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The Effectiveness of Cognitive-Behavioral Therapy on the Social Anxiety, Rumination, and Psychological Well-Being of People with Depression Referred to Integrated Health Centers: Randomized Clinical Trial

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Review Article

Abstract

Introduction: Depression as an emotional factor is one of the mental disorders that should be seriously considered. The aim of this study was to evaluate the effectiveness of cognitive-behavioral therapy (CBT) on the social anxiety, rumination, and psychological well-being of people with depression.

Materials and Methods: The present study was a randomized clinical trial with a control group. The target population was people with depression who referred to the integrated health centers in Abadan, Iran. 30 people with depression who were willing to participate in the study were purposefully selected according to the study inclusion criteria
and were randomly assigned to the experimental and control groups (each group consisted of 15 people). The volunteers were requested to fill the research questionnaires in the pretest stage. Then, the experimental group participated in 9 sessions of CBT and the control group was saved on the treatment waiting list. After the last treatment session for the experimental group, both groups filled the questionnaires again in the posttest and follow-up stages. Data were collected using Persian version of Beck Depression Inventory (BDI), Social Phobia Inventory (SPIN), Ruminative Response Scale (RRS), and Psychological Well-Being (PWB) scales. Data analysis was performed using one-variable analysis of covariance (ANCOVA) and multivariate analysis of covariance (MANCOVA) test at the significance level of 0.05.

Results: Group CBT had a significant effect on social anxiety ($P \leq 0.001$), rumination ($P \leq 0.001$), and quality of life (QOL) ($P \leq 0.001$) of people with depression.

Conclusion: Group CBT is effective on social anxiety, rumination, and psychological well-being of people with depression and this approach can be recommended to improve the psychological problems of people with depression.

Keywords: Social anxiety; Depression; Psychological well-being; Cognitive-behavioral therapy; Rumination

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Introduction

Depression is a common mental disorder, with an estimated prevalence of 13%-19% (2). The World Health Organization (WHO) has predicted it to be the second major cause of disease in the world after cardiovascular disease (CVD) by 2020 (3). These statistics suggest that the current prevention and treatment measures are inadequate (5, 4). As depression is a recurring and debilitating disorder, it is crucial to identify and address the factors that contribute to it (6). One such factor is rumination (7).

Depression is often associated with rumination based on the metacognitive model of depression. The goal of metacognitive therapy is to understand the root causes of rumination and eliminate this harmful process. While there is no single definition for

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rumination, it can be defined as any repetitive thought pattern or tendency (8). To understand the causes of depression, creating a metacognitive model of rumination and depression is an essential step in metacognitive therapy. This model is based on the self-regulatory executive function model in psychological disorders (9). It assumes that individuals who are prone to depression worry and ruminate about their underlying beliefs and metacognitions (10). Negative cognitive models and rumination have been identified as risk factors in depression according to the metacognitive models of depression (11).

Additionally, social anxiety has been found to have a correlation with depression (12, 13). Psychological well-being is defined as the development of the true talents of every individual (14) and consists of self-control, individual growth, purposefulness in life, self-acceptance, happiness, environmental mastery, and optimism (15). One of the treatments used for people suffering from depression is cognitive-behavioral therapy (CBT) (16).

The CBT method has emerged from the combination of two behavioral therapy approaches (which is mainly based on Pavlovian and Neo-Pavlovian conditioning) and cognitive approach in the form of cognitive therapy and in the framework of cognitive psychology and basic cognitive knowledge. By including various theories and attitudes, the approach aims to recognize the role of cognitive processes in processing information and how a person responds to stimuli. The approach uses terms and concepts that align with behavioral therapy and can be evaluated and measured (10). Through this method, patients can identify negative thoughts and examine them, with an emphasis on self-help. The therapist aims to develop skills in the patient to not only solve current problems, but also prevent similar issues in the future (11). Ultimately, the goal is to identify and reconstruct irrational beliefs and schemas related to oneself, others, and the world, which can cause emotional disturbances and maladaptive behaviors (17).

Previous studies have confirmed the effectiveness of group CBT in reducing depression in patients with brain tumors (18), depression (19), and chronic back pain (20). The aim of the approach is to educate clients to identify and replace their ineffective thoughts, and to cope with unpleasant life events (17). This study was conducted with the aim to investigate the effectiveness of CBT on social anxiety, rumination, and psychological well-being in individuals who are suffering from depression, as these issues have not been previously studied in this population.

Materials and Methods

The statistical population of this randomized controlled clinical trial included people who suffered from depression, were referred to comprehensive health centers in Abadan city, Iran, in 2019, and scored higher than 17 on the Beck Depression Inventory (BDI). After making the necessary arrangements with the comprehensive health centers of Abadan city, patients were informed of the formation of group counseling sessions. Then, 30 people who were eligible to enter the study were selected in a targeted manner (those who had a score higher than 17 in the BDI questionnaire), and were randomly (using a table of random numbers) placed into the experimental and control groups. Using G*Power software (version 3.1.9.7; University of Düsseldorf, Düsseldorf, Germany), and considering an effect size of 0.25, alpha of 0.05, and test power of 0.80 to achieve the desired power, a total of 30 people were estimated as the sample size.

After randomly assigning the participants to the study groups, 9 experimental group sessions were held in 90-minute sessions over 2 months at the counseling center. Before the beginning of the sessions, an orientation session was held for the members of the experimental group, during which general explanations about the group therapy were provided. The researcher explained the conditions of the research and written consent of participation was obtained from all participants. Research questionnaires were completed during the introduction session, after 9 therapy sessions, and 2 months after the research ended. The experimental group received 9 sessions of counseling and group therapy, while the control group was put on an intervention waiting list. In order to adhere to ethical principles, after collecting follow-up questionnaires, CBT group therapy sessions were also conducted for the control group. In order to conduct the research, all participants answered all research questionnaires and provided information on their demographic characteristics before and after the treatment sessions.

The study inclusion criteria included having basic literacy, visiting health centers in Abadan City, scoring above 17 on the BDI scale, residing in Abadan City, and giving informed consent for participation in the treatment sessions. Individuals who had mental disorders, along with depression, that required immediate treatment were excluded from the study, as this could hinder the natural treatment process. Additionally, non-cooperation and physical

disability that prevented participation in meetings were also considered as exclusion criteria. All stages of the research were approved by the Ethics Committee in Biomedical Research of Islamic Azad University, Khorramshahr Branch, Iran, and registered in the Clinical Trials Registration System before the study began. The following section provides details on the tools used.

Beck Depression Inventory: The BDI-II is an updated version of the BDI scale, which was originally designed to measure the severity of depression. This revised questionnaire is more consistent with the DSM-IV and covers all aspects of depression based on cognitive theory. Like the original version, it consists of 21 items scored on a Likert scale ranging from 0 to 3, resulting in a total score range of 0-63. Two items have been modified for increased sensitivity to depression severity. The questionnaire can be used for individuals aged 13 and above and is divided into 3 symptom groups: emotional, cognitive, and physical symptoms. Studies in Iran have shown that the BDI-II is a valid and reliable tool, with an internal consistency range of 0.73-0.92, and a Cronbach's alpha coefficient of 0.86 for the patient group and 0.81 for the non-patient group.

Ruminative Response Scale: The Social Phobia Inventory (SPIN) is a self-assessment tool originally developed by Connor et al. to evaluate social anxiety. It consists of 17 items and is divided into the 3 subscales of fear (6 items), avoidance (7 items), and physiological discomfort (4 items). Each subscale score can be calculated independently, while the total score is the sum of the scores of all 3 subscales (22). The validity and reliability of the SPIN have been verified by Dogaheh in Iran (23).

Rumination Questionnaire: Nolen-Hoeksema et al. developed a self-assessment questionnaire that assesses 4 different types of reactions to negative mood (24).

Response Styles Questionnaire (Responses to depression questionnaire): The Response Styles Questionnaire (RSQ) consists of the Ruminative Response Scale (RRS) and Distracting Responses Scale. The RRS scale consists of 22 items scored on a scale ranging from 1 (never) to 4 (often) (24). The Cronbach's alpha coefficient of the RRS is in the range of 0.88 to 0.92. The results of Treynor et al.'s study showed that the test-retest correlation for RRS is 0.67 (25). This scale was also translated from English to Farsi in Iran and its Cronbach's alpha coefficient was calculated to be 0.88 as an index of internal consistency for the RRS scale (26).

Psychological Well-Being scales: Ryff's Psychological Well-Being (PWB) scales has 18 items in the 6 subscales of positive relations with others, self-acceptance, environmental mastery, autonomy, objective life, and personal growth (27). To determine respondents' overall psychological well-being, the sum of their scores in these 6 components is calculated. The subject must indicate his/her level of agreement with each item on a 6-point Likert scale ranging from strongly agree to strongly disagree. The total score of the PWD scales reflects a person's psychological well-being. The validity of this scale has been confirmed through the use of reliable depression, anxiety, and stress questionnaires using the concurrent validity method (27). Additionally, the Cronbach's alpha coefficient for the total score of the Persian version of the scale was 0.71 (28).

The CBT approach was implemented in 9 weekly 90-minute sessions for 2 months based on Beck's training package. The validity of this protocol has been confirmed by its creators and it has high form and content validity (17). Moreover, its content validity was confirmed, and then, it was used in the present study by 2 professors of the doctoral level of psychology at the Islamic Azad University, Khorramshahr-Khalij Fars Branch, Iran. The CBT treatment intervention was implemented as a group treatment for people in the experimental group. A summary of the treatment sessions is given below.

The first session: creating a therapeutic alliance and examining the symptoms of anxiety and depression disorders and dissatisfaction with life, creating group cohesion, explaining the individual's problem in the form of depression and anxiety, a summary of the treatment plan

The second session: introducing the downward spiral of depression and anxiety, presenting the etiology of depression and anxiety, presenting the logic of the three treatment components, and examining participants' reaction to the beginning of the treatment plan

The third session: reviewing assignments, creating a hierarchy of fear and avoidance, explaining and practicing self-review, assigning assignments

The fourth session: reviewing the task, automatic thoughts and the emotions caused by them, preliminary review of cognitive reconstruction skills, identifying automatic thoughts and the emotions caused by them, assigning homework

The fifth session: Reviewing homework, identifying thinking errors, challenging spontaneous thoughts, using wise responses, assigning tasks, and preparing for the first confrontation session

The sixth session: Reviewing the assignment,

reviewing the logic of gradual and regular confrontation, carrying out in-session confrontation, and assigning homework with an emphasis on reducing depression and anxiety and increasing life satisfaction

The seventh and eighth sessions: reviewing homework, presenting several additional points about the next confrontations, conducting in-session confrontations, examining the clients' questions and answering them in the field of depression and anxiety and life satisfaction, assigning homework

The Ninth session: reviewing homework, explaining the logic of advanced cognitive reconstruction, and fundamental beliefs, discovering and challenging fundamental beliefs, assigning homework with an emphasis on reducing depression and anxiety, and increasing satisfaction with life

The tenth session: evaluating progress, making decisions about additional treatments, discussing the possibility of recurrence and its prevention, explaining the end process, examining expectations after the end of the treatment, raising awareness about different emotions regarding the end of the treatment with an emphasis on reducing depression and anxiety and increasing satisfaction with life

In order to describe the data, centrality and dispersion indices such as mean and standard deviation were used, and Tukey's and the Bonferroni post hoc tests and repeated measures ANOVA were used to analyze the data. It should be noted that Levene's test (to check the homogeneity of variances), the Shapiro-Wilk test (to check the normality of data distribution), Box's M, and Mauchly's sphericity tests were used to check the assumptions of the inferential test. In addition, chi-square test was used to compare the two groups in terms of gender, and ANOVA was used to compare age. Finally, the data were analyzed in SPSS software (version 22; IBM Corp., Armonk, NY, USA). P values of less than 0.05 were considered significant.

Results

All eligible volunteers followed the study completely, and since there was no drop in participants in any of the studied groups (100% adherence rate), the Intention to Treat (ITT) test was not performed. The average age of the experimental and control group participants was 36.69 ± 7.83 and 35.51 ± 7.11 years, respectively. There was no significant difference between the two groups in terms of demographic characteristics (P < 0.05) (Table 1).

Table 1. Frequency distribution and comparison of demographic characteristics of the participants of the two groups

Demographic variables	Group		P
	CBT	Control	
Gender			0.33
Female	6 (40)	4 (26.7)	
Male	9 (60)	11 (73.3)	
Marital status			< 0.999
Single	0 (0)	1 (6.7)	
Married	15 (100)	14 (93.3)	
Age group (years)			
20-30	1 (6.7)	0 (0)	0.43
31-40	10 (66.7)	10 (66.7)	
41-50	4 (26.7)	5 (33.3)	
Level of education			0.08
Illiterate	1 (6.7)	0 (0)	
High school	11 (73.3)	14 (93.3)	
Associate degree	2 (13.3)	0 (0)	
Bachelor's degree	1 (6.7)	1 (6.7)	

CBT: Cognitive-behavioral therapy
Data are reported as number (percentage).

The scores of social anxiety, rumination, and psychological well-being in the two groups before and after the study are presented in Table 2.

Before the intervention, repeated measures ANOVA and AVCOVA tests were performed to meet the assumptions, and the results of Box's M, Mauchly's sphericity test, and Levene's test were checked. Since Box's M test was not significant for any of the research variables, the homogeneity condition of the variance-covariance matrices was established. Furthermore, the non-significance of each variable in Levene's test showed that the assumption of equality of variances between groups is also valid.

Table 2. Central indices and dispersion of scores of social anxiety, rumination and psychological well-being

Variable	Group	Pretest (mean ± SD)	Posttest (mean ± SD)	Follow-up (mean ± SD)
SPIN score	CBT	33.66 ± 8.29	28.06 ± 6.18	27.60 ± 5.38
	Control	31.73 ± 8.49	31.20 ± 8.26	30.80 ± 7.20
RRS score	CBT	38.06 ± 6.43	23.80 ± 4.31	33.13 ± 4.42
	Control	37.60 ± 4.13	37.26 ± 4.00	37.46 ± 3.96
PWB score	CBT	59.86 ± 4.74	65.53 ± 4.02	64.80 ± 4.12
	Control	60.11 ± 4.59	60.53 ± 4.70	60.46 ± 4.77

CBT: Cognitive-behavioral therapy; SPIN: Social Phobia Inventory; RRS: Ruminative Response Scale; PWB: Psychological Well-Being scales; SD: Standard deviation

Therefore, to investigate the effect of the CBT method on social anxiety, rumination, and psychological well-being according to the fulfillment of parametric test assumptions, MANCOVA was used (Table 3).

Table 3. The results of significancy analysis of multivariate analysis of covariance test

Variable	Test	Statistics	F	P
Group	Pillai's trace	0.957	29.819	≤ 0.001
	Wilks' Lambda	0.043	29.819	≤ 0.001
	Hotelling's trace	22.364	29.819	≤ 0.001
	Roy's largest root	22.364	29.819	≤ 0.001

Based on the data presented in table 4, the probability value of Wilks' Lambda significance test is lower than the determined alpha level ($\alpha = 0.05$), so there was a significant difference between the two groups in terms of at least one of the dependent variables.

According to the results presented in table 5, the F value of the effect of the independent variable (CBT method) on the research variables was significant ($P < 0.010$). As a result, when the pretest effect is removed from the posttest results of the groups, the difference between the groups is significant at the 99% confidence level.

Compared to the control group, the scores of the CBT group showed a significant improvement in all three indicators of social anxiety, rumination, and psychological well-being ($P \geq 0.001$). Moreover, in this group, the mentioned scores improved significantly in the posttest and follow-up stages ($P \geq 0.001$). In order to check the difference between measurement times, the Bonferroni post hoc test was used, which is presented in table 6.

Discussion

The purpose of this study was to investigate the effectiveness of the group CBT method on depression, anxiety, and quality of life (QOL) of people suffering from depression. The findings showed that the group CBT method was effective on depression, anxiety, and QOL of people suffering from depression. These findings were in line with the results of studies by Nikyar et al. regarding the effectiveness of the CBT approach on depression and hope in brain tumor patients (29) and Ranjbar et al. regarding the effect of the CBT method on depression (30).

Considering that CBT is effective on the social anxiety disorders of patients with depression, it can be said that the effect of depression on life, and tension and excessive irritability caused by negative thoughts cause more worry and anxiety than the disease itself in these patients. Certain beliefs about the disease lead to incompatible coping strategies, the aggravation of psycho-physical symptoms, and the resulting suffering and disability. CBT group therapy firstly provides people with the context to express their thoughts, ineffective beliefs, and cognitive distortions freely and without fear, and then, examine and correct their thoughts, underlying beliefs, and cognitive distortions (29). Cognitive restructuring, which is also known as rational empiricism (30), helps people use logical reasoning to practically test the content of their anxious thoughts against the reality of their life experiences, and identify and even put their dominant anxiety thoughts to a behavioral test, that is, test the possibility of the occurrence of the event they are worried about in reality (7). In this way, the cognitive evaluation of incidents affects the response to those incidents and will be a prelude to changing cognitive activity. CBT training has an effective role in creating or changing knowledge and attitude in people (30). Considering that the followers of the CBT approach believe that the existence of some common mental errors can cause problems in our interpretation and perception of reality, and as a result, inappropriate moods and behaviors appear, CBT training can be effective in improving a person's anxiety and his/her ability to clearly, correctly, and effectively convey his/her thoughts, feelings, needs, and desires.

Table 4. The effect of cognitive-behavioral therapy on dependent variables (analysis of variance in multivariate analysis of covariance text)

Variable	Source	Degree of freedom	Mean square	F statistics	P	Effect size
Social anxiety	Pretest	1	20.020	7.359	0.011	-
	Group	1	13.241	4.867	0.036	0.153
Rumination	Pretest	1	2.343	1.370	0.252	-
	Group	1	1.528	0.893	0.353	-
Psychological well-being	Pretest	1	102.345	102.391	≤ 0.001	-
	Group	1	3.125	3.127	0.088	-

Table 5. Repeated measures analysis of variance (the effect of time and group on variables)

Variable	Source variable	Source effect	F statistics	P	Eta squared
SPIN	Intragroup	Time	70.48	0.001	0.71
		Time*group	35.39	0.001	0.55
	Intergroup	Group	5.59	≤ 0.001	0.17
RRS	Intragroup	Time	175.61	0.001	0.86
		Time*group	120.30	0.001	0.81
	Intergroup	Group	40.30	≤ 0.001	0.64
PWB	Intragroup	Time	164.78	0.001	0.85
		Time*group	70.50	0.001	0.71
	Intergroup	Group	32.11	≤ 0.001	0.51

SPIN: Social Phobia Inventory; RRS: Ruminative Response Scale; PWB: Psychological Well-Being scales

The CBT approach helps rumination in people with depression by changing their abstract and non-adaptive thinking style into a constructive and specific thinking style. In this method, the patient learns how to identify the traps of non-constructive thinking and not get caught in them. Moreover, by involving the patient in a valuable life, this treatment model facilitates the process of avoiding getting stuck in rumination traps (31). Research has shown that rumination is an important factor in vulnerability to depression, predicting the onset, intensity, and duration of subsequent depression (32). Applying the CBT approach can reduce rumination. By changing faulty thinking, CBT is the most direct way to change the negative emotions and behaviors of people with depression. Therefore, in the CBT method, the person becomes aware of the effect that knowledge has on his/her feelings and behaviors (31).

The CBT approach helps a person replace non-adaptive behaviors with realism, a sense of efficacy, and increased activity by changing irrational behaviors, feelings, attitudes, and beliefs (33), and thus, helps to reduce rumination. In other words, by reducing the irrational thoughts of people with depression, including controlling non-adaptive behaviors such as not doing work and daily activities, the CBT approach causes people with depression to reduce their negative attitudes, and in this way, their negative thoughts. Methods such as modeling, gaining successful experiences, and social reinforcement are among the common methods used in CBT programs (32). Therefore, it is plausible that rumination improves as a result of the CBT approach.

To explain the efficacy of the CBT approach on the psychological well-being of people suffering from depression, it can be said that the cognitions and attitudes of patients have a great impact on their psychological well-being (30). According to the CBT approach, what people believe affects their feelings and behaviors. One of the basic principles of the CBT approach is the mutual and continuous influence between people's cognitions or opinions about the disease (thoughts), feelings, behaviors, and relationships with others (33). The CBT approach, in people who often have cognitive errors and illogical and destructive beliefs in their lives, increases their awareness of illogical thoughts and beliefs (34). Therefore, carrying out exercises in training sessions and assignments outside the sessions corrects false beliefs and thoughts, which improves the psychological well-being of patients. CBT training emphasizes the importance of acquiring skills and using these skills (35).

During the provided training, in addition to working on negative thoughts, people learn fruitful behavioral methods, which provide them with valuable resources in life. People under the influence of this training will gain the ability to provide their automatic thoughts and associated emotions as well as evidence to confirm and disconfirm them and reach some kind of self-awareness (34).

Table 6. Pairwise comparison of mean scores of variables at different times using the Bonferroni post hoc test

Variable	Steps		Mean differences	Standard error of estimation	P
Social anxiety	Pretest	Posttest	-4.46	1.11	≤ 0.001
		Follow-up	-3.33	1.11	≤ 0.001
	Posttest	Follow-up	1.13	0.59	0.105
Rumination	Pretest	Posttest	-2.26	0.51	≤ 0.001
		Follow-up	-1.93	0.51	≤ 0.001
	Posttest	Follow-up	0.33	0.53	0.804
Psychological well-being	Pretest	Posttest	-2.26	0.51	≤ 0.001
		Follow-up	-1.93	0.51	≤ 0.001
	Posttest	Follow-up	0.33	0.53	0.804

Followers of the CBT approach believe that the presence of some common mental errors can cause problems in our interpretation and perception of reality, and inappropriate attitudes and behaviors will appear as a result. Despite this issue, the effectiveness of CBT in improving the psychological well-being of people with depression depends on their ability to correctly and effectively communicate their thoughts, feelings, needs, and desires (35).

Limitations

Of the limitations of the current research, we can mention environmental and family factors, such as family conditions, parents' status, and economic and social status that may affect the results of the study, which were not controlled in the current research. Furthermore, the current research was conducted only on the population of depressed people who were referred to comprehensive health centers in Abadan City, and caution should be observed in generalizing the results to other regions and cities.

Recommendations

In future studies, it is suggested that an expert therapist who is unaware of the research process be used in therapy education to reduce bias. Moreover, we suggest to follow up the research after group training with individual counseling is also recommended. Using a wider community of people with depression is suggested to increase generalizability and improve social anxiety, rumination, and psychological well-being in individuals with clinical symptoms of depression. Mental health professionals and those in the field of health should design and use appropriate methods inspired by CBT programs to increase the mental health of patients with depression.

Conclusion

Based on the findings of the present research, it can be said that the group CBT approach has an effect on depression, anxiety, and the QOL of people with depression, and this method can be used to help patients with depression.

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Authors' Contribution

Study design and ideation: Ahmadreza Varmzyar and Behnam Makvandi

Getting financial resources for the study: Ahmadreza Varmzyar and Behnam Makvandi, Naser Seraj Khorrami

Scientific and Executive support of the study: Ahmadreza Varmzyar, Behnam Makvandi, Naser Seraj Khorrami, Negin Moradi

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Analysis and Interpretation of Results: Naser Seraj Khorrami, Fardin Moradi Manesh

Specialized statistical services: Naser Seraj Khorrami

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Conflict of Interest

Authors have no conflict of interest.

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