

The Effectiveness of Group Metacognition Treatment on Metacognition Beliefs of Women with Breast Cancer

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Objectives: The aim of present study was examining the effectiveness of group metacognition treatment on Metacognition Beliefs in women with breast cancer. **Method:** in a quasi-experimental design, with pre-test and post-test and control group, 24 patients with a diagnosis of breast cancer, among patients who referred to the Division of Oncology and Radiotherapy of Imam Hossein hospital in Tehran, were selected in available way and were assigned randomly to two groups, the first one receiving meta-cognition treatment (n=12) and one control group. Participants completed Metacognitions questionnaires (MCQ-30) in 4 stages. Data were analyzed by multivariate covariance analysis (MANCOVA). **Results:** Findings showed that metacognition treatment with control of pre-test has a significant effect in reducing symptoms related to metacognition factors (positive beliefs about worry, uncontrollability and danger and need to control thoughts) in women with breast cancer in post-test and 2-month and 4-month follow-ups. **Discussion:** results of this study showed metacognition treatment can be effective in reducing Metacognition Beliefs in women with breast cancer.

Keywords: Metacognitive therapy, Metacognition Beliefs, breast cancer

In all over the world breast cancer in women is a burden on health system and it is the most common cancer among women of the upper and lower classes (Tuncer, 2010). It is said that 75% of physical diseases are related to stress. Also stress, as a psychological phenomenon, is a significant factor in the incidence and persistence of several psychotic disorders (World health organization, 2010). Hence, in recent years considering sources of stress and coping strategies in different groups has been examined especially in patient with various diseases and psychological and physical problems and it is shown that the application of effective coping strategies has have an important role in reducing development and resistance of stressful events (Chen & Chang, 2012).

One of the treatments based on information processing model is metacognition treatment. This treatment is a new approach that is used recently in area of understanding and treating emotional disorders (Wells, 2009) and it is mostly based on strategies and processes that assess, control and monitor cognition. Metacognition is a kind of information that an individual has about knowing their internal states and coping strategies that affect them (Ma, Teasdale, 2004; Fisser & Wells, 2008). Metacognition beliefs refer to the beliefs that people have about their thinking. Having such beliefs has an effect on how individuals respond to and regulate their thoughts. On the basis of metacognition theory of psychological disorder, there are two types of metacognition beliefs: positive metacognition beliefs and the negative ones (McCabe, 2011; Wells, Welford, King, Papageorgiou & Wisely, 2010). Positive metacognition beliefs raises a need for involving in rumination about the meaning and causes

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of events (Wells, Fisher, Myers, 2012). Negative metacognition beliefs are activated as a result of the persistence of symptoms and failure in reducing this difference (Wells, King, 2006). Negative metacognition beliefs or negative meta beliefs are about uncontrollability of thoughts, meaning, importance, dangerous consequences of thoughts and cognitive experiences (Wells, Welford, King, Papa Georgiou & Wisely, 2010; McCabe, 2011).

In fact positive and negative metacognition beliefs has an effect on cognitive processing, sustainability of mind concerns and postponing effective coping strategies have important role in reducing welfare and persistence of psychological distress. (Roelofs, Papageorgiou, Gerbera, Huibers, Peeters & Arntza, 2007) It is necessary to change these beliefs because the main causes of individual's conflicts in the process of rumination are their respond to the motifs.

The effectiveness of metacognition treatment is examined in many researches. In a study with the aim of reducing symptoms of depressed patients, metacognition treatment strategies were used. The results suggested that metacognition approach is effective in reducing positive and negative metacognition beliefs (Leany, 2007; Wells, 2006). Wells introduces metacognition treatment as an effective and short treatment in his study that can provide area for definitive randomized controlled efforts. In this study treatment-resistant depressed patients received 8 sessions of metacognition treatment with the aim of conscious control of rumination, concern and metacognition beliefs.

A main course with weekly, 6-month and 12-month follow-up sessions were conducted. Substantial improvements were observed in all amounts of symptoms after treatment stage and the stage after follow-up remained too (Wells, King, 2006)

According to the presented materials, this treatment has been effective in reducing positive and negative metacognition beliefs. Hence, the presented study was conducted with the aim of examining effectiveness of group metacognition treatment on positive and negative metacognition beliefs in women with breast cancer.

Method

With a quasi-experimental design, a randomized controlled trial with assessment in baseline, after intervention and two-month and four-month follow-ups was conducted with control group. 24 patients with a diagnosis of breast cancer, among patients who referred to the Division of Oncology and Radiotherapy of Imam Hossein hospital in Tehran, were selected and assigned randomly to experimental group (n=12) and control group (n=12). All participants completed demographic questionnaire; Metacognitions questionnaires (MCQ-30) in four stages. In order to

comply with ethical issues after obtaining approval from the hospital, the written consent was obtained from all patients for participating in the study.

All women who referred to Division of Oncology and Radiotherapy of Imam Hossein hospital during April 1391 to March 1392 were the statistical population of this study. A sample size of 24 patients randomly was assigned to experimental group (12 patients) and control group (12 patients). Inclusion and exclusion criteria for this study were: person is diagnosed with stages I, II, III of breast cancer based on clinical findings, cytological studies, and diagnosis of physician; Depression severity scores should be higher than average in patients; more than a month should be passed after breast cancer diagnosis; patient should not suffer from another kind of cancer; patient's age should be between 30 to 55 years old. Other criteria included: patient should not receive psychological treatment from the time the disease is diagnosed; patient should have a degree of second school and higher; patient should agree and have ability to take part in desired courses. Exclusion criteria for this study included: absence of more than two sessions of intervention sessions; disease recurrence or creating metastasis elsewhere in the body during the research.

Instruments Structured Clinical Interview (SCID)

Was adapted by Frist et al (1997) It is a tool for diagnosis based on four criteria of Diagnostic and Statistical Manual of Mental Disorders (First, Spitzer, Gibbon, Williams, 1997). This tool has two main versions:

1 - Form SCID-I which assesses major psychiatric disorders (axis I in the DSM-IV) deals. This form have been translated and adapted by Sharifi et al (1384). This interview has good validity and reliability for the diagnosis of mental disorders. This test has been designed based on branching plan and includes some open-ended questions and one rule-out question which provide opportunity for interview erto be guided in the new fields, based on previous answers of respondents (Marnat, 2003).

Bakhtiari's study (1379), Clinical psychology professionals and professors has confirmed the validity of this tool. Test-retest reliability with an interval of one week was 0/95 (Bakhtiar, 2000)

2 - Form SCID-II also assesses personality disorders (axis II DSM-IV). Bakhtiari (1379; as quoted by Kabyrnezhad et al, 1388) has translated and adapted this form (Kabirnezhad, Mahmoud, 1388). Semi-structured clinical interview is used for personality disorders to assess the 10 DSM-IV personality disorders of axis II and was set in 1997. Content validity is approved by using experts' opinions and test-retest reliability coefficient. Reliability and validity of this tool has been accepted in various studies. In Bakhtiari's study (1379), the content

validity of the translated version of the interview was confirmed by three professors of psychology, and test-retest reliability coefficient of the tool with an interval of one week was % 87 (Bakhtiar, 2000) .

Metacognition beliefs questionnaire (MCQ-30)

Metacognition beliefs questionnaire has been designed to examine mental disorders metacognition theory, especially hypothetical role of metacognition beliefs in the pathology of emotional disorders .This questionnaire is a self-reported scale with 30 questions that individuals grade the extent of their agreement on a scale of 1 to 4 degrees (Wells, Certwright, 2004)

Self-regulation executive functioning model (SREF) is designed by Wells and Mathews (1996) for emotional disorders and measures the following metacognition domains in five separate scales: Positive beliefs about concern 2.Negative beliefs about concern that are related to uncontrollability and danger 3.poor cognitive assurance 4.The need to control 5.cognitive awareness (Wells, 2006)

Questions of this questionnaire are answered on the Likert scale from 1=disagree to 4=strongly agree. Chronbach's alpha coefficient of its subscales are expanded from 72% to 93%.Retest correlation with interval of 22 to 118 days in total score equals to 0.75,positive beliefs scale equals to 0.79 ,uncontrollability of danger equals to 0.59,cognitive reassurance equals to 0.69 ,need to control thought equals to 0.74 ,and conscious awareness equals to 0.87[20].In Iran Shirin Dastgiri(1387) has reported its internal consistency coefficient with the help of Chronbach's alpha coefficient for whole scale 91 % and for its subscales in the range of 71% to 87% and test-retest reliability within four weeks for a the scale was 73% and for the subscales was in the range of 59% to 83%(Shirin-zadeh-Dastgiri, Gudarzi, Ghanizadeh & Naghavi, 2008). Mohammadkhani and Farjad(1388) reported the amount of Chronbach's

alpha 80% for the whole questionnaire MCQ-30 and for subscales of positive beliefs about concern ,uncontrollability, danger ,cognitive reassurance, need to control thoughts and conscious awareness has been reported 0.52,83.71,0.60,0.0 and 0.79 respectively (Mohammadkhani, farjad, 2009).

Demographic Information Questionnaire

This questionnaire was used to collect needed demographic data as basic information including age, marital status, education, socio-economic condition, educational background, career history, and also some questions about involved breast, smoking and alcohol consumption by patient, the duration of knowing about disease and disease stage.

Results

The study was conducted at Oncology Division of Imam Hossein hospital in Tehran by two master clinical psychologists who were familiar enough to the intervention, according to the ethical standards of research such as informed consent and maintaining secrets of participants. Experimental and control group participants completed the questionnaire in four stages ;before intervention(pre-test), after intervention(post-test), 2 months after the intervention(the first follow-up), and four months after intervention(the second follow-up).Group Treatment was done in 8 sessions. Eight intervention sessions of this study were implemented based on practical guide of depression metacognition therapy by Adrian wells (Wells, 2009) and were conducted once a week in 2 hours for participants of experimental group. Participants of control group did not receive any interventions. Due to ethical considerations, at the end of the study the intervention was implemented for the control group. A summary of functional instructions of metacognitive therapy is presented in table 1.

Table1*Summary of operating instruction sessions of Metacognitive therapy*

Session	Topic
First	General formulation of client / introducing the model / identifying rumination periods (metacognition enhancement) / practicing techniques of increasing attention / completing ATT form/ homework (practicing techniques of increasing attention twice a day and making notes of ATT task).
Second	Checking homework, identifying rumination time and uncontrollable thoughts/introducing and practicing DM/showing the postponing of rumination in an experimental way for modifying uncontrollable beliefs/practicing ATT/homework, practicing ATT, applying DM/practicing and postponing rumination.
Third	Checking homework/ identifying rumination time and in time of thinking about uncontrollable thoughts/ identifying the triggers of DM practice/examining active rumination and practice, and practicing postponing of rumination in the session/challenging with uncontrollable metacognitions/identifying activity levels and coping/practicing ATT at home, applying postponing rumination and DM
Fourth	Checking homework, examining rumination and un control label thoughts, examining activity levels and unusual coping methods/examining whether postponing rumination is used in at least 75% of triggers and rumination periods or not/challenging with positive beliefs about rumination/practicing ATT/homework, practicing ATT, extensive use of DM and postponing rumination.
Fifth	checking homework, examining rumination, examining positive thoughts and activity level/examining and extensive application of DM/ continuing to the challenge with positive thoughts about rumination/examining activity levels and increasing time of contemplation to reaction(sinking in thought), identifying and preventing harmful coping behavior(for example sleep or drinking alcohol)/practicing ATT/homework, practicing ATT, postponing rumination, increasing activity
Sixth	Checking homework, examining rumination, positive thoughts and activity level/identifying negative beliefs and challenging with them about excitement and depression/homework, practicing ATT/practicing rumination and maintaining activities.
Seventh	Checking homework and examining rumination and unusual coping beliefs and strategies/starting to write new designs of identifying and modifying recurrent fears/practicing ATT/homework/practicing ATT.
Eighth	Checking homework and examining rumination/preventing of recurrent, work on the remaining cognitive beliefs.

Finding

Participants were aged 42 to 47 years old. The mean and standard deviation of control group was (44±2,04) and experimental group was (44,91±1,83).The average

age in participants of control group was one year more than experimental group at the time of diagnosis (table2). Participants were of average socio-economic condition, their left breast was involved and they were receiving chemotherapy.

Table2*Mean and standard deviation of age of participants and age at the time of diagnosis in terms of experimental and control groups*

	Group	Mean	SD	Min	Max
Age	Control	44	2.04	41	47
	Experimental	44.91	1.83	42	47
Age at diagnosis time	Control	43.33	2.38	40	47
	Experimental	43.75	1.71	40	46

Table 3 shows mean and standard deviation of metacognition factors in four stages of pre-test, post-

test, the first follow-up and the second follow-up on the basis of experimental and control groups.

Table3*Mean and standard deviation of metacognition factors in four stages of assessment*

Modality	Control(n=12)				Experimental(n=12)			
	pre-test	post-test	First follow	second follow-up	pre-test	post-test	First follow	second follow-up
positive beliefs	15.25±1.71	15.66±1.43	14.58±2.06	13.16±1.11	15.83±1.46	6.75±0.86	6.66±0.65	6.50±0.67
about worry uncontrollability and danger	22±1.20	21.66±1.23	21.66±1.37	21.66±1.37	22.41±0.79	11.33±1.37	14.08±1.72	14.08±1.72
cognitive reassurance	21±1.59	20.58±1.83	20.75±1.42	21.41±1.24	20.91±1.50	20.25±0.96	20.83±1.11	21±1.47
The need to control	18.83±1.69	18.91±1.72	18.50±1.31	18.58±0.99	19.66±1.66	13.75±0.96	13.66±1.92	13.66±1.49
cognitive awareness	11.08±1.97	10.91±1.83	11.08±1.97	10.83±1.74	12.33±1.66	17.41±0.66	16.66±0.98	15.91±1.67
total score metacognitive	88.16±3.92	87.75±3.13	86.58±3.75	85.66±3.17	91.16±3.92	69.50±1.88	71.91±2.64	71.16±3.73

In this study metacognition beliefs scores in both experimental and control groups were analyzed by multivariate covariance analysis (MANCOVA). First the assumptions of using model were assessed. Results of M box test about equality of covariance matrices suggested that the assumption of homogeneity of variance –covariance matrices is established and

observed covariance matrices of dependent variables are equal in groups. Results of Loen's test also showed that error variance of the dependent variable in groups in the level of $P \leq 0.0001$ is equal (table4). Therefore, the assumptions of the using multiple covariance analysis (MANCOVA) are observed .

Table 4*Shows the results of Levin's test for examining the equality of error variance*

Modality	F	DF1	DF2	significance level
positive concern post-test	3.656	1	22	0.69
danger control post-test	1.604	1	22	0.219
assurance post-test	1.053	1	22	0.316
thought control post-test	8.627	1	22	0.008
autonomy post-test	1.102	1	22	0.305
total score post-test	0.688	1	22	0.416
positive concern the first follow-up	8.755	1	22	0.007
danger control the first follow-up	2.080	1	22	0.163
assurance the first follow-up	0.936	1	22	0.344
thought control the first follow-up	5.797	1	22	0.025
autonomy the first follow-up	3.478	1	22	0.076
total score the first follow-up	1.588	1	22	0.221
positive concern the second follow-up	4.400	1	22	0.048
danger control the second follow-up	2.080	1	22	0.163
assurance the second follow-up	0.088	1	22	0.770
thought control the second follow-up	3.829	1	22	0.063
autonomy the second follow-up	1.056	1	22	0.315
total score the second follow-up	0.035	1	22	0.852

After assurance that assumptions are established, multivariate covariance analysis test was used. Results showed there is a significant relationship between

experimental and control group ($F_{4,14}=210.21$, $p \leq 0.0005$).

Table 5

Shows the results of multivariate covariance analysis (MANCOVA) to examine difference between experimental and control groups

Modality	Value	F	significance level	Eta square
pylavy trace test	0.999	210.215	0.0005	0.999
Wilks Lamedai test	0.001	210.215	0.0005	0.999
Hotelling effect test	735.754	210.215	0.0005	0.999
Largest root test	735.754	210.215	0.0005	0.999

In the next stage in order to determine in which of the dependent variables there is a significant difference between experimental and control

groups, the F test inter group's effects with control of the first type error with Bonferroni test method was used.

Table 6

Shows the results of F test intergroup effects for assessing differences between experimental and control groups for each dependent variable

Dependent variables	sum of squares	df	mean of square	f	significance level	Eta square
positive concern post-test	414.504	1	414.504	351.636	0.0001	0.954
danger control post-test	571.171	1	571.171	613.065	0.0001	0.973
assurance post-test	0.514	1	0.514	0.209	0.653	0.012
thought control post-test	157.025	1	157.025	182.642	0.0001	0.915
autonomy post-test	174.518	1	174.518	133.939	0.0001	0.887
total score post-test	1962.137	1	1962.137	530.864	0.0001	0.969
positive concern the first follow-up	317.850	1	317.850	122.910	0.0001	0.878
danger control the first follow-up	310.674	1	310.674	134.465	0.0001	0.888
assurance the first follow-up	0.532	1	0.532	0.366	0.0001	0.021
thought control the first follow-up	131.452	1	131.452	48.437	0.0001	0.740
autonomy the first follow-up	129.482	1	129.482	64.245	0.0001	0.791
total score the first follow-up	1315.492	1	1315.492	159.679	0.0001	0.904
positive concern the second follow-up	237.340	1	237.340	313.063	0.0001	0.948
danger control the second follow-up	310.674	1	310.674	134.465	0.0001	0.888
assurance the second follow-up	1.918	1	1.918	0.987	0.0001	0.055
thought control the second follow-up	140.572	1	140.572	93.832	0.0001	0.847
autonomy the second follow-up	97.316	1	97.316	42.585	0.0001	0.715
total score the second follow-up	1325.552	1	1325.552	145.385	0.0001	0.895

Discussion

The aim of this study was examining the effectiveness of group metacognition treatment on Metacognition Beliefs of patient with breast cancer. Results show that all the components of positive and negative metacognition beliefs questionnaire are significant in post-test except the component of group's cognitive reassurance.

Also, in the first and the second follow-ups only intergroup cognitive reassurance component was observed with no significant difference and there was significant difference between other components. Therefore it can be said that in positive and negative beliefs, the group receiving metacognition treatment significantly changed after the intervention, the first and the second

follow-ups in comparison to control group and the effect was not significant only on cognitive reassurance component. This information is shown clearly in following graphs. The aim of this study was examining the effectiveness of group metacognition treatment on metacognition beliefs components of women with breast cancer. Findings of present study showed that group metacognition treatment caused considerable improvement in reducing positive and negative metacognition beliefs of patients with cancer in experimental group relative to baseline in comparison to control group. These findings are consistent with previous studies that have shown this treatment can be an effective psychosocial intervention in reducing positive and negative metacognition beliefs (Wells, 2006) (Leany, 2007)

Negative metacognition beliefs about uncontrollability and danger are the main core of forming intense and uncontrollable concern and are associated with pathology of anxiety disorders and are of a special importance (Wells, Carter, 2009). Wells also showed in his review that negative beliefs about uncontrollability and danger showed the highest correlation among large range of vulnerability indicators (Wells, Fisher, Myers, 2012). Metacognition beliefs and thought patterns are targeted in treatment since negative metacognition beliefs have an effect on the way individuals respond to thoughts, beliefs, symptoms and negative emotions (Wells, Spada, 2011). The rape tic effect of group metacognition treatment is increased by factors related to group and it causes increase in adaptability ability, making sense of hope, greater account tability to treatment. Therefore, more treatment outcomes are affected (Imel, Baldwing, Bouns, MacCoon, 2008). Hence, in line with the result of this study, a psychological intervention such as metacognition treatment seems to be effective on improving mental health in breast cancer patients.

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