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THE EFFECTIVENESS OF GROUP METACOGNITIVE THERAPY (GMCT) ON EMOTIONAL INTELLIGENCE (EI) AND ANXIETY OF WOMEN REFERRING TO HEALTH HOME OF TEHRAN'S THIRD DISTRICT

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ABSTRACT

The present study was conducted to evaluate the effectiveness of GMCT on EI and anxiety in women referring to the health homes. The study design was semi-experimental using a pre-test and post-test along with control group. The population of the study was women referring to Health Home of Tehran's Third district. Sampling method was voluntary. From among the women who referred to Health Home of Third District of Tehran, 30 were selected based on the inclusion criteria and after completing the questionnaires, 20 of them with the lowest scores in the questionnaires were randomly assigned to the experimental (10 subjects) and control (10 subjects) groups. After the pre-test, conducted using Beck Anxiety Inventory (BAI) and Bar–On Emotional Intelligence Questionnaire, during two months in 8 sessions of 120 minutes each week, the experimental group underwent GMCT based on Wells meta-cognitive therapy in a group of 10 people. All the subjects filled out the research questionnaires after completing treatment and the two-month follow-up, whereas the members of the control group got no intervention during the study. The subjects were post-tested with the same tool as pre-test. We analyzed the data using statistical descriptive methods to get the frequency, percentage, mean, standard deviation, standard error, multivariate analysis of covariance analysis, and single variable covariance analysis. The results showed that GMCT made meaningful changes in the experimental group's members, compared to the control group members, concerning reducing anxiety and enhancing EI.
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Introduction

Meta-cognitive therapy is an emerging approach created due to systematic modeling and hypothesis-testing. In the metacognitive therapy, the root causes of problems stem from flexible and repetitive styles of thinking in response to thoughts of negative emotions and beliefs. In fact, by understanding the emotions, the person can avoid the subsequent problems. However, if the opposite is done and the feelings are suppressed, they will become stressful and suffer anxiety. It is worth noting that EI skills enable the person to stop the occurrence of tough situations before they become uncontrollable. People unable to use their own EI skills are likely to use other less effective methods to manage their moods, to suffer depression or addiction twice as much as the others, and even think of committing suicide. EI skills empower one's ability to cope with anxiety.

For treating psychological problems, in addition to drug therapies, various psychological treatments are proposed over consecutive years. The first generation of behavioral approaches in contrast to psycho-analytic psychology was introduced

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based on classical and factual conjectural notions during the 1950s and 1960s. The second generation of these treatments called cognitive-behavioral therapy was created until the 1990s with more emphasis on cognitive aspects and the emphasis of these types of treatments is on the role of beliefs, cognition, schemas, information processing system and creating mental disorders and that in treatment period changes should be made in them by different methods or delete them completely. Today, we deal with the third generation of this type of treatment that can generally be called acceptance-based models, such as under the general title, such as Mindfulness based cognitive therapy (MBCT), Meta cognitive therapy, and Acceptance and Commitment Therapy (ACT). In this treatment instead of changing cognitions, it is tried cognitive impairment associated psychological try to increase the psychological connection of the individual with his thoughts and feelings. One of the therapies proven to be effective in improving anxiety, depression [1,2], Stress Reduction [3], Emotion Control Strategies [1], and cognitive emotion regulation strategies is Metacognitive Therapy. Various studies have indicated a relationship between certain aspects of metacognition and psychological disorders [3].

On the other hand, is evident that women form the main pillars of the family and their physical and mental health has a direct effect on physical and mental health of the family and rearing their children. The World Health Organization has introduced women's health as an index to the country's growth rates [4].

Today, despite the drastic cultural changes in lifestyle, many people do not have the required capacities to tackle life issues making them susceptible to the problems of life and its conditions [5]. Recently, in examining the psychological disorders and social deviations, psychologists concluded that many of the disadvantages of people's disability are rooted in proper analysis of their own situation, lack of control of their personal adequacy to deal with difficult situations, and unpreparedness to solve problems of life. Thus, given the ever-increasing changes in society and the development of social relationships, preparation for confronting difficult situations seems crucial [6].

Given what has been mentioned, this research aimed to determine the effectiveness of GMCT on EI, its components and anxiety in women referring to health homes and test the hypotheses.

The main hypothesis

GMCT is effective on EI and anxiety in women referring to home health.

Sub-hypotheses

1. GMCT is effective on EI of women referring to home health.
2. GMCT is effective on the anxiety of women referring to health homes.
3. GMCT is effective on the components of EI in women referring to the health home

What is going on ahead is theoretical and research hypothesis, method, findings and conclusions.

It is hoped that the results of this study provide a clear and practical perspective for counselors and psychotherapists as well as theoretical and practical tools for reducing psychological problems in different educational institutions, such as counseling centers in universities and clinics.

2. Theoretical basics and literature

2.1. Metacognition

Metacognition, as a term, was introduced by Flavel in 1979 and refers to the individual's knowledge of cognitive processes and skill in controlling these processes. Miscellaneous definitions have been presented for metacognition:

It is defined as knowledge of the person of cognitive processes and strategies, thinking about thought [8]; knowledge and control applied for the thought and activities of learning, knowledge about knowledge, and the knowledge of the individual of his own learning. Meta-cognition is a key to cognitive ability, allowing the individual to control and rebuild his thoughts acting as a base for learning. Moreover, meta-cognition can be considered as the awareness of the individual of his own thinking process and his ability to control this process. Meta-cognition is a cognitive model acting at a higher level of performance under control.

It is worth noting that metacognition has been examined as the cause of many psychological problems recently [3].

2.1.1. Metacognitive treatment (MCT)

MCT is a new approach suggested recently and was really welcomed due to its special features, systematic structure, a limited number of therapy sessions, emphasis on the cognitive process rather than its content, designing specific techniques such as Detached Mindfulness Attention Training Technique, and offering special models for each disorder and their experimental evaluation [8,9]. Despite the short time passing from its emergence, many studies have been conducted to evaluate the basic theory of meta-cognitive and therapeutic treatment. MCT of anxiety and depression disorders is an approach emerged in recent years in understanding and treating emotional disorders. During these years, several studies have been conducted on the effectiveness of meta-cognitive therapy on depression. The results of these studies suggest that interactions such as metacognitive therapy that concentrate on the change in the patient relationships with ineffective thinking are more useful than the efforts to change the mindset and belief. Thus, it seems that this approach can make compensations for some of the deficiencies of cognitive theories prevent the onset of the disease after treatment of depression. It can also plays a significant role in prevention.

2.2. Emotional Intelligence

Winepine used the term “emotional intelligence” for the first time in his PhD thesis, but Maîrer and Salvey [10] developed the meaning of the term. They considered EI as a kind of social intelligence, including the ability to control one's own and others' emotions and distinguish between them and using this for effective performance in the environment to face the demands of life consisting of intrapersonal and interpersonal components of Gardner summarized in five areas as follows:

- Self-awareness: awareness of self, self-reflection ability and recognition of feelings as they exist
- Emotion Management: Controlling the emotions and feelings in a desirable manner and identifying the origin of these feelings and finding ways to manage and control fears, excitements, anger, and so on

Self-motivation: directing and guiding emotions and feelings towards the goal, self-excitement, and delaying desires and inhibiting efforts

- Sympathy: Sensitivity to the interests and feelings of others and tolerating their views and valuing the differences between people in relation to their feelings about things and affairs
- Relationship Arrangement: this includes the management of the excitement of others and having social skills. EI includes capabilities such as stimulating endurance against despair, impulse control, mood moderation, and avoiding destructive stress to deter mental disorders. In other words, EI is the ability of the person to identify and express the emotions of self and others positively [11].

EI is a set of non-cognitive abilities and skills allowing a person to be able to cope with the demands and pressures of the surroundings [12].

2.2.1. Aspects of EI

John Mayer and Peter Salovay outlined the four dimensions of EI as follows [13]:

Self-awareness, social awareness, relationships management, and self-control

2.2.2 EI Models

EI Models introduced so far are Salovey and Mayer's Emotional Intelligence Model, Bar-On's mixed model of emotional intelligence, and the combined model of EI. In this study, due to using Bar-On's Emotional Intelligence Questionnaire, we examine issues concerning Bar-On's mixed model of EI.

Bar-On's model of EI has to do with having the potential to act and succeed in the performance, which is process-oriented rather than product-oriented [13]. This focuses on a number of emotional and social potentials, which include the ability to beware, communicate with others, reach strong emotions, handle strong emotions, adapt to changes and resolve issues of a social and personal nature [11].

Bar-On's model introduces five components of EI including interpersonal, interpersonal, adaptability, stress management, and general mood. Among these components, there are sub-components shown in the table below [13].

Table 1.2: EI model of Bar-On

Components	Sub-components
1. Intrapersonal relationships	1- Self-esteem, 2- Independence, 3- self-expression, 4- Emotional self-consciousness
2. Interpersonal relationships	5. Self-flourishing
3. Adaptability	6- Interpersonal relationships, 7- Social responsibility, 8- Empathy
4. Stress management	9- Reality Testing, 10- Flexibility, 11- Problem Solving
5. General mood	12- Stress tolerance, 13- Impulse control

Bar-On has assumed that people with EI higher than average are more successful in dealing with the demands and environmental pressures. He also points out that the lack of EI can lead to lack of success and emotional problems. Bar-On states that EI and cognitive intelligence are equally involved in the overall intelligence of the person, and thus he proposes it as an indicator of individual talent for success in life [13].

2.3. Anxiety

The most common reaction to a stressor is anxiety. Anxiety is an unpleasant excitement usually described with these words: concern, perturbation, tension, and fear of feelings that everyone experiences with varying degrees. Anxiety disorders are one of the most common psychiatric disorders in the United States and many other nations studied. Moreover, examinations have always shown that these disorders cause many problems and complications, engage high levels of health care services, and make many problems in the functioning of individuals. New examinations have additionally demonstrated that unending uneasiness issue can build the mortality related with the confusions of essential hypertension. Thus, psychiatric clinics and other experts must be able to diagnose and treat the anxiety disorder quickly and accurately [7].

In another definition, it is stated that anxiety is a type of emotional state characterized by a feeling of insecurity that is mostly mistaken with fear and perturbation and its distinction is the lack of physical changes such as feeling of strangulation, sweating, increased pulse rate, and so on, considered as signs of fear. Many schools tried to justify the incidence of anxiety according to principles of their positions. It is interesting that, from the point of view of theorists of education, this is a kind of acquisition tendency. However, psychoanalysis, in contrast to the anxiety caused by the failure of luminous motivation, considered to be a foramen-factor of the danger directly involving “I” that is the conscious personality that with this prognosis can deal with appropriate actions or force its mechanisms to move and work .

It should be noted that anxiety disorders are of the commonest categories of mental disorders. In the national study of co-morbidity, the reports state that of every four persons, one has diagnostic criteria for at least an anxiety disorder, and the 12-month prevalence of these disorders is 17.7%. Women with life-long prevalence of 30.5%, compared with 19.2% of men, can be more likely to develop anxiety disorder. Finally, the prevalence of anxiety disorders decreases by the increase in socio-economic status [14].

2.3.1. Theories of Anxiety

Theories of anxiety can be categorized into psychoanalytic theory, behavioral theory, existential theory, biological view, and cognitive theory. Further studies on theories can be accessed in the descriptions of the titles of psychology.

2. Overview of the studies conducted

Papeli Meibodi and Shahangiyan [1] conducted a research to study the effectiveness of group therapy of cognitive and behavioral group therapy on reducing anxiety and adjustment of emotions. In a semi-experimental study with a pre-test post-test along a control group of 24 students of Alzahra University, after initial clinical evaluation and diagnosis of symptoms anxiety and exaggerated emotional regulation, the subjects were randomly divided into three groups: cognitive behavioral group therapy (8 subjects), metacognitive group therapy (8 subjects) and control group (8 people). The experimental groups received 10 sessions of weekly cognitive and physical activity activation. The tools used were Beck Anxiety Inventory, Loneliness Inventory, and Cognitive Emotion Regulation. Questionnaire (CERQ). The subjects completed the tools three

times: before intervention, at the end of intervention, and after two months of follow up. Multivariate covariance analysis was used for data analysis. The results showed that both cognitive and meta-cognitive behavioral group therapies were equally effective on anxiety symptoms. However, therapeutic techniques differed in their ability to differentiate between different types of emotional regulation, such as positive placement and diagnosis, so that meta-cognitive therapy was returned to a cognitive behavioral approach compared with cognitive behavioral therapy.

Bahadori, Jahanbakhsh, Jamshidi [15] conducted a study aimed at determining the effectiveness of metacognitive therapy on anxiety symptoms in patients with social phobia. This study was a quasi-experimental one with a pre-test post-test design, a three-month follow-up, and a control group. Among all patients with social phobia disorder referring to psychiatric centers of Shiraz in 2010, nineteen subjects were selected through purposive sampling and randomly assigned to experimental (10 subjects) and control groups (9 people). After pre-test, social phobia symptoms assessment questioner (SPSAQ) and Beck Anxiety Inventory (BAI) (1988) were conducted. The experimental group underwent 8 weeks of Wells meta-cognitive therapy, but the control group did not receive any intervention. The results of multivariate covariance analysis showed that metacognitive therapy had a significant effect on reducing the anxiety symptoms in patients with social phobia in the experimental group ($P \leq 0.001$).

King and Wells [9] showed that due to individual metacognitive therapy, there was a significant reduction in the social, health and social outcomes of patients with over-the-counter anxiety disorder. The results of their study showed that individual metacognitive therapy improves the level of concern, depression, and anxiety in patients with generalized anxiety and these results lasted for one year.

3. Method

3.1. Study design

The present study is a semi-experimental study with pre-test and post-test and a control group. In this project, 20 subjects were selected and randomly assigned to control and experimental groups. Then, before applying GMCT (independent variable), the selected subjects in both groups were measured by pre-test using Bar-On's questionnaire of EI and BAI. Then the experimental group underwent GMCT, whereas the control group received no intervention. Finally, the dependent variables (emotional intelligence and anxiety) in the two groups were examined.

3.2. Population of the study

The population of this study was all women referring to Health Home of Tehran's Third district of Tehran, who referred to the training centers, of whom 20 were randomly selected and placed in the experimental group (10) and control group (10).

3.3. Sample (sample size, sampling method, sample selection criteria)

The sample size of the study was 20 people. The sampling method was voluntary, so that among the women who visited Health Home of Tehran's Third district, 30 were selected based on inclusion criteria and sampling criteria (1- female, 2- Minimum diploma in education, 3- Having anxiety and concern, and 4- Volunteer to participate in the research). After completing the questionnaires, 20 of them who scored the lowest in the questionnaires were randomly assigned to 10 (control) and 10 (control) groups.

3.4. Research tool

In this study, Metacognition Questionnaire-30 (MCQ-30), Bar-On's EI, and BAI were used to collect data.

3.4.1. Metacognition Questionnaire-30 (MCQ-30)

This questionnaire was designed to test the meta-cognitive theory of mental disorders, especially the hypothetical role of meta-cognitive beliefs in the pathology of emotional disturbances. This questionnaire has 30 items that divides individuals based on a scale of 1 to 4. This questionnaire has 5 sub-scales obtained through factor analysis with acceptable internal consistency. These subscales include 1- Positive beliefs about anxiety, 2- Negative beliefs about inevitability and risk, 3- Negative beliefs about the need to control thoughts, 4- Positive beliefs about cognitive self-awareness, and 5- Negative beliefs about cognitive confidence.

3.4.1.1. Reliability and Validity

In the field of validity of this questionnaire, the Cronbach's alpha coefficient range for subscales was from 0.93 to 0.72 and its re-test reliability for the total score after 22 to 118 day period was 0.75; and for the subscales, it was from 0.59 to 0.87.

3.4.2. Bar-On Emotional Quotient Inventory

The questionnaire has 117 questions, and its options have been set on a 5-point Likert scale. In Iran, a 90-item version of it has been standardized that has 15 sub-scales that fall into five general areas. These five areas are:

Intrapersonal component: emotional self-awareness, self-expression, self-esteem, self-flourishing, independence

Interpersonal component: empathy, social responsibility, interpersonal relationships

Adaptability: solving the problem, realism, flexibility

Stress management: stress tolerance. Impulse control

General mood: Optimism and happiness

3.4.2.1. Reliability and Validity of Bar-On's Emotional Intelligence Questionnaire

Reliability of the questionnaire was calculated by calculating Cronbach's alpha: for male students, 74%; for female students, 68%; and for all individuals 93%. The examination of the face validity of the questionnaire was conducted on 500 students of different age groups (18-40 years) at the state and Azad universities (Isfahan, Isfahan Medical Sciences, Azad Khorasgan) individually and in person, the results of which indicated high face validity of the questionnaire.

3.4.3. Beck Anxiety Inventory (BAI)

The questionnaire was introduced in 1990 by Aaron Temkin Beck et al. that specifically assessed the severity of clinical anxiety symptoms. BAI is a self-report questionnaire designed to measure the severity of anxiety in adolescents and adults. This questionnaire contains 21 symptoms of anxiety.

3.4.3.1. Reliability and Validity of BAI

Studies show that this questionnaire has high reliability and validity. Its internal consistency coefficient (alpha coefficient) is 92%, its validity is 0.75 with a retest method, and correlations of items are between 0.30 and 0.76. Five types of content validity - content, concurrent, construct, diagnostic, and factor value - all of which indicate the effectiveness of this tool in measuring the severity of anxiety [7].

3.5. GMCT package

After sample selection and random division of the experimental group of MCT group in eight two-hour sessions (once a week) for two months. The structure of these sessions was based on Wells meta-cognitive treatment based on cognitive flaws as follows.

Table 3.1: The content of sessions based on Wells meta-cognitive therapy

Sessions	Session content
First session	Making patients aware of Metacognitive Therapy and purpose of group meetings / formulation of patients' problems based on meta-cognitive concepts, presentation of the technique of attention education training and use of attention education technique
Second session	A home-based homework review, teaching of a discrete mindfulness technique, and the implementation of a test of suppression of thought focused on negative meta-cognitive beliefs associated with irresponsibility
Third session	A review of home assignment and a technique for postponing worries focused on negative meta-cognitive beliefs associated with uncontrollability
Fourth session	Reviewing homework, challenging negative meta-cognitive beliefs about the danger of being worried, and examining the opposing evidence
Fifth session	Home assignment review, the use of verbal and behavioral rewording techniques on negative beliefs about danger of worries
Sixth session	Review of home assignment, challenging positive meta-cognitive beliefs about worries
Seventh session	Enhancing new processing designs rather than worrying
Eighth session	Prevention of relapse

3.6. Data Analysis

We used descriptive statistics and descriptors for obtaining frequency, percentage, mean, standard deviation, standard error of data to analyze the data obtained by the above questionnaires, and then inferential statistics for obtaining covariance analysis (MONOVA) as well as single-variable covariance analysis (ANCOVA) with the help of spss22.

4. Results

4.1. Descriptive data

At this stage, descriptive indices including the mean and standard deviation of the scores of variables were reported and reviewed. First, the meta-cognition scores and its five components were analyzed descriptively and reported. Moreover, the normal distribution of these scores was examined based on Kalmogorov-Smirnov test. The level of significance obtained from Kalmogorov-Smirnov in all 12 data groups was greater than 0.05. ($P>0.05$). In other words, the distribution of none of the data groups has a significant effect on the normal distribution of deviations, and the presumption of the normal distribution of data is appropriate for the metacognitive scores of the test group in the pre-test and post-test. The mean of total metacognitive scores of the pretest group was 70.2 and the mean score in the post-test of the experimental group was 47.0. Metacognitive scores have reduced 23 scores, the difference that can be seen in all the meta-cognitive components.

In the next stage, descriptive indices of EI scores were investigated in the three stages of measurement, along with the normal distribution of these scores based on the Kalmogorov-Smirnov test. The significance level of Kalmogorov-Smirnov in all 6 groups was greater than 0.05 ($P>0.05$); in other words, the distribution of any group was not significantly deviant from the normal distribution, and the presumption of the normal distribution of the data was suitable for the two-group EI scores.

The descriptive indices of EI component scores, which comprise 15 components, were evaluated in three stages of measurement, along with the normal distribution test of these scores based on Kalmogorov-Smirnov test. The significant level of Kalmogorov-Smirnov test for all 90 data groups was greater than 0.05 ($P<0.05$). ; in other words, the distribution of any group was not significantly deviant from the normal distribution, and the presumption of the normal distribution of the data was suitable for the two-group EI scores.

4.2. Inferential Data (Hypothesis testing)

The main hypothesis: GMCT has a significant effect on EI and anxiety in women referring to health home.

For studying the main hypotheses of the study - entitled “GMCT has a significant effect on EI and anxiety of women referring to the health home” - due to the existence of control and experimental groups and EI and anxiety, multivariate covariance analysis was used. Here, we mention that the dependent variables in this hypothesis were measured three times: pre-test, post-test, and follow-up. With the help of pre-test, we tried to select homogenous individuals, so that at the time of entering the test,

there was no significant difference between the groups, and the study of the survival of the emotional traces. These explanations can determine the reason for using multivariate covariance analysis as the main axis of the analysis of this study.
Before the main analysis of the multivariate covariance, the important hypotheses of this statistical test were examined. The important presumptions of this statistical test were examined. After the presumption of data normality in the descriptive phase, box test was used to examine the homogeneity assumption of the observed covariance matrix. The significance level of Mbox index was not statistically significant and the assumption of the homogeneity of multivariate variance was established ($P<0.05$). The next hypothesis was the condition for correlation between variables. The linear relationship between the dependent variables of the study was examined by Bartlett's test. The results of Bartlett test for examining the presumption of the correlation between the variables were meaningful that confirmed the establishment of the assumption ($p<0.05$).
Multivariate covariance test was conducted after reviewing and defining the presumptions.
Table 4.1: The results of multivariate covariance analysis of the effectiveness of GMCT on women's EI and anxiety

Change resources	Wilks' lamdba	F	df1	df2	p	η2
Anxiety	0.047	65.413	4	13	0.001	0.953
Emotional Intelligence	0.043	71.829	4	13	0.001	0.957
Group	0.068	44.657	4	13	0.001	0.932

In Table 4.1, it is seen that the value of F obtained for Wilks' lambda with the value of 44.65 with 4 and 13 degrees of freedom at the level of $p<0.001$ indicates a significant change in the dependent variables. The effect for the source of the change of the group was 0.935, which was strong and showed the independent variable that is GMCT and had a significant effect on the EI and anxiety of women referring to health home. So far, the results indicate the confirmation of the main hypothesis.
As the main effect was significant, for finer investigation of the changes and examination of the sub-hypothesis, the scores of the groups were examined by univariate covariance and Bonferroni's follow-up test, the results of which are reported.
First sub-hypothesis: GMCT has a significant effect on EI of the women referring to health home.
Table 4.2: The results of covariance analysis of the effectiveness of GMCT on EI

Sources	Variables	Total	DF	Mean square	F value	Sig.	Eta square
Emotional Intelligence Pretest	Post-test EI	201.18	1	201.18	3.273	0.089	0.17
	Follow-up EI	96.93	1	96.93	2.827	0.112	0.15
Group	Post-test EI	7114.81	1	7114.81	115.732	0	0.879
	Follow-up EI	1605.56	1	1605.56	46.83	0	0.745
Error	Post-test EI	983.63	16	61.48			
	Follow-up EI	548.55	16	34.29			
Total	Post-test EI	14303.75	19				
	Follow-up EI	12988.95	19				

The results in Table 4.2 showed a significant difference in EI scores of the groups in the post-test ($F1.16=115.73$ and $p<0.001$). With the follow-up, this difference is seen in Table 4.3. There is difference between the mean scores of the experimental group and the control group as 38 scores, which is a significant difference at $p<0.001$. The score of EI of this group has had a significant increase, based on which the confirmation of the first sub-hypothesis can be assured.
Table 4.3: The results of Bonferroni's follow-up test to compare the mean scores of EI

Dependent variable	Control group	Experimental group	Mean difference of the groups	SD	Sig.
Post-test of EI	287.06	325.44	-38.376*	3.567	0.001
Follow-up of EI	287.94	306.17	-18.230*	2.664	0.001

The second sub-hypothesis: GMCT has a significant effect on the anxiety of women referring to health home.
Table 4.4: The results of covariance analysis on the effectiveness of GMCT on anxiety

Sources	Variables	Total	DF	Mean square	F value	Sig.	Eta square
Anxiety pre-test	Post-test of anxiety	268.69	1	268.69	291.559	0.000	0.948
	Follow-up of anxiety	334.5	1	334.5	92.929	0.000	0.853
Group	Post-test of anxiety	125.88	1	125.88	136.592	0.000	0.895

	Follow-up of anxiety	38.5	1	38.5	10.696	0.005	0.401
Error	Post-test of anxiety	14.75	16	0.92			
	Follow-up of anxiety	57.59	16	3.6			
Total	Post-test of anxiety	475.8	19				
	Follow-up of anxiety	474	19				

The results in Table 4.4 show a significant difference between the anxiety scores of the groups in post-test (F1.16=136.59 and p<0.001). By following these differences in Table 4.5, a difference of 5.10 existed between the scores of the experimental group and the control group. This difference is significant at the level of p<0.001. The anxiety scores of the experimental group have had a significant reduction, based on which the second sub-hypothesis was confirmed.

Table 4.5: The results of Bonferroni follow-up test for comparison of anxiety scores

Dependent variable	Control group	Experimental group	Mean difference of the groups	SD	Sig.
Post-test of anxiety	36.65	31.55	5.105*	0.437	0.001
Follow-up of anxiety	36.41	33.59	2.823*	0.863	0.005

The prominent point in tables 4.1 to 4.5 is the results of the follow-up studies. The results of this study showed that group therapy has had a long-standing effect on anxiety and EI. By the evaluation of the process of pre-test, post-test, and follow-up, it becomes evident that in post-test, the differences had reached the highest value, and at the follow-up somewhat reduced and moderated. However, this decrease was such that the scores still show a significant difference in pre-test scores.

Third sub-hypothesis: GMCT has a significant effect on EI components of women referring to the health home.

Multivariate covariance analysis was used to examine the third sub-hypothesis, due to the existence of control and experimental groups and 15 dependent variables that are the components of EI. Here, we recall that the dependent variables in this hypothesis were measured three times: pre-test, post-test and follow-up. Multivariate covariance analysis has become the main axis of analysis of this hypothesis.

Prior to the main analysis of the multivariable covariance, the important presumptions of this statistical test were examined. After the presumption of data normality in the descriptive phase, box test was used to examine the homogeneity assumption of the observed covariance matrix. The significance level of Mbox index was not statistically significant and the assumption of the homogeneity of multivariate variance was established (P>0.109).

The next hypothesis was the condition for correlation between variables. The linear relationship between the dependent variables of the study was examined by Bartlett's test. The results of Bartlett test for examining the presumption of the correlation between the variables were meaningful that confirmed the establishment of the assumption (p<0.05).

Multivariate covariance test was conducted after reviewing and defining the presumptions. With respect to the establishment of all the important presumptions concerning the significance of the values of Wilks' lambda, in examining this hypothesis, they are mentioned for the conclusion in Table 4.6.

Table 4.6: The results of multivariate covariance analysis of the effectiveness of GMCT on components of women's EI

Change source	Wilks' lambda	F	df1	df2	p	η2
Pre-test of problem solving	0.523	0.366	3	1	0.803	0.523
Pre-test of prosperity	0.889	2.663	3	1	0.417	0.889
Pre-test of independence	0.677	0.699	3	1	0.682	0.677
Pre-test of tolerance	0.756	1.031	3	1	0.603	0.756
Pre-test of self-flourish	0.982	18.250	3	1	0.17	0.982
Pre-test of self-awareness	0.961	8.161	3	1	0.251	0.961
Pre-test of realism	0.976	13.595	3	1	0.196	0.976
Pre-test of relations	0.754	1.023	3	1	0.604	0.754
Pre-test of optimism	0.787	1.229	3	1	0.566	0.787
Pre-test of self-esteem	0.475	0.301	3	1	0.834	0.475
Pre-test of control	0.488	0.318	3	1	0.826	0.488
Pre-test of flexibility	0.899	2.954	3	1	0.399	0.899
Pre-test of responsibility	0.934	4.700	3	1	0.324	0.934
Pre-test of empathy	0.884	2.532	3	1	0.426	0.884

Change source	Wilks' lambda	F	df1	df2	p	η2
Pre-test of self-expression	0.683	0.719	3	1	0.677	0.683
Group	0.988	26.479	3	1	0.142	0.988

In Table 4.6, it is observed that F value obtained for Wilks' lambda with a value of 26.479 along 4 and 13 degrees of freedom is significant at the level of p<0.001 showing non-significant overall changes in the dependent variables of this hypothesis. The volume of the effect on the source of group change was 0.988, which is somewhat strong, indicating that GMCT methods have a strong effect on EI of women referring to health home.

For finer analysis of the differences in this calculation, the scores of the groups were examined by single-variable covariance within the multivariate analysis, the results of which are shown in the table below.

Table 4.7: The results of multivariate covariance analysis on the effectiveness of GMCT on the components of EI

Sources	Variables	Total	DF	Mean square	F value	Sig.	Eta square
Group	Post-test of problem solving	0.01	1	0.01	0.00	0.97	0.00
	Post-test of prosperity	7.80	1	7.80	34.48	0.01	0.92
	Post-test of independence	0.01	1	0.01	0.01	0.92	0.00
	Post-test of tolerance	9.69	1	9.69	4.08	0.14	0.58
	Post-test of self-flourish	9.27	1	9.27	8.42	0.06	0.74
	Post-test of self-awareness	8.82	1	8.82	6.40	0.09	0.68
	Post-test of realism	9.66	1	9.66	18.86	0.02	0.86
	Post-test of relations	1.70	1	1.70	0.40	0.57	0.12
	Post-test of optimism	3.42	1	3.42	5.14	0.11	0.63
	Post-test of self-esteem	3.06	1	3.06	2.72	0.20	0.48
	Post-test of control	2.12	1	2.12	1.78	0.27	0.37
	Post-test of flexibility	7.69	1	7.69	7.19	0.08	0.71
	Post-test of responsibility	0.81	1	0.81	0.38	0.58	0.11
	Post-test of empathy	0.81	1	0.81	1.52	0.31	0.34
	Post-test of self-expression	1.72	1	1.72	3.21	0.17	0.52
Error	Post-test of problem solving	7.98	3	2.66			
	Post-test of prosperity	0.68	3	0.23			
	Post-test of independence	3.19	3	1.06			
	Post-test of tolerance	7.14	3	2.38			
	Post-test of self-flourish	3.30	3	1.10			
	Post-test of self-awareness	4.13	3	1.38			
	Post-test of realism	1.54	3	0.51			
	Post-test of relations	12.79	3	4.26			
	Post-test of optimism	2.00	3	0.67			
	Post-test of self-esteem	3.38	3	1.13			
	Post-test of control	3.58	3	1.19			
	Post-test of flexibility	3.21	3	1.07			
	Post-test of responsibility	6.40	3	2.14			
	Post-test of empathy	1.60	3	0.53			
	Post-test of self-expression	1.61	3	0.54			

The reported results in the table above indicated a significant difference between the scores of prosperity of the groups in post-test (F1.3 = 34.49 and p<0.01). Moreover, the results showed a significant difference between the scores of the realism of the groups in post-test (F1.3=18.86 and p<0.02).

Table 4.8: Results of Bonferroni's follow-up test for comparing the mean of EI components

Dependent variables	Control group	Experimental group	Mean differences of the ground	SD	Sig.
Pre-test of problem solving	20.51	20.59	-0.078	1.89	0.97
Pre-test of prosperity	19.68	22.92	-3.235*	0.551	0.01
Pre-test of independence	20.28	20.42	-0.137	1.194	0.916
Pre-test of tolerance	14.80	18.40	-3.607	1.787	0.137
Pre-test of self-flourish	21.04	24.56	-3.526	1.215	0.062
Pre-test of self-awareness	19.98	23.42	-3.44	1.359	0.085
Pre-test of realism	16.05	19.65	-3.600*	0.829	0.023
Pre-test of relations	20.60	22.11	-1.51	2.392	0.573
Pre-test of optimism	20.58	22.72	-2.141	0.945	0.108
Pre-test of self-esteem	20.39	22.41	-2.025	1.229	0.198
Pre-test of control	16.76	18.44	-1.687	1.265	0.274
Pre-test of flexibility	16.69	19.91	-3.213	1.198	0.075
Pre-test of responsibility	22.73	23.77	-1.039	1.692	0.583
Pre-test of empathy	22.18	23.22	-1.044	0.846	0.305
Pre-test of self-expression	18.09	19.61	-1.519	0.848	0.171

By the follow-up of the difference between scores of happiness components shown in Table 4.8, a difference is seen between the mean scores of the experimental group and the control group of 23.3 points, which is significant at the level of $p<0.01$ and confirms that the scores of the happiness component in the experimental group have increased significantly.

Moreover, regarding the difference between the scores of the realism component in Table 4.8, a difference of 3.60 scores exists between the scores of the experimental group and the control group. This difference is significant at the level of $p<0.023$ and confirms the increase in the score of realization component of the experimental group.

In concluding the results of the third hypothesis, one can state that although the high number of EI components increased the error in calculations and disrupted the possibility of confirmation of the significance of the total, the results of follow-up Tukey test, which have high potential, confirmed the significance of prosperity and realism of EI.

5. Discussion and Concluding

5.1 Interpretation of research findings

5.1.1 Main hypothesis

GMCT has a significant effect on the EI and anxiety of women referring to the health home.

According to the findings of Table 4.1, GMCT has a significant effect on EI and anxiety in women referring to the health home, and the main hypothesis of the research was confirmed. This finding is in line with the study of Bahadori, Jahanbakhsh, and Jamshidi [15].

In explaining the findings of this hypothesis, one can say that EI means the power of emotion control, perception of emotions, emotional knowledge, and ability to regulate emotions. Thus, EI can be considered as the ability to learn and change emotion. In fact, an individual with high EI can define his feelings and understand his emotional qualities and experiences in a two-way relationship. Such a person can express his emotions in a meaningful way and organize his emotions in a suitable way. On the significant effect of GMCT on EI, one can state that using meta-cognitive techniques, GMCT has strengthened EI composed of emotional self-awareness, self-expression, self-esteem, self-flourishing, independence, empathy, social responsibility, interpersonal relationships, realism, flexibility, problem solving, stress tolerance, optimism, impulse control, and happiness. By increasing the levels of EI, GMCT leads to using more adaptive and successful coping strategies agaisnt negative experiences and thoughts. Thus, high ability to use EI skills leads to more adaptive confrontation with problems for solving problems.

In defining anxiety, one can state that anxiety is an overwhelming perturbation, unpleasant and ambiguous often along with symptoms of ototonum, such as headache, sweating, palpitations, chest tightness, and slight stomach discomfort. Anxious people are prone to focus on some things around them the others ignore. By doing this, they try to prove that if they consider their position to be threatening, they are righteous and thus responding correctly. If they justify their fear wrongly, their anxiety will be strengthened by this selective response, thus, a vicious circle of anxiety is created, one end of which is their turbulent perception, and the other is exacerbating their anxiety. An important feature of psychological disturbances is that the patterns of individual thinking and attention focus on themselves and the threats. Metacognitive therapy stresses the change in these patterns of thought and considers them very important. Metacognitive approach calls these patterns of thought and attention “cognitive-attention syndrome (CAS).” Individuals who are prone to activate CAS patterns are more likely to continue the anxiety provocation. With the implementation of techniques, GMCT paves the ground for prevention of conceptual analysis

of thoughts, the elimination of CAS, and the abandonment of uncompromising thinking styles, such as beliefs, ideas, and pathogenesis, and the reduction of inspirational strategies that were maladaptive, and the anxiety reduced as well.

5.1.2. Sub-hypotheses

5.1.2.1. First sub-hypothesis: GMCT is effective on EI of women referring to health home.

The results of Table 4.2 indicated significant differences in EI scores of the groups at post-test. By following up this difference, it was shown that the experimental and the control group scores were different with 38 points, which is significant. The EI scores of this group had significantly increased based on which the confirmation of the first sub-hypothesis was concluded. This finding is in line with the findings of Papelli, Meybodi and Shahghian [1].

In explaining this finding, one can state that one of the most influential factors in the regulation of excitement is metacognition. Metacognitive approach introduces strategies to individuals to leave themselves behind the mechanisms that lock in their concern, to monitor maladaptive control and self-control, and with flexible processing instruction emotional responsiveness provide a future plan for guiding thinking and behavior in the face of threats and harms. As is evident from the results of the study, GMCT has had a significant effect on EI of women referring to health home strengthening the EI of the clients. Thus, the first sub-hypothesis is confirmed.

5.1.2.2. Second sub-hypothesis: GMCT is effective on the anxiety of women referring to health home.

The results reported in Table 4.4 showed a significant difference between the anxiety scores of the groups in post-test. Following this difference, 5.10 scores difference between the mean scores of the experimental group and the control group was found, which is significant. The anxiety scores of the experimental group had significantly decreased, leading to the confirmation of the second sub-hypothesis. The findings of this hypothesis are consistent with the results of Papelli, Meybodi and Shahghian [1] as well as Wells and Kings (2006).

In explaining the second sub-hypothesis, one can state that anxiety and concern related to the anxiety disorder are connected with the positive and the negative metacognitive beliefs. Given this relation, one can conclude that one of the reasons of the effectiveness of metacognitive therapy on anxiety disorders is the effectiveness of metacognitive therapy on these positive and negative beliefs about worries. Therefore, by identifying the positive and negative beliefs of the patients about routine and regular monitoring of the natural symptoms of arousal and behavioral training, providing evidence on the method of attention, the ineffective beliefs of clients about anxiety would be reduced. This method of treatment by eliminating the concern and the emergence of a flexible metacognitive style has paved the way for natural processing damaged in most mental disorders.

In GMCT, by focusing on the elimination of repetitive thinking patterns concerned with thought, focusing on ineffective coping threats known as cognitive-attention syndrome facilitate a change in how respondents respond to negative beliefs. According to the results, it was determined that in post-test, the effect of GMCT, the anxiety scores of the experimental group significantly decreased, which is why the second hypothesis of the research can be confirmed.

The newsworthy point is that the results of the follow-up data show that the group treatment had a lasting effect on EI and anxiety. By examining the process of pre-test, post-test and follow-up of the experimental group, it is made clear that in the post-test, the differences are at the highest point. However, in the follow-up study, these differences reduced and moderated. However, this reduction was in such a way that the scores still differed significantly from the pre-test. Therefore, the results of this study have a relative correlation with the studies by Wells and King [9], Ross and Van Kozereld [16] that have shown the efficacy of this treatment for generalized anxiety disorder, obsessive-compulsive disorder as anxiety disorders, respectively.

Third sub-hypothesis: GMCT is effective on the EI components of women referring to health home.

Multivariate covariance analysis was used to examine the third sub-hypothesis, due to the existence of control and experimental groups and 15 dependent variables that are the components of EI.

Mbox test was used to examine the homogeneity assumption of the observed covariance matrix. The significance level of Mbox index was not statistically significant and the assumption of the homogeneity of multivariate variance was established. The results of Bartlett's test for determining the presumption of correlation between variables are significant, confirming the existence of the presumption. Considering the establishment of all presumptions of significance of the values of Wilks' lambda, the results were reported in Table 4.6 to conclude.

The results of Table 4.7 showed a significant difference in the scores of prosperity of groups as well as the realism scores of groups in post-test. By pursuing the difference in scores of prosperity and realism in Table 4.8, a difference is seen between the scores of the experimental group and the control group that is significant confirming that the scores of prosperity and realism of the experimental group have significantly increased. The results of Tukey's post-hoc analysis, which has high potential, highlighted the significant potential of prosperity and the realism of EI. However, it should be noted all sub-scales of EI have increased compared to pre-test, but not significant enough to show significant significance in each of them.

In short, one can concluded that the findings of this study were in line with other studies indicating that with a special focus on ineffective emotional responses, non-controllable meta-cognitive beliefs, and the risk of useless coping strategies, GMCT has affected the development of EI and the reduction of anxiety in women referring to health home.

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