practices breathing spaces
Session seven	Taking care of oneself in the face of lowering mood, responding to one's own pattern of early warning signs of depression, taking wise and skillful action	Sitting meditation, breathing space, developing an action plan using "working wisely with unhappiness and depression" worksheet
Session eight	Reviewing and reflecting on learning. Planning to continue mindfulness practice	
Follow-up	Reinforcing people to do daily mindfulness practice, share experiences and learn from each other	

MBCT = mindfulness-based cognitive therapy.

Table 2 - Comparison of demographic characteristics between the study groups

	Experimental group		Control group		
Group	**Frequency**	**Percentage**	**Frequency**	**Percentage**	**p-value**
Sex					
Male	3	33.3	2	22.2	0.624
Female	6	66.7	7	77.8	
Education					
High school			11.1	1	
Diploma	66.7	6	22.2	2	0.272
Associate degree	11.1	1	11.1	1	
Bachelor	22.2	2	55.6	5	
Marital status					
Single	44.4	4	55.6	5	
Married	44.4	4	44.4	4	0.462
Divorced	11.1	1	0	0	
Age					
19-24	22.2	2	22.2	2	
25-30	33.3	3	11.1	1	0.590
More than 30	44.4	4	66.7	6	

Table 4 indicates that MBCT significantly changed the variables depression and self-compassion, though rumination and mindfulness. These meaningful changes were significant and persistent over time.

Table 5 shows that in the experimental group meaningful changes were observed from pre-test to post-test ($p < 0.01$), while changes were stable and persistent in the follow-up period. In the control group, variables like depression (BDI) and ruminative response also decreased significantly, but the reductions were very low in comparison with the experimental group.

Table 3 - Descriptive analysis of variables

Source	Follow-up	Post-test	Pre-test
Depression (BDI)/ group			
Experimental	7.11 ± 2.93	6.11 ± 1.45	33.78 ± 9.41
Control	23.77 ± 7.27	27.66 ± 7.14	29.11 ± 7.30
Depression (Hamilton)/ group			
Experimental	4.44 ± 1.13	5.11 ± 1.26	20.77 ± 3.92
Control	17 ± 1.87	17.11 ± 1.53	16.33 ± 3.20
Ruminative response/ group			
Experimental	34.33 ± 5.26	38 ± 5.40	62.22 ± 10.69
Control	54.22 ± 3.92	56.88 ± 5.37	65.55 ± 6.91
Self-compassion/ group			
Experimental	48.77 ± 3.11	44.22 ± 2.86	27.22 ± 2.58
Control	21.66 ± 2.06	23 ± 0.50	25.89 ± 2.84
Mindfulness/ group			
Experimental	72.55 ± 3.39	58.66 ± 6.10	31.66 ± 12.66
Control	19.77 ± 5.19	23.66 ± 3.24	20.88 ± 7.02

BDI = Beck Depression Inventory.

Table 4 - Mixed-design analysis of variance with repeated measures of variables

Source	SS	df	MS	F	Sig.	ES
Depression (BDI)						
Interaction (time × group)	1024	1	1024	63.751	0.001	0.79
Within-subjects (time)	2304	1	2304	143.440	0.001	0.90
Between subjects (group)	1688.96	1	1688.96	16.84	0.001	0.51
Depression (Hamilton)						
Interaction (time × group)	650.25	1	650.25	83.903	0.001	0.84
Within-subjects (time)	552.25	1	552.25	71.258	0.001	0.81
Between subjects (group)	606.68	1	606.68	80.39	0.001	0.83
Self-compassion						
Interaction (time × group)	1495.11	1	1495.11	219.690	0.001	0.93
Within-subjects (time)	676	1	676	99.331	0.001	0.86
Between subjects (group)	3700	1	3700	485.56	0.001	0.96
Ruminative response						
Interaction (time × group)	616.69	1	616.69	16.406	0.001	0.50
Within-subjects (time)	3461.36	1	3461.36	92.081	0.001	0.85
Between subjects (group)	2660	1	2660	32.11	0.001	0.66
Mindfulness						
Interaction (time × group)	3969	1	3969	67.927	0.001	0.80
Within-subjects (time)	3560.11	1	3560.11	60.929	0.001	0.79
Between subjects (group)	14569	1	14569	246.21	0.001	0.94

BDI = Beck Depression Inventory; X = Time and Treatment interaction; SS = sum of squares; df = degrees of freedom; MS = mean square; ES = Eta squared.

Table 5 - Analysis of variables with Bonferroni pairwise comparisons

Variables / source of changes		Experimental group			Control group		
		Difference of means	Standard error	Sig.	Difference of means	Standard error	Sig.
Depression (BDI)							
Pre-BDI	Post-BDI	27.66	3.03	0.001	1.44	0.76	0.28
Pre-BDI	Follow-up - BDI	26.66	2.43	0.001	5.88	1.09	0.04
Post-BDI	Follow-up - BDI	-1.00	0.83	0.79	3.33	1.06	0.01
Depression (HDRS)							
Pre-HDRS	Post-HDRS	15.66	1.13	0.001	-0.77	0.99	1
Pre-HDRS	Follow-up - HDRS	16.33	1.32	0.001	-0.66	1.30	1
Post-HDRS	Follow-up - HDRS	0.66	0.52	0.72	0.11	0.67	1
Ruminative response							
Pre-RRS	Post-RRS	24.22	2.38	0.001	8.66	1.26	0.001
Pre-RRS	Follow-up - RRS	27.88	3.87	0.001	11.33	1.29	0.001
Post-RRS	Follow-up - RRS	3.66	2.67	0.62	2.66	1.20	0.172
Self-compassion							
Pre-SCS	Post-SCS	-17	0.68	0.001	2.88	0.92	0.041
Pre-SCS	Follow-up - SCS	-21.55	1.46	0.001	4.22	0.94	0.006
Post-SCS	Follow-up - SCS	-4.55	1.57	0.60	1.33	0.70	0.28
Mindfulness							
Pre-SMQ	Post-SMQ	-27	5.14	0.002	-2.77	1.52	0.31
Pre-SMQ	Follow-up - SMQ	-40.88	4.99	0.001	1.11	0.99	0.88
Post-SMQ	Follow-up - SMQ	-13.88	2.45	0.001	3.88	1.09	0.02

BDI = Beck Depression Inventory; HDRS = Hamilton Depression Rating Scale; RRS = Ruminative Response Scale; SCS = Self-Compassion Scale; SMQ = Southampton Mindfulness Questionnaire; Sig. = Statistical significance.

Discussion

The aim of the present study was to determine the effectiveness of MBCT for rumination, mindfulness, and self-compassion in patients with TRD. The results showed that MBCT reduced depression in the experimental group compared to the control group, which is consistent with the findings of Kingston et al.,[34] Finucane and Mercer,[35] Papageorgiou and Wells,[36] Teasdale et al.,[37] Kenny and Williams,[38] and Alberto Chiesa et al.[39] MBCT facilitates a detached or decentered view of one's thoughts, emotions and bodily sensations. MBCT teaches depressed individuals to observe their thoughts and feelings nonjudgmentally and to view them as mental events that come and go, rather than as aspects of themselves. This attitude toward negative cognitions in depression prevents escalation of negative thoughts into rumination. MBCT helps depressed individuals learn to recognize their automatic cognitive-affective-behavioral patterns and relate to their experiences with curiosity, patience, and compassion.[11]

Teasdale and Chaskalson articulate three mechanisms through which mindfulness training can help depressed people: 1) mindfulness training strengthening the 'attentional muscles' so that a natural transient sense of sadness is less likely to lead to depression; 2) mindfulness training cultivates attitudinal qualities of kindness, compassion, patience, nonjudgmentalness and openness to experiences, so that instead of avoiding negative emotions, patients learn to be open to these experiences; and finally, 3) mindfulness training changes the depressed patients' beliefs about thoughts, body sensations, and feelings.[40,41]

The results of the present study showed that MBCT reduced rumination in the experimental group compared to the control group. These findings are in line with those of Kingston et al.[34] and Nolen-Hoeksema,[42] who have explained the role of rumination in vulnerability to depression. The decentering hypothesis can be taken in to consideration to explain the effectiveness of MBCT for rumination.[43]

Decentering means the ability to focus on the present moment and achieve a state of being non-judgmental about thoughts and feelings and accepting them. Studies have shown that decentering can reduce the level of depressive rumination thought by teaching the patient to pay attention in a particular way.[12] Decentering includes distancing, separating, allowing, accepting, and dropping negative thoughts and ideas. Barnhofer et al. have noted that, by strengthening

cognitive control mechanisms, meditation may lessen ruminative processes and thereby reduce depression. This theoretical background led us to hypothesize that MBCT could prove effective for reducing TRD.[44]

The results of the present study revealed that MBCT increased mindfulness in the participants in the experimental group compared with those in the control group. Review and meta-analysis studies have been conducted to investigate the effect of mindfulness training on self-report mindfulness. The findings of those studies are in line with the present study.[45,46] Furthermore, the results of the present study showed that MBCT led to increased self-compassion. These findings are consistent with evidence that participation in mindfulness interventions such as the MBCT and mindfulness-based stress reduction increases self-compassion.[45-47] Recently, it has been hypothesized that increased self-compassion leads to increased individual well-being.[48,49] In fact, mindfulness increases the ability to experience self-compassion and accept personal mistakes, negative thoughts, and emotions as part of the human experience. If a person is aware of the experience of suffering and accepts it without judgment, sufficient mental space will be allocated to experiencing self-compassion and a desire will be formed to alleviate suffering from himself and others.[50] Several theoretical models have emphasized the importance of self-compassion in development of well-being, in reduction of anxiety and depression, and in resilience to stress.[51-53]

Limitations

The limitations of this study were a small sample size and the follow-up time in the current study was limited to one month, which does not allow for informed conclusions about possible longer-term effects of MBCT and their comparison.

Conclusion

The results showed that MBCT leads to a significant reduction in depressive rumination and increased self-compassion and mindfulness in the treatment group (MBCT combined with antidepressants). This treatment can be considered a promising intervention for improving depression in patients with TRD.

Suggestions

Since MBCT was effective for decreasing depression and rumination and for increasing self-compassion and mindfulness in patients with TRD, it is suggested that clinicians use MBCT as an effective treatment for TDR. It is also recommended that the mediators of this treatment be investigated in future studies. Furthermore, it is suggested that a larger sample size be used in future studies.

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