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Examining the Effectiveness of Mindfulness-Based Cognitive Therapy on Quality of Life in primary Infertile Women

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Abstract

The present study aimed to examine the effectiveness of mindfulness-based cognitive therapy on quality of life in infertile women. Semi-experimental design, a randomized controlled trial with assessment in baseline, after intervention and two- month follow-up was conducted on participants of control group. A total of 24 female patients with primary infertility diagnosis among patients who referred to the Infertility Center of Shariati hospital in Tehran were selected as volunteers and were assigned randomly into the experimental (n=12) and control groups (n=12). All participants completed Infertile Couples' Quality of Life Questionnaire in three phases of baseline, after treatment and follow-up. Data were analyzed using multivariate repeated measurement of variance analysis. Results showed that mindfulness-based cognitive therapy improve the quality of life in social and psychological components, depression, aggression and jealousy in participants of experimental group. Results of this study showed that mindfulness - based cognitive therapy can be effective in improving quality of life in infertile women.

Keywords: infertility, mindfulness-based on cognitive therapy, quality of life

Introduction

Fertility has high value in many cultures and the desire to have children is one of the most basic human drives. If effort to get pregnant fails, it can become a destructive emotional experience. Further, having children in all cultures creates existential, identity and position for parents. Fertilization is estimated 20-25% in each cycle for normal couples that do not use contraception methods. According to this estimate, 50% of couples after 3 or 4 months and 95% of them after 12 months should be able to experience pregnancy (De Canha, Date, & Date, 2009).

Infertility means a couple does not have a child after a year of regular intercourse and without the use of contraception methods. Inability to have children is considered as a tragedy for millions of couples around the world (Aflatoonian, Seyedhassani, 2009). World health organization defines quality of life as the individuals' perception of their situation in life in terms of the culture and moral systems that they live in and in relation to their goals, expectations, standards and priorities. Therefore, it is totally personal, is not observable and is relied on the individuals' perceptions of the different aspects of their lives (Baumann, Ionescu, & Chau, 2011). The concept of quality of life includes considering the spiritual issues, personal emotions and all levels of needs,

physiological to self-actualization needs (Tannenbaum, Ahmed, Mayo, 2007). Quality of life is known and applied as an indicator for measuring health status in researches (World Health Organization, 2004; Moshirian Farahi, Moshirian Farahi, Aghamohammadian Sharbaf, & Sepehri Shamloo, 2017). The psychosocial effect of infertility is complicated and it is associated with reducing scores of different dimensions of quality of life. Injuries resulted from infertility are reported in different areas such as psychological harm, communication abilities, marital life, family life, sexual relationship, physical injuries and economic issues. It seems that infertility affects all aspects of individual's life and is not only confined to sexual issues and relationships and its effects are imposed on psychological and social aspects of infertile person (Chachamovich, Chachamovich, Ezer, Fleck, 2010). Teasdale, Segal & Williams (1995) extracted the skills as attention control from mindfulness meditation and believed that these skills help the person to control the mental ruminations causing restlessness and ultimately lead to depression. The basic learned skills can make the person to stop engaging in sustainable patterns of negative thinking. In addition, mindfulness-based cognitive therapy by combining stress reduction program based on mindfulness-based therapy and cognitive techniques provides the conditions so that one can observe his negative thoughts separately and free of judgment (Segal, Teasdale, & Williams, 2004). Mindfulness- based stress reduction program (MBSR) is presented by Kabat-Zinn in Medical Centre of Massachusetts University in 1979 (Kabat-Zinn, 1990, 2003, 2005).

It is an 8-week program; each session lasts 2 to 2.30 hours. Mindfulness skills are taught for coping with life stresses and raising awareness of the present moment and include thought-related meditation, relaxation and Hatha yoga (Kabat-Zinn, 1990; Matousek, Dobkin, Pruessner, 2010) Mindfulness means paying attention to the present time in a special, targeted, and without judgment way (Kabat-Zinn, 2003). One of the main goals of this program is promoting health and reducing stress (Brantly, 2005). Meditation and mindfulness exercises result in increasing self-awareness and self-acceptance abilities in patients (Baer, 2015). One of the main concepts of mindfulness training is that to be honest to ourselves and our feelings. Along with increasing individual's ability for mindfulness, the person can accurately detect what is happening in the body and mind as it is happening in the environment around (Kabat-Zinn, 2005).

Many studies have been conducted about the effectiveness of mindfulness-based stress reduction program. Mindfulness-based stress reduction model showed successes in improving quality of life, stress symptoms and sleep quality in patients with chronic diseases (Carlson, Speca, Patel, & Goodey, 2003), and it also resulted in significant increase in mental clarity, mental health and decrease in physical stress (Carlson, Speca, & Segal, 2010). In a research that was conducted on 133 patients with breast cancer in stages I to III, results showed that mindfulness has a significant effect on life quality of patients with cancer (Forti, 2011). In a research that was conducted on 133 patients with breast cancer in stages I to III, results showed that mindfulness has a significant effect on life quality of patients with cancer (Forti, 2011). In Carlson, Speca, Patel, Goodey (2004) research, mindfulness interventions and meditation were implemented on 49 patients with breast cancer and 10 patients with prostate cancer. They showed that mindfulness significantly influences on stress symptoms and quality of life.

Godfrin and Van Heeringen (2010) showed that mindfulness-based cognitive therapy influences on depression and quality of life. Moreover, Gonzalez-Garcia et al. (2014) showed that quality of life, psychological stress, depressive symptoms, and anxiety symptoms improve in the MBCT group compared with the control group. Colle et al. (2010) showed that a short time mindfulness intervention improves participants' quality of life. In terms of infertile women, Li,

Long, Liu, He and Li (2016) revealed that women who attended the mindfulness intervention illustrate a significant increase in mindfulness, self-compassion, meaning-based coping strategies and all quality of life domains.

In Iran, few studies have been conducted on the quality of life in infertile women which have been generally cross-sectional, descriptive and lacked control group to analyze the impact of infertility and psychological treatment on the quality of life of this population. Considering the problems that infertile women face and evidences related to the effect of mindfulness-based cognitive therapy on different psychological variables, this study was designed with the aim of examining the effectiveness of mindfulness-based cognitive therapy on improving global and specific life quality.

Methodology

This study was a semi-experimental with a randomized controlled trial. After obtaining approval from the hospital, from the patients with a diagnosis of primary infertility who referred to the Infertility Center of Shariati hospital, a random sample was selected and participants were assigned into two groups. Experimental group received weekly mindfulness-based cognitive therapy and control group did not receive intervention. Participants filled the written consent letter.

Participants

All women who referred to Division of Infertility of Shariati hospital in Tehran in the summer of 1393 consisted the statistical population of this study. A sample size of 24 patients were randomly assigned into experimental group (12 patients) and control group (12 patients).Inclusion and exclusion criteria for this study included: receiving no drug treatments from the time of diagnosis , duration of infertility from 1 year to 6 years , having education of higher than guidance school, the age between 25 to 40 years, lack of history of neurological and psychiatric diseases and hospitalization, lack of substance abuse, ability to participate in group treatment sessions and willingness to cooperate .Exclusion criteria included : Failure to attend more than two sessions of intervention sessions and not wanting to continue to participate in the intervention sessions.

Tools

1- Demographic Information Questionnaire

Due to the influence of contextual factors and biological characteristics on mood states and quality of life in patients, researcher-made demographic questionnaire was prepared. It includes questions about age, education, economic condition, duration of marriage, starting period of infertility treatments, performed treatments so far, history of mental illness and suicide.

2- Structured Clinical Interview (SCID)

Was adapted by First, Gibbon, Spitzer and Benjamin (1997). It is a tool for diagnosis based on four criteria of Diagnostic and Statistical Manual of Mental Disorders. This tool has two main versions: 1- Form SCID-I which assesses major psychiatric disorders (axis l in the DSM-IV) deals. 2 - Form SCID-II also assesses personality disorders (axis II DSM-IV). This test has been designed based on branching plan and includes some open-ended questions and one rule-out question which provide opportunity for interviewer to be guided in the new fields, based on previous answers of respondents. Semi-structured clinical interview is used for personality disorders to assess the 10 DSM-IV personality disorders of axis ll 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 (Kabirnzhad, Aliloo, Hashemi, 2004). This interview has good validity and reliability for the diagnosis of mental disorders. (Shooshtari et al., 2007)

3- Infertile Couples' Quality of Life Questionnaire

The questionnaire includes 72 items and 7 scales. It is used for assessing quality of life in infertile couples. The questionnaire was made in 2010 by Yaghma'ee et al. (Yaghma'ee, Mohammadi, Alavi, 2010). Items of this questionnaire are graded in a Likert range of 1 to 5, 1 (totally agree) to 5 (completely disagree). The subscales of this questionnaire include: physical health, mental health, spiritual and religious beliefs, economic condition, emotional relationships, sexual satisfaction and social relationships. Designers of the questionnaire used content, formal and construct validity indices to validate it. They used factor analysis to determine the construct validity. Internal consistency and stability were used to determine the reliability of the questionnaire. To assess the internal consistency, items of questionnaire were calculated and the coefficient of 71%-95% was obtained for each factors and 81% for the whole questionnaire. A coefficient of 0.81 to 0.94 was calculated for the factors of the questionnaire and 0.89 for the whole questionnaire.

Procedure

The study was conducted at Infertility Division of Shariati hospital in Tehran by two master psychologists who were familiar enough to the intervention, according to the ethical standards of research such as informed consent and maintaining secrets of participants. Participants of experimental and control groups completed questionnaires in 3 stages, before intervention(pre-test), after intervention (post-test) and 2 months after intervention(follow-up). Treatment was done in 8 group sessions. Eight intervention sessions of this study were followed based on mindfulness-based cognitive therapy 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 research, participants of control group were given a CD of yoga practices. A summary of functional instructions of mindfulness-based cognitive therapy was presented in table 1.

Table1. Summary of functional instruction sessions of mindfulness-based cognitive therapy

Session	Topic
First session: Automatic Pilot	The introduction of automatic guidance system/knowing how to use present moment awareness of bodily sensation, thoughts and emotions in reducing stress/practicing eating raisins[1],giving feedback and discussion about the practice/three - minute breathing, giving assignment for next week and distributing leaflets of the first session and CDs of meditation
Second session: facing obstacles	Re-examining body workout/ giving feedback and discussion about examining body workout/ practicing breathing mindfulness meditation/ /distributing leaflets of the second session and CDs of meditation
Third session: Kindness with breathing, body and awareness about breathing and body movement	Having conscious sitting with awareness of breathing(the sitting meditation)/ practicing three -minute breathing /distributing leaflets of the third session and video tape of yoga practices
Fourth session: learning how to answer	Re-examining body workout / (in the hospital chapel)/5-minute practicing of "seeing or hearing"/ re-practicing conscious session with awareness of breathing and body/ distributing leaflets of fourth session and CDs of meditation

[1]Object attention training

Session	Topic
Fifth session: slowly cope with difficulty (attendance)	Practicing breathing /re-practicing conscious session(awareness of breathing ,body, sounds and thoughts)/explaining the stress and identifying participants' reactions to stress/examining awareness of pleasant and unpleasant events on feeling ,thoughts and bodily sensations/ practicing 3-minute breathing /distributing leaflets
Sixth session: thoughts are not facts	practicing sitting meditation (mindfulness of sounds and thoughts)/distributing leaflets of the sixth session and number4 video tape to participants
Seventh session: self-care	Practicing mountain meditation/sleep hygiene/ repeating exercises of the previous session/making a list of enjoyable activities/distributing leaflets of the seventh session
Eighth session: going beyond fear	Examining body workout /overview of program/examining and discussing programs /practicing stone, beads and marbles meditation

Data analysis

SPSS 22 (SPSS Inc., Chicago, Illinois, USA) was used for testing the hypotheses. In order to analyze the data, we used descriptive statistic (mean and standard deviation) and inferential statistic (repeated measure of variance analysis).

Results

Table2. Descriptive indexes of age, duration of marriage and duration of treatment in research groups

	Group	Mean	SD
Age	Control	32.25	3.07
	Experimental	32.33	2.77
Duration of marriage	Control	8.58	3.80
	Experimental	7.66	2.77
Treatment time	Control	6.41	2.96
	Experimental	5	2.13

Age mean and standard deviation was (32.25±3.07) in control group and (32.33 ±2.77) in experimental group; The mean and standard deviation of the duration of marriage was (8.58±3.80) in control group and (7.66 ±2.77) in experimental group; the mean and standard deviation of the time that the women were receiving the treatment were (6.41±2.96) in control group and (5±2.13) in experimental group. Groups were equal in economic situation.

Quality of life in infertile women includes different social, physical, mental, economic, sexual, religious, and emotional dimensions. Psychological dimension includes hope, depression, fear, aggression, isolation and jealousy. The mean scores of quality of life components changed in experimental group after the intervention and follow-up in comparison to the assessment before the intervention, while the mean score of the control group showed no significant change in three stages (Table 3). To examine this hypothesis a repeated measures of variance analysis was used. Before the

implementation of this analysis, first assumptions of repeated measures of variance analysis were examined and were presented in table 4.

Table 3. Descriptive indexes of quality of life dimensions in research groups

	Control(n=12)			Experimental(n=12)		
	Pre-test	Post-test	Follow-up	Pre-test	Post-test	Follow-up
Physical	43.33±4.14	43±4.08	42.25±4.28	42.25±2.92	38.41±2.60	40.91±2.64
Mental	92.33±2.30	90.25±2.30	88±4.22	91.75±5.04	78.91±6.27	80.75±4
Hope	12.16±1.58	11.58±1.67	13.91±2.27	12.25±1.91	13.33±1.15	12.25±1.81
Depression	16±0.85	15.92±0.91	11.66±1.92	16.16±1.46	10.08±1.62	10.75±2.13
Fear	14.33±1.23	14.13±1.03	16.75±1.95	14.50±1.56	14.01±1.16	14.08±2.53
Aggression	12.58±0.51	11.41±1.72	9.50±1.62	12.58±0.66	8.50±1.97	8.66±1.37
Isolation	28.58±1.44	28.25±1.48	29.16±1.74	28.08±2.93	25.75±2	28.75±2.52
Jealousy	28.58±1.44	28.25±1.48	29.16±1.74	28.08±2.93	25.75±2	28.75±2.52
Economy	8.66±0.49	8.16±0.28	7±1.70	8.16±1.19	6.75±1.91	6.25±1.35
Sex	17.50±2.15	17.58±8.44	15±1.47	15.25±0.86	14.83±1.26	14.50±1.67
Religious	24.91±1.56	24.55±1.26	23.33±1.72	25.43±1.96	25.16±2.16	23.58±1.44
Emotional	19.66±1.82	19.23±1.21	18.16±1.46	18.25±2.30	16.50±2.19	17.66±2.99
Social	34±1.90	33.25±2.17	33.16±1.89	33.50±3.84	29.91±2.67	29.58±3.65

Table 4. Results of multivariate test to examine the significance of time effect and time and group interaction effect on dependent variables

Source	Test	Eta square	significance level	F	Value
Time	Wilks' Lambda	0.923	0.0001	32.755	0.006
Time & group	Wilks' Lambda	0.748	0.0001	8.148	0.064

Table 5. Results of repeated measures of variance analysis

	Sum of squares	DF	F	significance level	Eta square
Social	36.671	1	5.228	0.032	0.192
Physical	28.167	1	2.572	0.123	0.105
Mental	244.90	1	19.71	0.0001	0.473
Hope	0.019	1	0.013	0.911	0.001
Depression	29.630	1	32.117	0.0001	0.593
Fear	3.63	1	2.831	0.107	0.114
Aggression	9.37	1	15.566	0.001	0.414
Isolation	7.78	1	3.152	0.090	0.125
Jealousy	6.68	1	9.432	0.006	0.30
Economy	0.375	1	0.193	0.665	0.009
Sex	21.40	1	1.439	0.243	0.061
Religious	0.375	1	0.147	0.706	0.007
Emotional	17.22	1	6.00	0.023	0.214

The result of this analysis, due to F value and significance level, showed that these models have a significant effect on quality of life in time and time and group interaction effect.

According to the results of table 5 the mindfulness-based on cognitive therapy significantly increased quality of life in three steps of evaluation in social (F= 5.228, Sig= 0.032), mental (F= 19.71, Sig= 0.0001), depression (F= 32.117, Sig= 0.0001), aggression (F = 15.566, Sig = 0.0001), jealousy (F = 9.432, Sig = 0.006) and emotional (F = 17.22, Sig = 0.006) dimensions.

Discussion

The present study aimed to examine the effectiveness of mindfulness-based cognitive therapy on quality of life in infertile women. Results showed that MBCT program significantly improved quality of life components in infertile women compared to before the treatment and after the two-month follow-up. These findings are consistent with studies have shown that MBCT program can be an effective psychosocial intervention in improving quality of life. Carlson and Space (Carlson, Speca, Patel, Goodey, 2003; Godfrin, & Van Heeringen, 2010; Gonzalez-Garcia et al., 2010; Forti, 2011; Li, Long, Liu, He and Li, 2016). For example, Carlson, Speca, Patel and Goodey (2003) investigated the relationships between a mindfulness-based stress reduction meditation program for early stage breast and prostate cancer patients and quality of life, mood states, stress symptoms, lymphocyte counts, and cytokine production. They showed that MBSR was associated with enhanced quality of life and decreased stress symptoms in breast and prostate cancer patients. Moreover, Li, Long, Liu, He and Li (2016) revealed that the mindfulness intervention shows a significant increase in mindfulness, self-compassion, meaning-based coping strategies and all quality of life domains in infertile women. We can infer that therapies based on mindfulness can generally influence on quality of life.

There are several reasons that indicate group MBCT program was effective in improving patients' quality of life. MBCT program intervention causes mindfulness by meditation practices and mindfulness causes an increase in self-awareness and self-acceptance ability in patients. Mindfulness is not a method or technique, but it is defined as an available way to reduce pain and increase positive qualities such as consciousness, insight, wisdom and sympathy (Lerner, Kibler, Zeichner, 2013). Using relaxation training and emphasis on it indicates that it is a valuable stress management skill that should be used regularly in individual's life and should be a consistent part of individual's coping skills. Expressing emotions during all sessions of program are advantages. Patients who participated in the study received eight sessions of group intervention with an expert trainer. It can be inferred it is likely that a stronger alliance is developed between the patients and the trainer and it facilitates the healing process and better continuity of the treatment. Treatment effects of group mindfulness-based cognitive therapy increase by group-related factors; therefore, they influence on treatment consequences (Imel, Baldwing, Bouns, MacCoon, 2008).

Based on the results of the present research, it seems that psychological interventions such as mindfulness -based cognitive therapy can be effective in increasing mental health and quality of life in infertile women. Considering the semi-experimental design, this study has particular limitations. Lack of full control of interfering variables, using self-reported tools for assessing and lack of examining underlying factors in effectiveness of this intervention were the most important limitations that should be considered for future studies. It is recommended to use longer periods of follow-up in future studies to assess the continuity of the treatment results.

Conclusion

The results revealed that mindfulness-based cognitive therapy has major mechanisms to improve quality of life such as self-awareness, relaxation training, and self-acceptance. It seems that mindfulness - based cognitive therapy is an effective method in improving quality of life in primary infertile women. It needs potential implications and future directions for the empirical study of mechanisms involved in mindfulness are addressed.

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