

## The effect of cognitive behavioural therapy on anxiety in infertile women

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### ABSTRACT

*The present study was conducted with the aim of investigate the effect of Cognitive Behavioral Therapy (CBT) on anxiety in infertile women. For this purpose among all the women who had referred to Mehr Proffetional Clinic during 4 months in Rasht with using Cattle Anxiety Scale 30 people who had high anxiety randomly selected and randomly assigned to two 15 subjects experimental and control groups. After an initial assessment of participants' anxiety, the experimental group went under CBT for 8 sessions of 90 minutes and control group did not receive any intervention. Finally, participants' anxiety was measured again. Findings from the analysis of covariance showed that CBT significantly has improved the anxiety in experimental group in comparison with control group. According to findings in present research it can be concluded that CBT can be used as an effective intervention method in women with high anxiety.*

**Keywords:** infertility, Cognitive Behavioural Therapy (CBT), anxiety

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### INTRODUCTION

Infertility is the inability to conceive after one year of regular sexual intercourse without any contraceptive [1]. Studies have shown that 10 to 15 percent of couples of reproductive age are suffering from this problem [2]. The factors of men (25 to 40%) of women (49 to 55%), a combination of both male and female (10%), and unknown causes (10%) are involved in this problem [3]. Boivin, Binting, Collins, & Nygren [4] in their study about fertility rates have reported that between 1990 to 2006 among 25 different populations of developed and developing countries 72.4 to 120.6 heterosexual women, 20 to 40 years old and interested in having own child were sterile. With the advancement of science, technology and innovation of new methods of treatment such as Intra Uterine Insemination (IUI), In Vitro Fertilization (IVF), Intra Cytoplasmic Sperm Injection (ICSI) and other treatments although the window of hope has opened on infertile couples, but makes them to experience more and longer treatment periods [5].

The couples when facing with infertility encounter with several problems such as loss of communication with each other and others, difficulty in sexual activity, decisions in life and emotional disturbances [6]. Therefore infertility is a serious medical problem and affects the quality of life [7]. Infertile women known infertility as most stressful life events and describe the course of repeated and successive treatment as frequent periods of crisis [8]. Infertility seems to have a significant effect on the psyche such as creation of anxiety and depression. In addition, in turn such problems can be increase the duration of infertility [9]. Indeed, on the one hand, anxiety can adversely affect the physiological function of the body and effect on fertility outcome and on the other hand, also infertility is caused an increase in anxiety. Hence, there is a vicious cycle that further undermines the ability of couples in the reproductive [5]. Also with increasing age of infertile women due to reduced treatment success gradually increased anxiety during treatment and women with high school graduates or less have high anxiety during infertility treatment [10]. Due to the stressful nature of infertility and its treatment several studies has been made on the effect of cognitive-behavioral

therapy (CBT) in reducing the stress of infertility. Indeed, using CBT that include different method such as relaxation, cognitive restructuring, biofeedback, systematic desensitization, behavioural training, stop thinking and assertive training as one of the ways to deal with psychological problems during medical treatments have been proposed by many researchers [11].

Harvey & Rapce [12] reported that cognitive behavioral intervention was effective in reducing anxiety. Also Domar and his colleagues in two studies showed that with performing CBT and reduction of stress in women undergoing infertility treatment fertility will be more likely [13, 14]. Naughton [15] stated that CBT was effective in reducing stress in infertile couples. Also the Wischmann [16] results showed positive effects of counseling and marital therapy on reducing psychological problems of couples. Also in studies conducted in Iran, Heydari, Latif Nejad, Sahebi, Jahanian, & Mazloom [17] and Gharaee, Mazaheri, Sahebi, Peivandi, & Aghahoseini [18] came to this conclusion that after CBT infertile women anxiety undergoing treatment is reduced. Manoochehri, Zandipour, Puorshahriari, & Mirdamadi [19] represent the effectiveness of cognitive behavioral intervention in increasing infertile women mental health. Faramarzi, Alipour, Esmaelzade, Kheirkhah, Poladi, & Pash [20] reported that CBT alone is not a valid proposal treatment versus medication but best of Fluoxetine acts in treatment or decreases infertile women depression and anxiety. This fact that a person cannot naturally like any other normal person follow the process of reproduction and have a child is one of the bitter experiences of life that also social context can increase that importance and become it for a person to a mental health crisis. Hence the present study was conducted with the aim of investigate the effect of CBT on anxiety in infertile women.

## MATERIALS AND METHODS

### 2.1. Sample and sampling method

This study is experimental with pretest-posttest with control group design. The population of this research includes all the women who had referred to Mehr Proffetionl Clinic during 4 months in Rasht. Inclusion criteria include over 6 months up to 3 years of infertility diagnosis and being in the age range between 20 to 40 years. With using Cattle Anxiety Scale 30 people who had high anxiety (their raw score was on the scale from 46 to 80) randomly selected and randomly assigned to two 15 subjects experimental and control groups.

### 2.2. Data collection

**Cattle Anxiety Scale:** this scale contains 40 items that grading in a scale of three grades (0, 1, and 2). Cattle Scale in Iranian society has been normalized by Kormi Nouri [21] for both women and men. Cronbach's alpha coefficient was used to assess the validity of this scale that respectively was for males 0.87 and for women 0.85. At this scale, women who their score was in the 0-1 alignment namely, their raw score is lower than 23 are a quiet, stable and comfortable person, women who their score was in the 4-6 alignment namely, their raw score is between 24 to 36 are eligible for medium grade of anxiety, women who their score was in the 7-8 alignment namely, their raw score is between 37 to 45 are anxious and neurotic people and finally, women who their score was in the 9-10 alignment namely, their raw score is between 46 to 80 to ensure are needed to pharmacotherapy and psychotherapy.

### 2.3. Method

After sampling for initial assessment of participants' anxiety, pre-test was performed for both experimental and control groups, then the experimental group went under CBT for 8 sessions of 90 minutes and control group did not receive any intervention. Finally, the post-test was administered to both groups. Training topics in each session were summarized as follows:

*The first session (description session):*

(1- Welcome, motivating, overview of the structure and rules of the group meetings, stating the number and duration of meetings and express their expectations of treatment sessions 2- Understanding each other 3- Talk about CBT and interactive expression of thoughts, emotions, anxiety and depression-related behaviors).

*Second session:*

(1- An overview of the content of the previous session with the active participation of all members 2- Analysis of activating events, beliefs and emotional reactions from the client's perspective 3- Identifying the underlying dysfunctional beliefs and classify them using A-B-C behavior analysis skills in depression and anxiety 4- Talk about positive self-talks and its role in controlling of dysfunctional emotions and behaviors 5- Determine the next session task to identify dysfunctional beliefs underlying anxiety and depression and also the practice of positive self-talks and investigate its effects on the behavior).

*Third session:*

(1- An overview of the content of the previous session with the active participation of all members 2- Checking the assignments given to the client in the areas of dysfunctional basic belief and positive self-talks 3- Muscle relaxation training 4- Determine the next session task in the field of building muscle relaxation).

*Fourth session:*

(1- An overview of the content of the previous session with the active participation of all members 2- Checking homework in the field of muscle relaxation and its effects on anxiety and depression 3- Discussion on problem solving skill, its process and its effects on anxiety and depression 4- Providing various examples of problem solving skill and its stages 5- Determine homework in the field of problem solving skills in relation to the problem that individuals are caught).

*Fifth Session:*

(1- An overview of the content and techniques presented in previous sessions from the beginning of therapy sessions up to now 2- Review homework on problem solving 3-Discussion on objective analysis, logical analysis and benefit analysis in relation to anxiety and depression 4- Providing homework on logical analysis, usefulness and objectivity in relation to anxiety and depression).

*Sixth Session:*

(1- An overview of the content presented in previous session with the active participation of all members 2- Review homework on objective analysis, logical analysis and benefit analysis 3- Discussion in the field of social skills such as assertiveness, interpersonal skills and self-control 4- Providing homework on social skills).

*Session Seven:*

(1- An overview of the content of the previous session with the active participation of all members 2- Review homework on social skills 3- Discussion on the role of attribute in behavior and in particular its role in the treatment of anxiety and depression and also training in relation to opposed beliefs and experience two incompatible emotional states 4- Determine homework in the field of attribute, opposed beliefs and experience two incompatible emotional states in relation to the problem that client is suffered).

*Session Eight:*

(1- An overview of the all content and techniques presented in previous sessions from the beginning of therapy sessions up to now 2- Checking the assignments given to the client in the areas of attribute, opposed beliefs and experience two incompatible emotional states 3- Discussion on the stop thinking and biofeedback and their role in control and reducing anxiety and depression 4- Determine homework in the field of stop thinking, biofeedback and their role in the control and reducing anxiety and depression).

## RESULTS AND DISCUSSION

Table 1 shows mean and standard deviation of pre-test and post-test for experimental and control groups in the Cattell Anxiety Scale. According to Table 1 the mean of experimental group anxiety in the pre-test is 48.67 and in the post-test is 32.67 which represents a reduction in the anxiety scores of the experimental group while the mean of anxiety at the control group pre-test and post-test did not change appreciably.

**Table 1: The mean and standard deviation of the experimental and control groups on the variables of anxiety**

Group	Test	M	SD
Experimental	Pre-test	48.67	4.13
	Post-test	32.67	3.24
Control	Pre-test	48.93	3.26
	Post-test	48.73	3.08

Covariance analysis was used to evaluate research data. Table 2 shows adjusted mean and standard deviation at post-test of experimental and control groups. As Table 2 shows the mean scores of anxiety in the experimental group is less than the control group.

**Table 2: The adjusted mean and standard deviation of the post-test scores**

Group	Number	M	SD
Experimental	15	32.74	0.62
Control	15	48.65	0.62

Tables 3 and 4 show the assumptions of homogeneity of variance and regression and because the calculated F in both cases is more than 0.05, the data did not question the assumptions of homogeneity of variance and regression.

**Table 3: Check the assumption of homogeneity of variances**

F	d.f1	d.f2	P
2.29	1	28	0.14

**Table 4: Check the assumption of homogeneity of regression**

Source of change	SS	d.f	MS	F	P
Group and pre-test	16.31	1	16.31	3.02	0.09

Based on the results of table 5 and according to the calculated F ( $P < 0.001$ ,  $F = 326.99$ ,  $d.f = 1/27$ ,  $\text{Eta} = 0.92$ ) because the significance level is less than 0.001, thus the calculated F is statistically significant that this findings suggest that CBT is effective in reducing anxiety.

**Table 5: Analysis of covariance on the effect of CBT on anxiety**

Source of change	SS	d.f	MS	F	P	Effect size	Test power
Corrected model	2059.63	2	1029.81	117.48	0.00	0.92	1.00
intercept	28.11	1	28.11	4.84	0.00	0.15	0.56
Pre-test	123.60	1	123.60	21.30	0.00	0.44	0.99
group	1897.33	1	1897.33	326.99	0.00	0.92	1.00
Error	156.66	27	5.80				
Total	51911	30					
Corrected total	2216.30	29					

## DISCUSSION AND CONCLUSION

The present study was conducted with the aim of investigate the effect of CBT on anxiety in infertile women. The data analysis showed that CBT is effective in reducing anxiety in infertile women. The findings of this study are consistent with studies that have been reported that cognitive behavioral intervention is effective in reducing anxiety and stress in infertile women [12, 13, 14, 15, 16, 17, 18, 19, 20]. Manoochehri and colleagues [19] consistent with the present study showed that the efficacy of CBT in improving the mental health of infertile women can be affected by psychosocial support groups. Due to this fact that infertile people feel alone and know their problems as unique and also cannot arise their feelings and problems at any point, therefore, group provide the safest place for mental release and to discuss on untold.

In fact, CBT due to emphasis on attitude, identification and restoration of cognitive distortions, correct thinking skills and also evaluation judgments and negative thoughts can due to lowering levels of anxiety, depression and other psychological problems and the promotion of self-control impulses, emotions or attitudes may have a significant effect on mental health of infertile women. This effect started of muscle relaxation and decrease in the respiratory rate and leads to calm nerves and helps to individual to control own muscle tension. Thus leading to the coordination of physiological changes, including decrease in oxygen consumption, carbon dioxide elimination, reduction in heart rate and blood pressure, reduce energy consumption and reduce muscle contraction and thus reducing the anxiety and stress. On the other hand, people with homework and get enough organized feedback learned behavioral techniques and apply them in their normal environment.

Finally, the small number of sample due to dropping samples to causes such as lack of implementation of some cognitive-behavioral techniques and lack of cooperation some people in the post-test was the limitations of the present study. Also, since subjects in this research were studied from the initial treatment to phase of Intra Uterine Insemination (IUI) and followed the subjects until they achieve a positive pregnancy test was not possible it is recommended that in the future conduct researches regarding the impact of CBT on the success of assisted reproductive techniques and its effects on anxiety in patients undergoing infertility treatment until the phase of the results of pregnancy test. Furthermore, these results highlighted the need to developing mental health units and composing the psychologists and counseling teams along with medical teams in infertility clinics and the importance of attention to couples mental disorders in infertility treatment.

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