Family and health

Comparison of metacognitive therapy and treatment based on behavioral activation on rumination dimensions in women with major depressive disorder

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Abstract

Introduction: Numerous studies point to the high level of rumination in women with major depressive disorder. The aim of the present study was to compare metacognitive therapy and treatment based on behavioral activation on rumination dimensions in women with major depressive disorder.

Methods: The current research was a quasi-experimental study with a pre-test-post-test-follow-up design with a control group. The statistical population of this research included all women with major depressive disorder referring to psychological clinics located in the 8th district of Tehran, 45 of whom were selected in a targeted manner and randomly assigned to two experimental groups and one control group. The instrument of this research was rumination questionnaire. For the first experimental group, metacognitive therapy and for the second experimental group, behavioral activation therapy was held in 8 sessions of 90 minutes, but the control group did not receive any intervention. The data were analyzed using mixed analysis of variance.

Results: The results indicated that metacognitive therapy and behavioral activation therapy reduced rumination and its components at the end of the interventions and the follow-up period (p>0.05). The results showed that behavioral activation therapy is more effective in reducing rumination symptoms than metacognitive therapy (p>0.05).

Conclusion: Because of its effect on depression, behavioral activation therapy alone or with complementary therapy can be effective in reducing rumination and depression symptoms in women with major depressive disorder.

Keywords: behavioral activation therapy, major depressive disorder, metacognitive therapy, rumination

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Introduction:

Depression is one of the most common disorders faced by mental health professionals (1) and epidemiological studies have also reported this disorder as the most common psychiatric disorder (2). Lack of pleasure, sleep disorder, decreased appetite and energy, depressed mood, reduced concentration and mood changes are common in this disorder (3). Approximately 20% of women and 10-17% of men suffer from this disorder during their lifetime (4-5). In this regard, major depressive disorder is between mild and severe depression (6). This type of disease causes deep discomfort and feelings of hopelessness and changes mood and physical performance in people (7).

One of the psychological problems that can negatively affect the mental health of patients with major depressive disorder is obsessive rumination. Rumination is known as a constant preoccupation with a thought or a topic and thinking about it, and it is a class of conscious thoughts that is defined around an axis (8). These repetitive thoughts enter consciousness involuntarily and divert attention and goals (9). In fact, rumination is a set of passive thoughts that are repetitive and focused on the causes and results of symptoms. It also hinders adaptive resolution and increases negative thoughts (10), rumination can be the cognitive foundation of patients. It consists of thoughts that are endlessly reviewed, fueling despair about the future and negative self-evaluations. These thoughts have an effect on the mood and affect the motivation of the patient (11). Rumination is one of the solutions of self-regulatory executive function to reduce cognitive dissonance, and it is actually considered a type of coping style with depressed mood (12).

Today, there are many psychological treatments for patients with depression, some of which have been able to prove their effectiveness. In recent years, new forms of cognitive-behavioral therapy have been created, and one of these approaches is behavioral activation therapy, which focuses mainly on behaviors and activities (13).

Cognitive theorists believe that sufferers have a specific cognitive style characterized by pessimism, and the belief that unpleasant events are unpredictable. This cognitive style includes automatic thoughts that emphasize the possibility of failure and social embarrassment. Behavioral activation therapy, which is one of the third wave treatments, is a type of pure behavioral therapy that provides objective and easy-to-implement techniques for the treatment of depression and is cost-effective due to the short duration of the treatment period (14). The goal of behavioral activation is to increase behaviors that are likely to lead to rewards from the patient. Rewards may be intrinsic (such as pleasure or a sense of accomplishment) or extrinsic (such as social attention) (15).

Behavioral activation therapy is a type of pure behavioral therapy that is based on the functional analysis of behavior and is rooted in the behavioral theory of depression. According to the characteristics of behavioral activation treatment method and its effectiveness on depression disorder (16). It can be said that behavioral activation is considered as a valid treatment for the treatment of depression. In the context of the effect of this therapeutic method on rumination, behavioral activation therapy obviously focuses on reducing rumination from the analytical functional point of view (17).

Behavioral activation therapists target the process of rumination instead of its content (18). Due to its objective techniques and easy implementation, this therapeutic approach has been tested in mental health centers, inpatient centers, addiction treatment centers (19), outpatient

centers, and counseling centers on a group or individual basis (20). Uphoff et.al. (21) Showed in their research that behavioral activation therapy has an effect on the recovery of patients with depression. Stein et al. (22) stated in their research that behavioral activation therapy is effective in reducing anxiety symptoms and increasing activation in addition to improving depression. The result of the research of Moshier & Otto (23) showed that the symptoms of depression and rumination decreased significantly during the treatment period of behavioral activation. Also, Polenick & Flora (24) concluded in their research that behavioral activation training significantly reduces rumination in people with depression. Kharaei and Azizi (25) showed in their research that behavioral activation therapy has a significant effect on reducing symptoms of depression, anxiety and increasing quality of life. Ataei Moghanlou and Ataei Moghanlou (26) showed in their research that behavioral activation therapy significantly reduced depression and rumination scores in the intervention group compared to the control group.

On the other hand, one of the new therapeutic approaches in this field is metacognitive therapy. Metacognitive therapy, as a pure cognitive therapy approach, has emerged due to dissatisfaction with existing cognitive behavioral approaches that do not take into account the important features of maladaptive thinking and its controlling factors (27). Metacognitive theory is similar to traditional cognitive theory in terms of emphasizing the principle that dysfunctional beliefs affect mental processing, but instead of focusing on the content of cognition, this theory emphasizes the process of cognition (processing styles and dysfunctional control of thinking) (28-30).

The basic principle of this treatment is that the psychological disorder is related to the activation of a maladaptive thinking style known as cognitive-attentional syndrome (31). Cognitive-attentional syndrome has a very important effect on emotional regulation, and metacognitive therapy aims to eliminate this syndrome and adjust metacognitive beliefs related to it (32). This treatment method is a growing trend in new interventions, where the treatment model is based on mechanisms that prevent natural emotional processing (31). The metacognitive model of treatment is one of these interventions. In this model, metacognitions in the form of beliefs, evaluations, and control strategies are among the basic factors of creating and maintaining this disorder, and it is a motivated and active method of evaluating and dealing with the threat created by a person's metabeliefs (33). Basaknejad et al. (34) showed that metacognitive group therapy has an effective role in reducing the symptoms of thought-action confusion, suppression of thoughts and rumination in the population of female students. The results of the research by Ansari et al. (35) and Taheri Daghian et al. (36) show the effectiveness of metacognitive therapy on reducing depression symptoms and improving rumination and the research results of Winter et al. (37) and Hjemdal et.al (38) have shown the effectiveness of metacognitive therapy in reducing people's depression. Also, Baygan et al. (39) and Schaich et.al (40) showed in their research that metacognitive therapy and behavioral activation therapy are effective on patients with depressive disorder and have reduced depression.

According to what was said, examining the effectiveness of metacognitive therapy on patients with major depressive disorder can be an important step in the direction of inventing new treatments in the field of clinical psychology. It is obvious that the findings obtained from such studies can provide researchers, clinical psychologists and others interested in this field

with new strategies in the two fields of prevention and treatment. Considering the few studies that have been conducted on the effectiveness of these treatment methods on the mental disorders of patients with major depressive disorder in the Iranian population, and considering the clinical importance that this perspective can be effective in the treatment of this disease, the present research aims to investigate the effectiveness of the treatment. Metacognitive and behavioral activation has been done in improving the symptoms of rumination in women with major depressive disorder. Considering the control group along with the experimental group, it examines the effectiveness of these treatment methods in more detail and aims to evaluate the effects of each treatment method on the group of patients with the disorder. Compare major depression. In other words, considering the ever-increasing number of people suffering from this disorder and, on the one hand, the significant material and spiritual costs that both families and governments bear, and considering the research gap in the field of psychological interventions to compare these two approaches to rumination, the present research seeks to answer this fundamental question whether the effectiveness and continuity of the effect of metacognitive therapy and treatment based on behavioral activation on the dimensions of rumination in female patients with major depressive disorder are different.

Research Methodos:

The current research was a quasi-experimental method and a pre-test-post-test-follow-up design of 60 days was used with a control group. The statistical population of the current study was made up of all women with major depressive disorder who referred to psychological clinics located in District 8 of Tehran in 2021. The sample size in this research was determined according to the number of groups and the number of investigated variables. The selected groups to implement the experimental intervention and play the role of witnesses were already three different groups. Based on this, 45 people from the aforementioned community were selected based on Cohen's table (1988) and after the preliminary interview and based on the criteria for entering and exiting the research in a non-random and purposeful way and randomly assigned to experimental and control groups (activation therapy experimental group behavioral, 15 people), (metacognitive therapy experimental group, 15 people) and (control group, 15 people) were placed. The criteria for people to enter the research include informed consent, female gender, receiving a diagnosis of major depressive disorder (depression) by a psychiatrist, not participating in other psychotherapy courses at the same time, not taking antidepressants at least one month before the evaluation, literacy at least one cycle, group Age 20 to 50 years, physical and mental readiness to answer the questions and exclusion criteria included absence of more than two sessions.

The method of conducting the research was that after making the necessary coordination with Islamic Azad University of Khomein and the management of Aramesh and Rovanbeh clinics, Zendegi Aram and Khaneh Omid, the patients' files were given to the researcher and an initial telephone interview was conducted with each of the patient woman suffering from major depressive disorder and based on the entry and exit criteria, 45 patients were selected and randomly assigned to three groups, including two test groups and one control group before the experiment. After being replaced in the groups, the subjects answered the research questionnaire as a pre-test before the implementation of the intervention. The first experimental group received metacognitive therapy and the second experimental group

received behavioral activation therapy in 8 sessions of 90 minutes in a face-to-face group manner with two sessions each week on Monday and Thursday by the researcher. But the subjects of the control group did not receive any intervention. After the end of the treatment sessions, all three groups answered the research questionnaire again in the post-test phase and 60 days later in the follow-up phase. Ethical considerations were as follows: 1) The main goal of the research is to improve human health along with respecting their dignity and rights. 2) In this research, the principle of confidentiality and keeping the secrets of the subjects and taking appropriate measures to prevent its publication have been observed. 3) The researcher is obliged to respect the privacy of the subjects during the research. 4) Any possible harm or damage caused by participating in the research must be compensated according to the approved laws. 5) There was no financial burden or damage during the research. 6) At the end of the research, every person who entered the study as a subject has the right to be informed about the results of the study and to benefit from the interventions or methods that have been shown to be useful in that study. 7) The researcher is obliged to publish the results of the research honestly, accurately and completely, whether the results are negative or positive. 8) If during the implementation of the research, a subject with capacity loses his capacity or a subject without capacity becomes capable, according to the resulting change, informed consent to continue the research should be obtained from the legal guardian or the person himself. 9) Non-acceptance of the subject's participation in the research or his non-continuation and cooperation is accepted, and this has no effect on the services provided to the individual in the same institution. 10) The information was in the form of code. 11) After finishing the work in the witness group, educational pamphlets or other items were presented and made available to them if they wished. The structure of the behavioral activation therapy sessions was based on the protocol designed by Dimidjian et al. (41) and adapted from Martel et al. (16) and the content of the metacognitive therapy sessions was also implemented according to the manual of metacognitive therapy for depression by Wells (42). A brief description of behavioral activation therapy sessions is presented in Table 1 and metacognition therapy is presented in Table 2.

Table 1. Behavioral activation therapeutic interventions of Dimidjian et al. (41) and Martel et al. (16)

Sessions 1 and 2	Review of treatment structure (confidentiality of information, roles, use of self-report scales to diagnose symptoms and need for exercises outside of treatment sessions), review of treatment protocol history with adolescent and their parents for use of behavioral activation therapy, introduction of depression and behavioral activation therapy, monitoring the participants' activity, examining the effect of relationships and activities on mood, introducing the state-activity-state model for teenagers, providing psychological information to parents about adolescent depression.
Sessions 3 and 4	Introducing the role of behavioral activation in mood management - goal-oriented behavior in the contrast of mood and self-centered behavior, monitoring activity and mood, talking to parents about their experiences and concerns as parents of depressed teenagers, introducing functional analysis and the reinforcing role in maintaining behavior, introducing short-term consequences versus long-term consequences of behavioral choices, using

	good feelings
Sessions 5 and 6	Examining and introducing the role of stress as an important factor for depression, introducing problem solving as a way to discover what to do in stressful situations, introducing communication skills to parents and creating appropriate and effective communication, introducing and presenting smart ideas through setting effective goals, set and assign small and short-term goals to achieve larger goals, set goals for practice throughout the week, provide ways for parents to support their teens.
Sessions 7 and 8	Showing the importance of identifying internal and external obstacles on the way to achieving goals, introducing targeted behavioral strategies to overcome obstacles, practicing predetermined goals, supporting adolescents and parents to identify ideas and parents monitoring their behavior, showing the importance of avoidance as a common internal obstacle and comprehension of the repetition pattern, response, avoidance (TRAP) pattern.
Sessions 9 and 10	Examining the adolescent's condition and identifying what he/she wants to do in the rest of the therapy sessions, examining key skills to help the adolescent achieve his goals, providing ways to activate ideas and goals and make the most of good feelings, goal setting, recognizing obstacles and avoidance, work with adolescents to plan and determine an action plan to assess priorities, goals and activities that are necessary to practice in subsequent treatment sessions, support the adolescent and review the importance of maintaining focus on the plan and goals, attempt to improve depressive mood.
Sessions 11 and 12	Reviewing and updating plans established in previous meetings, creating a personal exacerbation prevention plan to help adolescents manage depression and its symptoms.

Table 2. Wales metacognitive therapy sessions (42)

Session	Content
First	At the beginning of the first session, the participants are introduced and get to know each other. Then the symptoms of inconsistency and feeling of loneliness are evaluated and the need, importance and necessity of treatment is determined.
Second	First, the logic of metacognitive treatment for psychological disorders and promoting normal states is explained, then different treatment methods for cognitive dissonance and loneliness are evaluated using the metacognitive method.
Third	In the third session, positive and negative metacognitive beliefs in people are identified and evaluated, and the advantages and disadvantages of these beliefs are analyzed.

Fourth	At the beginning of the metacognitive control strategies session, the advantages and disadvantages of the used metacognitive control strategies are analyzed and then more useful metacognitive control strategies are taught as alternatives.
Fifth	People are taught to use mindfulness techniques to deal with dysfunctional metacognitive thoughts and strategies (people learn to deal with their thoughts like a cloud in their mind, if they don't need to be processed).
Sixth	In the sixth session, participants will learn about worry and rumination strategies as ineffective coping strategies, analysis of the benefits and harms of mental rumination and worry, analysis of the process of suppressing thoughts as an ineffective process (white tiger) and the consequences of conflict with symptoms, teaching how to postpone worry.
Seventh	At the beginning of the meeting, people are introduced to the symptoms of cognitive inattention in the continuation of mental disorders, then they are presented with the techniques of teaching attention to people and teaching people this way.
Eighth	In the final sessions, the method of focusing attention on the situation is taught as an efficient metacognitive strategy, and the obstacles in applying the methods are presented, marked and resolved, and at the end of the session, the questionnaires for the post-test are provided to the participants.

In this research, in order to collect data, in addition to collecting demographic information, the following psychological questionnaire was also used:

Rumination Responses Scale (RRS): This questionnaire was compiled by Nolen-Hoeksema & Morrow (43) and contains 22 items and consists of two subscales of rumination responses and distracting responses and each contains 11 statements. It can be This questionnaire is scored according to the Likert scale from (1) never to (4) most of the time. The range of each score for each subject is between 22 and 88 variables. This questionnaire evaluated four different types of reaction to negative mood. Based on empirical evidence, the scale of rumination responses has high internal reliability. The results of many studies show that the scale of rumination responses can predict the severity of depression in follow-up periods in clinical and non-clinical samples by controlling variables such as the initial level of depression or stress factors (44). This scale was first translated into Farsi by Bagherinejad et al. (44). They reported the reliability coefficient of the questionnaire using Cronbach's alpha method as 0.90 and for its dimensions as 0.92 and 0.89. Cronbach's alpha was 0.86 in the only research of Rashwanlou et al. (45).

For data analysis at the level of descriptive statistics, mean and standard deviation indicators were used, and at the level of inferential statistics, mixed variance analysis was used, which was analyzed by spss-26 software.

Findings:
The findings of the research on demographic information showed that 14 people (31%) of the participants in the research were 20 to 30 years old, 21 people (46%) were between 30 to 40 years old, and 10 people (23%) were 40 to 50 years old. They were. In addition, the mean and

standard deviation of the average age of the participants are 37.28 and 5.29 years, respectively. 25 people (55.6 percent) of the people participating in the research had a diploma, 4 people (8.9 percent) had associate degree, 10 people (22.2%) had a bachelor's degree, 5 people (11.1%) had a master's degree, and 1 person (2.2%) had a Ph.D degree.

As seen in Table 3, the components of rumination are shown for the three groups of control, metacognitive therapy, and behavioral activation in three measurement stages (pre-test, post-test and follow-up). As can be seen, in the control group, the average component of rumination responses, deviant responses and moral criteria and the total score of rumination in the post-test and follow-up compared to the pre-test stage do not show much change. But in the groups of metacognitive therapy and behavioral activation, we see a significant reduction of rumination components in the post-test and follow-up phase compared to the pre-test phase. Also, the scores of the sub-components of rumination responses, diverting responses and moral criteria have decreased in the post-test and follow-up phase compared to the pre-test phase.

The significance of these changes was checked using the mixed variance analysis test. Before the test, the mixed variance analysis test was performed using the Kolmogorov-Smirnov test to check the normality of the distribution of rumination scores and its components in the three stages of measurement ($p<0.05$) and the Levine test to check the homogeneity of rumination variances in the three measurement stages. Pre-test (F=0.186), (P=0.20), post-test (F=1.105, P=0.123) and follow-up (F=1.33, P=0.263) in the variable of rumination responses in 3 stages of pre-test measurement. (F = 1.782, P = 0.214), post-test (F = 1.543, P = 0.252) and follow-up (F = 1.346, P = 0.46) in the variable of distracting responses in the three stages of pre-test measurement (F = 1.23) =, P=0.3), post-test (F=0.817, P=0.45) and follow-up (F=1.72, P=0.19) in the variable of ethical criteria in the three stages of measuring deviant responses in the three stages of pre-test measurement (64 F=/0.53), post-test (F=1.127, P=0.115) and follow-up (F=0.316, P=0.175) and to check the homogeneity of the variance-covariance matrix using Mbox test in the variable Rumination (MBOX = 29.73, F = 1.04, P = 0.32), rumination responses variable (MBOX = 17.47, F = 1.35, P = 0.33), distracting responses variable (MBOX = 31.54, F = 1.814, P = 0.1), ethical criteria variable (MBOX = 14.95, F = 1.561, P = 0.35) was used; that the results of these tests were not significant, Mauchly's test was also used to check the assumption of sphericity and the results showed that the assumption of sphericity was not met for any of the components of rumination except rumination responses, so the Greenhouse-Geisser method was used to interpret the results.

Table 3. Mean and standard deviation of rumination variable and its components in the pre-test, post-test and follow-up stages.

		Pre-test		Post-test		Follow-up	
		Mean	Standard Error	Mean	Standard Error	Mean	Standard Error
Rumination responses	Control	70.93	10.19	70.47	10.20	70.47	10.06
	Metacognitive therapy	74.00	10.53	49.13	7.19	48.87	7.32
	Behavioral	69.07	9.89	37.40	7.43	37.20	7.46

	activation						
Misleading answers	Control	39.20	4.39	37.67	5.11	36.53	5.28
	Metacognitive therapy	38.80	3.08	25.00	4.69	23.73	5.28
	Behavioral activation	38.20	3.82	18.73	2.89	17.27	2.69
Rumination	Control	129.13	14.93	128.47	14.72	128.87	14.28
	Metacognitive therapy	134.33	16.21	90.40	10.80	90.13	10.70
	Behavioral activation	130.93	13.54	69.27	9.34	68.87	9.78

Based on this, the results of mixed variance analysis are presented in Table 4. As seen in Table 4, the effect of time is significant in the variable of rumination responses (P<0.05), so there is a significant difference between the three stages of pre-test, post-test and follow-up in this variable. Also, according to the results of the table, it shows that there is a significant difference between the group and time in the variables of rumination responses, diverting responses and rumination, and it is clear that there is a difference in the dependent variable between the pre-test and post-test stages and follow-up between the two treatment groups and the control group. In the effect of the group, according to the values and significance level of F, there is a significant difference between the two groups of metacognitive therapy and behavioral activation and the control group in the variables of rumination responses, diverting responses and rumination. Pairwise comparison of these groups was conducted separately for each stage using the Bonferroni face test and its results are presented in Table 5. According to table 5, it can be seen that there is a significant difference between the metacognition therapy and control groups in the variable of rumination responses (P<0.05) and between the metacognition therapy and control groups in the variables of rumination responses, diverting responses and rumination, and behavioral activation therapy and control group in variables of rumination responses, diverting responses, and moral and rumination criteria (P<0.05). Also, the results showed that there is a significant difference between the behavioral activation method and metacognitive therapy at the significance level of 0.05. According to Table 5, the mean difference of the metacognitive treatment method and behavioral activation for the variable of rumination and its components in the post-test and follow-up phase is positively significant. As a result, the behavioral activation method has been more effective in reducing rumination than metacognitive therapy (P<0.05).

Table 4. Results of mixed analysis of variance related to intragroup and intergroup effects

Variable	Factors	Sources of change	Sum of squares	Degree of freedom	Average of squares	F statistic	Significance level	Significance level
Rumination	Intragroup	Time	1191.76	2	995.88	27.61	0.0001	0.42

			SS	df	MS	F	p	η²
responses		Time × group	810.98	4	202.75	5.62	0.0001	0.23
		Error	241.18	76	36.07	-	-	-
	Intergroup	Group	241.18	76	1711.14	20.65	0.0001	0.52
		Error	3148.68	76	82.86	-	-	-
Misleading answers	Intragroup	Time	82.93	1.45	57.06	0.25	0.77	0.01
		Time × group	1619.63	2.91	557.24	2.45	0.05	0.11
		Error	12544.89	55.22	227.17	-	-	-
	Intergroup	Group	225.22	2	1127.61	4.95	0.01	0.21
		Error	8656.41	38.002	227.8	-	-	-
Rumination	Intragroup	Time	292.98	1.33	220.53	0.46	0.56	0.01
		Time × group	5812.2	2.66	2187.5	4.55	0.01	0.19
		Error	24283.19	50.48	481.02	-	-	-

Table 5. Benferoni's post hoc test results for pairwise comparison of rumination component averages

			Pre-test			Post-test			Follow-up		
Rumination responses	Metacognitive therapy	Control	3.067	3.726	1.000	-21.333	3.062	0.000	-21.600	3.058	0.000
		Behavioral activation	4.933	3.726	0.578	11.733	3.062	0.001	11.667	3.058	0.001
	Behavioral activation	Control	1.867	3.726	1.000	-33.067	3.062	0.000	-33.267	3.058	0.000
		Metacognitive therapy	-4.933	3.726	0.578	-11.733	3.062	0.001	-11.667	3.058	0.001
Misleading answers	Metacognitive therapy	Control	-0.400	1.388	1.000	-12.667	1.584	0.000	-12.800	1.694	0.000
		Behavioral activation	0.600	1.388	1.000	6.267	1.584	0.001	6.467	1.694	0.001
	Behavioral activation	Control	-1.000	1.388	1.000	-18.933	1.584	0.000	-19.267	1.694	0.001
		Metacognitive therapy	-0.600	1.388	1.000	-6.267	1.584	0.001	-6.467	1.694	0.001

Rumination	Metacognitive therapy	Control	5.200	5.443	1.000	-38.067	4.323	0.000	-38.733	4.291	0.000
		Behavioral activation	3.400	5.443	1.000	21.133	4.323	0.000	21.267	4.291	0.000
	Behavioral activation	Control	1.800	5.443	1.000	-59.200	4.323	0.000	-60.000	4.291	0.000
		Metacognitive therapy	-3.400	5.443	1.000	-12.133	4.323	0.000	-21.267	4.291	0.000

Discussion and conclusion:

The present study sought to answer the question whether there is a difference between the effectiveness and continuity of the effect of metacognitive therapy and treatment based on behavioral activation on the dimensions of rumination in women with major depressive disorder. The results of mixed variance analysis showed that both treatment groups were effective on rumination compared to the control group, and behavioral activation therapy was more effective in reducing rumination in women with major depressive disorders than metacognitive therapy.

In explaining the effectiveness of metacognitive therapy on rumination and its components in women with major depressive disorder, no study was found that was directly aligned with the results of this research, but the results obtained indirectly, to some extent, were consistent with the studies of Basaknejad et al. (34), Ansari et al. (35), Taheri Daghian et al. (36), Winter et al. (37), Hjemdal et.al. (38), Baygan et al. (39) and Schaich et.al. that have confirmed the effectiveness of metacognitive therapy in patients with depression and major depression. In explaining the effectiveness of this treatment on rumination and its components in women with major depressive disorder, it can be said that depression is associated with things such as rumination and positive and negative metacognitions. Therefore, if the treatment focuses on components such as reducing rumination and changing metacognitions, it can reduce the symptoms of rumination in people with depression (50). The success of metacognitive treatment of depression lies in targeting the main characteristic of depression, which is rumination (51). Negative ruminative thoughts (rumination and worry) are recognized as one of several factors at the same time in the vulnerability and maintenance of the effective disorder are considered as coping strategies. The content of positive metacognitive beliefs includes topics related to rumination as a coping strategy. Negative metacognitive beliefs, rumination includes issues related to rumination. Although many people believe that rumination helps them solve their problems, responding to problems through rumination is associated with more problems and tension. Therefore, it can be assumed that the treatment used in this research has been able to affect the rumination related to the subjects' rumination. In explaining the effectiveness of metacognitive techniques, Nolen-Hoeksema pointed out the nature of this treatment and considered it effective in the effectiveness of the treatment process (52). Since in depression a person's thinking patterns are focused on himself and threatening issues, the aforementioned treatment emphasizes changing these thinking patterns. On the other hand, metacognitive therapy has dealt with the change of processes and activities such as rumination, threat monitoring, focusing on danger, suppressing thoughts and behaviors such as behavioral, cognitive and emotional avoidance that depressed people do to deal with the perceived dissonance and regulate the resulting negative emotions, but in the long run they get the opposite result (53). In fact, metacognitive therapy provides the basis for obtaining better treatment results through creating insight in patients. In other words, the goal of the metacognitive treatment model of depression is to show the metacognitions and

processes that perpetuate depressive episodes. Also, in explaining the results of the treatment, it can be pointed out that the metacognitive treatment of depression has an evaluation program and accurate scales, and in this way, the therapist is informed about the results of the treatment and gives appropriate feedback to the patients. Some behavioral change principles can challenge metacognitive beliefs. Therefore, one of the reasons for the stability of treatment results in the follow-up phase can be due to the increase in metacognitive control of people with depressive symptoms on their metacognitive beliefs. Increasing metacognitive control allows depressed people to establish a new relationship with their thoughts, to change metacognitions that increase the maladaptive pattern of repetitive negative thinking or increase rumination (54).

In general, according to the changes that happened in all three subjects, it can be concluded that facilitating the basic thinking styles, such as rumination and metacognitive beliefs, was able to reduce negative thoughts and, as a result, reduced rumination in patients with major depression. The effectiveness of behavioral activation therapy on reducing rumination is consistent with the results of studies (21, 24, and 26) that have confirmed the effectiveness of activation therapy on depression.

In connection with explaining the effectiveness of behavioral activation therapy on rumination in women with major depression, it can be said that the behavioral theory of depression suggests that this therapy is effective because it leads to an increase in positive reinforcement. The goal of behavioral activation is to increase behaviors that are likely to lead to rewards from the patient. Rewards may be intrinsic (such as pleasure or a sense of accomplishment) or extrinsic (such as selective attention). These increased rewards help to improve the mood of the patient (15). Over time, such a process leads to an increase in environmental reinforcement, followed by an improvement in mood (1). Martel et al. (54) also suggested that the reason for the effectiveness of this treatment could be that during the treatment, people learn to change their lifestyle and follow a new rule in their lives. That is, get active instead of getting inactive when they feel sad. Regarding the effectiveness of this treatment on rumination with self-blame and rumination, it can be said that one of the goals of behavioral activation is to reduce depressing rumination by focusing the patient on environmental activities (55). According to the behavioral activation theory, rumination is a private behavior that prevents full engagement in life activities and therefore can act as a form of avoidance. According to this theory, rumination leads to two specific forms that are the target of treatment for depression: First, rumination separates the person from his environment and instead of engaging in the activities of that moment, focuses him on inner thoughts. Second, rumination prevents fruitful problem solving (16). Behavioral activation therapy using specific techniques such as highlighting the consequences of rumination, problem solving, paying close attention to sensory experience, refocusing on the task at hand, causes the person to turn their attention away from rumination and problematic thoughts. These techniques provide a way to target the rumination process without interfering with the content of thoughts. It has been suggested that behavioral change, followed by behavioral activation therapy, may represent a particularly effective method of changing cognitions.

Another finding of the present study showed that behavioral activation therapy was more effective in reducing rumination in women with major depressive disorder compared to metacognitive therapy. That is, behavioral activation treatment has been able to reduce rumination in women with major depressive disorder. In explaining the effectiveness of behavioral activation therapy on rumination, it can be said that the therapeutic approach of

behavioral activation tries to identify the factors that play a role in depression. From the point of view of this type of treatment, in order to reduce the amount of rumination that leads to depression, it is necessary to make changes in some aspects of life and to reduce the state of withdrawal, which is an important factor in maintaining or increasing the amount of rumination. The therapist used a method called guided activities to reduce rumination. In this method, a series of approaches related to behavior change were used, and finally, by using them, the subjects were able to obtain more reinforcers from the environment. The role of the behavior activation therapist was similar to that of a coach. In other words, when the client was trying to implement activation techniques, the therapist provided specialized assistance to successfully implement these techniques. Also, during the treatment, the therapist tried to summarize the client's problems in small formats in order to increase the possibility of solving them.

In general, the results showed that behavioral activation therapy was more effective than metacognitive therapy in reducing rumination in women with major depressive disorder. Therefore, behavior activation therapy can be used as an effective psychological intervention in treating the problems of women with major depressive disorder. It is suggested that behavioral activation therapy group sessions be held in Islamic counseling centers and that this program and related techniques be taught to help the mental state of women with major depressive disorder in the form of knowledge-enhancing workshops. It is also suggested that future studies compare the effectiveness of behavioral activation therapy with other therapeutic approaches, including third wave therapies such as commitment and acceptance. Finally, it is suggested that in future studies, in order to generalize the results, research should be conducted on people with major depressive disorder in other cities and other people with various mental disorders.

Research limitations

The limitations of the research include the quasi-experimental nature of the research; that is, the groups were selected purposefully (women with major depressive disorder referring to psychological clinics), but people were randomly assigned, and the lack of control over the duration of major depressive disorder as an influencing variable in the effectiveness of the intervention pointed to a larger number of samples due to limited access.

Ethical considerations

This article is taken from the doctoral dissertation of the first author in the field of psychology at the Islamic Azad University, Khomein branch, which was approved by the university's research council on 10/01/2020. In this research, ethical considerations such as the full consent of the sample, compliance with the principle of confidentiality and confidentiality of information have been observed, and the researcher has conducted the research process after obtaining approval from the ethics committee with the ID IR.IAU.ARAK.REC.1400.011.

Conflict of interest

The authors also declare that there is no conflict of interest in the results of this research.

Aknowledgement

References:

1. Young JE, Rygh JL, Weinberger AD, Beck AT. Cognitive therapy for depression. In D. H. Barlow (Ed.). Clinical handbook of psychological disorders (250-306). New York: Guilford Press; 2018.

2. Seshadri A, Orth SS, Adaji A, Singh B, Clark MM, Frye MA, McGillivray J, Fuller-Tyszkiewicz M. Mindfulness-Based Cognitive Therapy, Acceptance and Commitment Therapy, and Positive Psychotherapy for Major Depression. American Journal of Psychotherapy. 2021; 74(1): 4-12. https://doi.org/10.1176/appi.psychotherapy.20200006.

3. Omidmehr A, Hekmat H, Kordestani D, Gholami M. The Effectiveness of Mindfulness, Logotherpy and Behavioral Activation Treatment on Negative Automatic Thoughts and Depressed Female Students' Attention. Family and health quarterly. 2020; 10(3): 19-35. (In Persian) http://journal.astara.ir/article_245948.html

4. Levinson DF. The genetics of depression: A review. Biological Psychiatry. 2016; 60: 84-92. https://doi.org/10.1016/j.biopsych.2005.08.024

5. Collins E, Segal Z. Therapeutic mindfulness and depression. In M. H. Trivedi (Ed.), Depression (pp. 357–371). Oxford University Press, 2020.

6. Moore MT, Lau MA, Haigh EAP, Willett BR, Bosma CM, Fresco DM. Association between decentering and reductions in relapse/recurrence in mindfulness-based cognitive therapy for depression in adults: A randomized controlled trial. Journal of Consulting and Clinical Psychology. 2020; 90(2): 137-147. https://doi.org/10.1037/ccp0000718

7. Guo HR, Wang JR, Wang YL, Huang BL, Yang XH, Ren YM. The effectiveness of mindfulness-based cognitive therapy combined with medication therapy in preventing recurrence of major depressive disorder in convalescent patients. Front Psychology. 2020; 18(13): 882006. https://doi.org/10.3389/fpsyg.2022.882006.

8. Sharma V, Sagar R, Kaloiya G, Mehta M. Effectiveness of Metacognitive Therapy in Patients with Depression and Comorbid Anxiety Symptoms: A Case Series From India. Cureus. 2022; 14(4): e24229. https://doi.org/10.7759/cureus.24229

9. Stalmeier TDM, Lubbers J, Cladder-Micus MB, Hanssen I, Huijbers MJ, Speckens AEM, Geurts, DEM. Mindfulness based cognitive therapy (MBCT) reduces depression-related self-referential processing in patients with bipolar disorder: an exploratory task-based study. Cognition and Emotion. 2020; 2: 1-18. doi.org/10.1080/02699931.2022.2105308

10. Abbasi R, Khademloo M. The Effectiveness of Mindfulness-based Cognitive therapy on Schema fectiveness/ shame, rumination and social isolation of women perfectionis. Psychological Studies. 2018; 14(1): 127-145. (In Persian) https://psychstudies.alzahra.ac.ir/article_3136.html

11. Kraines MA, Peterson SK, Tremont GN, Beard C, Brewer JA, Uebelacker LA. Mindfulness-Based Stress Reduction and Mindfulness-Based Cognitive Therapy for Depression: a Systematic Review of Cognitive Outcomes. Mindfulness. 2022; 13: 1126-1135. https://doi.org/10.1007/s12671-022-01841-7

12. Johannsen M, Nissen ER, Lundorff M, O'Toole MS. Mediators of acceptance mindfulness-based therapies for anxiety and depression: A systematic review and meta-analysis. Clinical Psychology Review. 2022: 94: 102156. https://doi.org/10.1016/j.cpr.2022.102156

13. Dimidjian S, Barrera MJr, Martell C, Muñoz RF, Lewinsohn PM. The origins and current status of behavioral activation treatments for depression. Annual Review of Clinical Psychology. 2021; 7(4): 1-38. https://doi.org/10.1146/annurev.clinpsy-032210-104535

14. Mazzucchelli T, Kane R, Rees C. Behavioral activation treatments for depression in adults: a meta-analysis and review. Clinical Psychology: Science and Practice. 2009; 16(4): 383-411. https://doi.org/10.1111/j.1468-2850.2009.01178.x

15. Leahy RL, Holland SJ, McGinn LK. Treatment plans and interventions for depression and anxiety disorders. 24 Ed, New York: Guilford Press, 2018.

16. Martell CR, Dimidjian S, Herman-Dunn R. Behavioral activation for depression: A clinician's guide. New York: Guilford, 2010.

17. Addis ME, Martell CR. Overcoming depression one step at a time: The new behavioral activation approach to getting your life back. New Harbinger Publications, Incorporated, 2014.

18. Tanrıverdi D, Özgüç S. Metacognitive features and cognitive distortions of the patients with major depression. Current Psychology; 2022. https://doi.org/10.1007/s12144-022-03026-w

19. Daughters SB, Braun AR, Sargeant MN, Reynolds EK, Hopko DR, Blanco C, Lejuez CW. Effectiveness of a brief behavioral treatment for inner-city illicit drug users with elevated depressive symptoms: the life enhancement treatment for substance use (LETS Act!). Journal of Clinical Psychiatry. 2018; 69(1): 122-129. https://doi.org/10.4088/jcp.v69n0116

20. Rahbaran R, Karami R, Shahmohammadi M. The Effectiveness of Behavioral Activation Therapy on Rhubarb and Depression Disorders in Adolescents. The Journal of Thought & Behavior in Clinical Psychology (JTBCP). 2019; 14(52): 17-26. (In Persian) https://jtbcp.riau.ac.ir/m/article_1539.html

21. Uphoff E, Pires M, Barbui C, Barua D, Churchill R, Cristofalo D, Ekers D, Fottrell E, Mazumdar P, Purgato M, Rana R, Wright J, Siddiqi N. Behavioural activation therapy for depression in adults with non-communicable diseases. Cochrane Database of Systematic Reviews. 2020; 8(8): CD013461. https://doi.org/10.1002/14651858.CD013461.pub2.

22. Stein AT, Carl E, Cuijpers P, Karyotaki E, Smits JAJ. Looking beyond depression: a meta-analysis of the effect of behavioral activation on depression, anxiety, and activation. Psychol Med. 2021; 51(9): 1491-1504. https://doi.org/10.1017/S0033291720000239

23. Moshier SJ, Otto MW. Behavioral activation treatment for major depression: A randomized trial of the efficacy of augmentation with cognitive control training. J Affect Disord. 2017; 210: 265-268. https://doi.org/10.1016/j.jad.2017.01.003

24. Polenick CA, Flora SR. Behavioral activation for depression in older adults: theoretical and practical considerations. Behavior Analyst. 2018; 36(1): 35-55. https://doi.org/10.1007/bf03392291

25. Kharaei K, Azizi M. Effectiveness of behavioral activation on depression, anxiety and increase quality of life for female heads of households in ghaleh- ganj city. JNIP. 2021; 10(14):1-8. (In Persian) http://jnip.ir/article-1-580-fa.html

26. Ataie Moghanloo V, Ataie Moghanloo R. The effect of behavioral activation therapy based on lifestyle changes on depression, psychological well-being and guilt in children aged 7 to 15 years with diabetes. Journal of Rafsanjan University of Medical Sciences. 2015; 14(4): 338-325. http://journal.rums.ac.ir/article-1-2382-fa.html (In Persian)

27. Hauschildt M, Arlt S, Moritz S, Yassari AH, Jelinek L. Efficacy of metacognitive training for depression as add-on intervention for patients with depression in acute intensive psychiatric inpatient care: A randomized controlled trial. Clinical Psychology & Psychotherapy. 2022; 1-14. https://doi.org/10.1002/cpp.2733.

28. Wells A. Metacognitive therapy for anxiety and depression. New York: Guilford Press, 2019.

29. Carter JD, Jordan J, McIntosh VVW, Frampton CMA, Lacey C, Porter RJ, Mulder RT. Long-term efficacy of metacognitive therapy and cognitive behaviour therapy for depression. Australian & New Zealand Journal of Psychiatry. 2022; 56(2): 137-143. https://doi.org/10.1177/00048674211025686

30. Dietrichkeit M, Hagemann-Goebel M, Nestoriuc Y, Mortiz S, Jelinek L. Side effects of the metacognitive training for depression compared to a cognitive remediation training in patients with depression. Scientific Reports. 2021; 12(11): 7861. https://doi.org/10.1038/s41598-021-87198-8.

31. Wells A, Reeves D, Heal C, Davies LM, Shields GE, Heagerty A, Fisher P, Doherty P, Capobianco L. Evaluating Metacognitive Therapy to Improve Treatment of Anxiety and Depression in Cardiovascular Disease: The NIHR Funded PATHWAY Research Programme. Front Psychiatry. 2022; 13: 886407. Doi.org/10. 3389/fpsyt.2022.886407

32. Wells A, Fisher P, Myers S, Wheatley J, Patel T, Brewin, C. Metacognitive therapy in treatment-resistant depression: A platform trial. Behavior research and therapy. 2012; 50: 367-373. https://doi.org/10.1016.j.brat.2012.02.004

33. Özgüç S, Tanriverdi D. Effect of metacognitive training applied on depression and cognitive distortion levels of depression patients. Current Psychology. 2021. https://doi.org/10.1007/s12144-021-02202-8

34. Bassaknejad S, Zargar Y, Hatami Sarbarzeh M. The effectiveness of cognitive behavioral group therapy on thought-action fusion, thought suppression and guilty feeling of university students. Cognitive and Behavioral Sciences Research. 2012; 3(1): 23-32. (In Persian) https://cbs.ui.ac.ir/article_17302.html

35. Ansari B, Tasbihsazan S, Khademi A, Rezaei M. Effectiveness of Metacognitive Therapy on Worry, Rumination and Asthma Control in Patients with Asthma. IJRN. 2021; 7(3): 20-29. (In Persian) http://ijrn.ir/article-1-627-fa.html

36. Taheri Daghian A, Ghasemi Motlagh M, Mehdian H. Comparison of the effectiveness of dialectical behavior therapy and metacognitive therapy on reducing depression and rumination in depressed patients. MUMS. 2021; 63(6): 264-275.   (In Persian) https://mjms.mums.ac.ir/article_18374.html

37. Winter L, Schweiger U, Kahl KG. Feasibility and outcome of metacognitive therapy for major depressive disorder: a pilot study. BMC Psychiatry. 2020; 20(1): 566. https://doi.org/10.1186/s12888-020-02976-4

38. Hjemdal O, Solem S, Hagen R, Kennair LEO, Nordahl HM, Wells A. A Randomized Controlled Trial of Metacognitive Therapy for Depression: Analysis of 1-Year Follow-Up. Front Psychol. 2019; 8: 10-1842. https://doi.org/10.3389/fpsyg.2019.01842

39. Bayegan K, Sotodeh Asl N, Karami A, Asadzadeh Dahraei H. Comparison of the Effectiveness of Metacognitive Therapy and Behavioral Activation on Depression in Elderly with Type 2 Diabetes. Avicenna Journal of Neuro Psycho Physiology. 2020; 7(1): 9-14. http://ajnpp.umsha.ac.ir/article-1-305-en.html

40. Schaich A, Heikaus L, Assmann N, Köhne S, Jauch-Chara K, Hüppe M, Wells A, Schweiger U, Klein JP, Fassbinder E. PRO*MDD Study Protocol: Effectiveness of Outpatient Treatment Programs for Major Depressive Disorder: Metacognitive Therapy vs. Behavioral Activation a Single-Center Randomized Clinical Trial. Front Psychiatry. 2018; 9: 584. https://doi.org/10.3389/fpsyt.2018.00584

41. Dimidjian S, Martell CR, Addis ME, Herman-Dunn R. Behavioral activation for depression. In D. H. Barlow (Ed.), Clinical Handbook of Psychological Disorders (328–364). New York: The Guilford Press; 2008.

42. Wells A. Metacognitive therapy: A practical guide, (Ch.9: Major depressive disorder). New York: Guilford press, 2009.

43. Nolen-Hoeksema S, Morrow J. A prospective study of depression and posttraumatic stress symptoms after a natural disaster: The 1989 Loma Prieta earthquake. Journal of Personality and Social Psychology. 1991; 61: 115-121. doi.10.1037/0022-3514.61.1.115

44. Bagherinezhad M, Salehi Fadardi J, Tabatabayi SM. The relationship between rumination and depression in a sample of Iranian student. Research in Clinical Psychology and Counseling.   2010;   11(1):   21-38.   (In   Persian) https://tpccp.um.ac.ir/article_28015.html?lang=fa

45. Tanhaye Reshvanloo F, Torkamani M, Mirshahi S, Hajibakloo N, Kareshki H. Validity and Reliability Assessment of the Persian Version of the Co-Rumination Questionnaire. Journal   of   clinical   psychology.   2021;   13(1):   79-87.   (In   Persian) https://jcp.semnan.ac.ir/article_5107.html

46. Mortezaei Z, Ali Mirzaei M, Shamsi S. Comparison of metacognitive therapy and stress reduction program therapy based on mindfulness on depression, self-evaluation and emotion regulation in women with postpartum depression. New ideas of psychology. 2017; 1(3): 30-40. http://jnip.ir/article-1-104-fa.htmal (In Persian)

47. Khoshlahjeh A. The effect of metacognitive therapy in reducing symptoms of depression and anxiety in female patients with constipation. Educational Sciences and Psychology. 2017; 6(21): 116-128. https://hpj.journals.pnu.ac.ir/article/-3703.html (In Persian)

48. Ghadampour E, Azizi A, Mohammadi J. Efficacy of detached mindfulness in metacognitive therapy on postpartum depression. Nursing Education. 2017; 5(5): 17-22. http://jne.ir/article-1-738-fa.html (In Persian)

49. Hasanvandi S, Valizadeh M, Mehrabizadeh Honarmand M. The effectiveness of group-based metacognitive therapy on symptoms of depression and rumination. Principles of Mental Health. 2013; 15(57): 142-168. doi.org/10.22038/jfmh.2013.775 (In Persian)

50. Ma SH, Teasdale JD. Mindfulness-based cognitive therapy for depression: replication and exploration of differential relapse prevention effects. Journal of Consulting and Clinical Psychology. 2004; 72(1): 31-40. https://doi.org/10.1037/0022-006x.72.1.31

51. Wells A, Welford M, Fraser J, King P, Mendel E, Wisely J. Chronic treated with metacognitive therapy: An open trial. Cognitive and Behavioral Practice. 2008; 15(2): 85-92. https://doi.org/10.1016/j.cbpra.2006.11.005

52. Wells A, Sembi S. Metacognitive therapy for PTSD: A preliminary investigation of a new brief treatment. Journal of Behavior Therapy and Experimental Psychiatry. 2004; 35(3): 307-318. https://doi.org/10.1016/j.jbtep.2004.07.001

53. Wells A, Matthews G. Attention and emotion: A clinical prespective. UK: Erlbaum, 1994.

54. Martell C, Addis M, Dimidjian S. Finding the Action in Behavioral Activation: The Search for Empirically Supported Interventions and Mechanisms of Change. In Hayes, S. C., Follette, V. M., & Linehan, M. M (Eds), Mindfulness and acceptance: Expanding the cognitive behavioral tradition. New York: Guilford Press, 2004: 152-167

55. Ritschel LA, Ramirez CL, Jones M, Craighead WE. Behavioral activation for depressed teens: A pilot study. Cognitive and Behavioral Practice. 2011; 18(2): 281-99. https://doi.org/10.1016/j.cbpra.2010.07.002