

# EFFECT OF MINDFULNESS-BASED GROUP COUNSELING ON ANXIETY IN INFERTILE WOMEN UNDERGOING IN VITRO FERTILIZATION TREATMENT IN HAMADAN, IRAN

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Date Received: July 30, 2018

Date Revised: October 20, 2019

Date Accepted:

November 30, 2019

## ABSTRACT

**Objective:** To determine the effect of mindfulness-based group counseling on anxiety in infertile women undergoing in vitro fertilization (IVF).

**Methodology:** This randomized controlled trial was performed on 90 infertile women who underwent IVF in the infertility center of Fatemeh Hospital Hamadan in 2016. The participants were randomly divided into two groups; case and control. After the initial completion of the Spielberger demographic and anxiety questionnaire by both groups, 8 group counseling sessions with the subject of mindfulness were held in the intervention group for 90 minutes a day and twice a week. The counseling axes included: auto-guidance, barriers, breathing with mindfulness, staying in the moment, accepting and permission to attend, non-truthful thoughts and how to do self-care. Then the Spielberger anxiety questionnaire was completed by both groups after intervention. The data were analyzed using SPSS version 21.

**Results:** There was a significant difference between the control and the intervention groups in terms of apparent anxiety ( $p < 0.001$ ) and the hidden anxiety ( $p < 0.001$ ) before and after the intervention. Moreover, after the intervention, the means of apparent and hidden anxiety were lower in the case group than the control group ( $p < 0.001$ ).

**Conclusion:** The mindfulness-based group counseling was found to reduce the apparent and hidden anxiety of infertile women undergoing IVF.

**Key Words:** Mindfulness based counseling, Anxiety, Infertility, in vitro fertilization

This article may be cited as: Kalhori F, Masoumi SZ, Mohagheghi H, Parsa P, Mohammadi Y. Effect of mindfulness-based group counseling on anxiety in infertile women undergoing in vitro fertilization treatment in Hamadan, Iran. *J Postgrad Med Inst* 2019; 33(4): 299-303.

## INTRODUCTION

Infertility is defined as failure of conception after one year of unprotected sex due to a cause in male or female or otherwise normal couples<sup>1</sup>. More than 80 million people are infertile all over the world. The rate of infertility varies from country to country, with an average of 12-15%. According to statistics, the prevalence of infertility in Iran is 20.2-30%<sup>2,3</sup>. Infertility can be divided into primary infertility, in which a pregnancy has not occurred previously; and secondary infertility in which a previous pregnancy has occurred (although not necessarily leading to birth)<sup>1</sup>.

At global level, primary infertility is 0.6% to 3.4%, and secondary infertility is 8.7 to 32.6%<sup>4</sup>. The average primary infertility rate in Iran is 10.6% and the secondary infertility rate is 2.7%<sup>5</sup>.

In response to rising rates of infertility, rapid progress in reproductive medicine has largely been contributed to the new technologies in the treatment of infertile couples in the world<sup>6</sup>. In this context, assisted reproductive technology (ART) has been widely proposed as a successful and commonly used treatment in many countries. ART involves a wide range of treat-

ments or methods for fixing a pregnancy<sup>7</sup>. One of the techniques of ART is in vitro fertilization (IVF). Laboratory fertilization is a coherent sequence of actions that are initiated by the intense and controlled ovarian stimulation with exogenous gonadotropin and includes methods for assisting infertility by intra-cytoplasmic sperm injection, gamete transfer to the fallopian tube, transfer of zygote into the fallopian tube and tubular embryo transfer by laparoscopy. The steps of ART are stressful due to the high financial cost and the low chances of success. Women who suffer from infertility often use in vitro fertilization (IVF) to realize the wish of having a child. However, laboratory fertilization is a multifaceted anxiety due to its unpredictable outcome and tiring of the women physically and mentally<sup>8</sup>.

Infertility anxiety is the interaction between the infertility-induced physical conditions and medical interventions, the reactions of others and the psychological characteristics of the individual that may be associated with the person for a long time and recur with any diagnostic and therapeutic intervention<sup>9</sup>. Although both genders are emotionally affected by infertility, women experience a higher level of anxiety<sup>10</sup>. The results of various studies show that psychological factors such as anxiety can be a threat to the outcome of in vitro fertilization therapy<sup>11</sup>. Considering the uncertain outcomes, in the relationship between emotional anxiety and the outcome of pregnancy in women undergoing ART, patients may want interventions to improve their quality of life<sup>8</sup>.

Counseling and psychological interventions are necessary to help improve the quality of these women's life<sup>12</sup>. Interventions based on mindfulness are considered as one of the cognitive-behavioral therapies of the third wave. The mindfulness is a form of meditation that is rooted in the Eastern religious teachings, especially the Buddha<sup>13</sup>. Mindfulness is a broad concept of one state, which includes high awareness and focus on the reality of the present, accepting and acknowledging it, regardless of thoughts about the situation or in emotional reactions to the situation<sup>14</sup>. In fact, the mindfulness consists of a judgment free receptive knowledge of what is happening now<sup>11</sup>.

Conducting a mindfulness session in a scientific program is considered as mindfulness-based cognitive therapy (MBCT) or mindfulness-based stress reduction (MBSR). One of the distinctive features of MBCT is that it gives us the power to understand the point that if we overcome our unpleasant feelings through controlling them or trying to control them, in fact, we will keep the opposite feeling to end<sup>15,16</sup>. Considering the numerous problems such as anxiety in infertile women and the prevalence of infertility and also due to the few studies conducted in Iran, especially on the impact of group counseling on infertility and the lack of comprehensive

study in the field of different counseling approaches, this study was aimed to investigate the effect of group mindfulness-based cognitive therapy (MBCT) on anxiety in women undergoing IVF treatment.

## METHODOLOGY

This clinical trial was conducted on women with diagnosed primary infertility who were in the early stages of IVF. Inclusion criteria were age between 25-40 years, high school education or more, residency in Hamadan, no history of psychiatric illnesses or addiction and no neurological or other progressive diseases. Sample size was 90. To determine the reliability of the Spielberger questionnaire, the Cronbach's alpha values were 0.84 and 0.83 for apparent anxiety and hidden anxiety respectively.

This study was validated by IR.UMSHA.REC.2016.182 with the approval of the Ethics Committee and the Research Council of Hamadan University of Medical Sciences and was registered at the Iranian Registration Clinical Trials (IRCT) by IRCT2015082013405N14.

The subjects were randomly assigned to case and control groups. Group counseling was held for the case group. Then, using the mindfulness training package, this counseling method was implemented in groups during 8 sessions for 90 minutes a day and twice a week (the IVF process lasts for 4 to 6 weeks) in the case group. No intervention was performed in the control group. In each session, pamphlets and instruction CDs related to each session were provided to the intervention group for further study and understanding the consultation materials. During counseling sessions, individuals were divided into small groups to discuss the issues with the group members and express their problems. In addition, women in the intervention group were asked to use the exercises that they were trained in, especially the conscious yoga exercises provided in the educational CDs at home.

A pre-intervention plan was taken from 90 selected individuals before the start of IVF treatment at the beginning of the study, meaning that both groups completed the demographic information and the Spielberger Anxiety Scale questionnaire. Then, after holding training sessions in both groups, the 15-30 minutes post-intervention plan was performed before the embryo transfer stage (the anxiety was maximized in this period in the infertile women and the effect of mindfulness counseling was identified in the intervention group). Data were analyzed using SPSS 21 software and descriptive statistics such as mean and standard deviation for quantitative data; and frequency and percentages, independent t-intervention, paired t-intervention and Chi-square intervention were used for qualitative data.

## RESULTS

The mean age of infertile women in the intervention group was  $30.28 \pm 4.41$  and in the control group it was  $29.64 \pm 4.71$  years. The average duration of marriage and mean infertility in the intervention group was more than in the control group. The mean number of IVFs in the intervention group was 1.11 times and in the control group, it was 1.24 times.

In the intervention group, the mean of apparent and hidden anxiety scores before the intervention were more than after the intervention. There was a significant difference between the two groups in terms of apparent anxiety ( $p < 0.001$ ) and hidden anxiety ( $p < 0.001$ ) before and after the intervention (Table 1). In the control group, the mean of the apparent anxiety scores before intervention was 48.48 and after the intervention was 55.55 and the mean of the hidden anxiety scores before intervention was 47.91 and it was 54.64 after intervention; significant difference was found in terms of the apparent anxiety ( $p < 0.001$ ) and hidden anxiety ( $p < 0.001$ ) before and after the intervention in the con-

trol group. Based on the results of Table 2, there was no significant difference in the hidden anxiety between the control group and the intervention group ( $p = 0.06$ ). However, there was a significant difference between the two groups before the intervention in terms of the apparent anxiety ( $p = 0.02$ ).

After controlling the effect of apparent anxiety before the intervention between the two groups, based on the results obtained in the multivariate linear regression model, it was indicated that the difference in apparent anxiety score between the two groups after the intervention was 19.96, which is statistically significant. The mean of apparent anxiety scores after intervention in the two groups was 37.86 and 55.55, respectively. The mean of the hidden anxiety scores after the intervention were 38.31 and 54.34 in the intervention and control groups, respectively. There was a significant difference between the two groups in terms of the apparent anxiety ( $p < 0.001$ ) and hidden anxiety ( $p < 0.001$ ) after the intervention. So, after the intervention, the mean of the apparent and hidden anxiety in the intervention group was less than the control group.

**Table 1: Comparison of apparent and hidden anxiety scores in infertile women in the experimental and control groups**

Group		Before Intervention (mean±SD)	After Intervention (mean±SD)	P Value
Experimental Group	Apparent Anxiety Scores	$52.82 \pm 6.80$	$37.86 \pm 9.02$	<0.001
	Hidden Anxiety Scores	$51.17 \pm 6.97$	$38.40 \pm 7.66$	<0.001
Control Group	Apparent Anxiety Scores	$48.48 \pm 10.80$	$55.55 \pm 7.67$	<0.001
	Hidden Anxiety Scores	$47.91 \pm 9.47$	$54.64 \pm 7.21$	<0.001

**Table 2: Comparison of apparent and hidden anxiety scores in infertile women before and after the intervention**

Group		Experimental Group (mean±SD)	Control Group (mean±SD)	P Value
Before Intervention	Apparent Anxiety Scores	$52.82 \pm 6.80$	$48.48 \pm 10.80$	0.02
	Hidden Anxiety Scores	$51.17 \pm 6.97$	$47.91 \pm 9.47$	0.06
After Intervention	Apparent Anxiety Scores	$37.86 \pm 9.02$	$55.55 \pm 7.67$	<0.001
	Hidden Anxiety Scores	$38.40 \pm 7.66$	$54.64 \pm 7.21$	<0.001

## DISCUSSION

The mindfulness counseling can affect anxiety of the infertile women. In this study and according to the results of the Spielberger questionnaire, the apparent and hidden anxiety scores in the experimental group after the intervention decreased compared to the pre-intervention state. The study of Hoveyda et al<sup>17</sup> (which assessed the effect of mindfulness on stress reduction and conscious yoga on anxiety, depression and stress in infertile women), showed no significant difference in anxiety level before and after the intervention in the intervention group. This is not consistent with the present study, since, in our study, there was a significant reduction in the amount of anxiety after intervention in the experimental group. Moreover, the study of Hoveyda et al<sup>17</sup> showed that there was no significant difference in the anxiety level in the control group, which is not consistent with our study, because the apparent and hidden anxiety scores in the control group increased significantly compared to the previous state in our study.

Panahi et al<sup>18</sup> showed that there was no change in the anxiety symptoms in the control group compared to the previous state, which is consistent with the findings of the Hoveyda's study<sup>17</sup>. However, in our study, there was a significant difference in terms of apparent anxiety before the intervention. The findings of these two studies did not correspond to the present study. Moreover, in the Hoveida study, a conscious yoga program was used in addition to the use of mindfulness-based stress reduction counseling. However, in the present study, only mindfulness-based cognitive therapy was used. Also, in our study, intervention was performed after 15-30 minutes before embryo transfer, while in the Hoveyda's study<sup>17</sup> it was performed after the intervention.

Shahrestani et al<sup>11</sup> studied training with mindfulness-based cognitive therapy approach focused on improving the dimensions of perceived stress in infertile women undergoing IVF treatment and showed that there was a significant difference between the cases and control groups ( $p < 0.001$ ). The study of Galhardo et al<sup>19</sup>, showed that the mindfulness program for infertility significantly reduced the anxiety in the intervention group compared to the control group, which is consistent with our study. In the mentioned study, the infertility mindfulness program (ten 2-hour counseling sessions) was similar to mindfulness-based cognitive therapy in our study (eight 1.5-hour sessions). The study of Panahi et al.<sup>18</sup> showed that there was a significant difference between the intervention and control group in terms of improving anxiety symptoms using mindfulness-based cognitive therapy intervention, so that in the mindfulness group (intervention), the mean scores of anxiety symptoms were improved ( $p = 0.007$ ) compared to the control group, which is consistent with our study.

Mindfulness techniques are effective by providing an opportunity for meditation to enhance muscle relaxation and reduce stress and anxiety<sup>20</sup>. Mindfulness-based cognitive therapy has a potential impact on the anxiety of infertile women<sup>21,22</sup>.

## CONCLUSION

Mindfulness-based cognitive therapy was found to be effective in reducing apparent and hidden anxiety of infertile women undergoing IVF treatment.

## ACKNOWLEDGEMENTS

This article was extracted from a student research project. The authors would like to thank the Research and Treatment Vice-chancellors of Hamadan University of Medical Sciences, the authorities of the healthcare centers under study and the personnel who cooperated in the research. This study was financially supported by Hamedan University of Medical Sciences, Hamadan, Iran.

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#### CONTRIBUTORS

FK conceived the idea, planned the study and drafted the manuscript. SZM, HM, PP and YM helped acquisition of data, did statistical analysis, editing and final approval of manuscript. All authors contributed significantly to the submitted manuscript.