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Research Article

EFFECTS OF STRESS MANAGEMENT TRAINING ON PERCEIVED STRESS IN INFERTILE WOMEN UNDERGOING IVF IN INFERTILITY TREATMENT CENTER IN SHIRAZ 2014

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ABSTRACT
Infertility is a stressful event for infertile couples with physiological, psychological and behavioral responses. The threat of infertility depends on the assessment process and the perception of the event. Stress management training by providing basic strategies and addressing the dysfunctional thought, offers suitable methods of cognitive and emotional overcoming and changes the way people perceive and therefore changes physiological, psychological, and emotional responses. This is a randomized clinical trial with pretest - posttest on infertile women undergoing IVF fertility center in Shiraz 2014. 70 infertile women were chosen with available sampling the inclusion criteria and randomly divided into two groups test (35 women) and control (35 women). For the test group ten sessions and each session for 1.5 hour of stress management training were provided and the control group did not receive any mental health services. Both groups completed the perceived stress infertility questionnaire before and after the intervention. After data collection the statistical software SPSS (version 16) was used and the tests of covariance, multivariate and univariateon ($p<0.05$) level were analyzed. Data analysis showed that between two groups of test and control, there is a significant difference for reduction of stress and stress management training has impact on the improvement of perceived stress in infertile women but they will not improve the outcome of fertilization.

Keywords: *Infertility Perceived Stress, IVF Treatment, Stress Management Training and Infertility*

INTRODUCTION
Instinctive, emotional, and natural human needs necessitate that couples have children after marriage and in fact for most people, the concept of family forms when a child is born. "Einhorn" in connection with infertility suggests that the main paradox of infertility is that it is more common in societies where fertility is also high, people in society consider childbearing important that names it as dialectic of fertility and infertility. In these societies, infertility is unimportant to policy makers and fertility health policies and less emphasize on instruments and means of prevention and health services (Abbasi, 2005).
Infertility is a biological, mental, and social disorder and failure in fertility has a profound impact on various aspects of infertile couples 'life. Unlike biological model that emphasizes the physical and psychological disease, bio-psycho-social approach emphasizes the complex interplay of biology, psychology and social variables. Link between psychological factors and physical health is as a two-way street. Meaning that psychological state predisposes the individual to getting involved in physical illness and also getting sick in turn affects the person's mental state (Sarason, 1987).
Infertility is no exception and has dimensions of biological, psychological and social. This disorder like a tense crisis affects different aspects of couples' life (Manouchehri, 2006). In fact, Infertility is a complex crisis in life which is psychologically threatening and stressful. This is why many authors have likened psychological impact of infertility to public grief reaction (Hamid, 2011).
Infertile couples in addition to facing a variety of health problems, experience a bunch of psychological symptoms such as: Anxiety, difficulty in interpersonal relationships, frustration, anger and repressed aggression, interpersonal frustration, humiliation, rejection, unconscious guilt, depression, Jealousy, loneliness, low self-esteem, physical problem, obsessions and incompatibility of personality in these couples, especially those who have experienced treatment failure is impressive. One third of infertile women have had mental health problems. And 10% had moderate to severe depression (Hamid, 2011).

That's why the 1994 International Conference on Population and Development in Cairo, Infertility was introduced as a factor that causes serious damage to the body of fertility health. World Health Organization also considered infertility as a major problem in fertility health.

Available evidences about the stress of infertility, has made the researchers to offer infertility treatment program should be coupled with a psychological treatment (Agha, 2011). Al Ahmed (1981) in his autobiography as "a stone on the grave", referred to his and his wife's infertility problem and refers to the importance of fertility in Iranian culture and introduces child as a stone on the grave and as a means of generation survival. Infertility constitutes a substantial loss, the most bitter life experiences such as the death of immediate family is heavily involved in the reaction (Besharat, 2003). Fertility in most cultures and societies has high personal, social and cultural value and the desire to have children is one of the key motivators. Infertile people put efforts on diagnosis and treatment of infertility. If trying to get pregnant fails, it can become a destructive emotional experience. Dealing with infertility has a considerable impact on the lives of men and women and involve them with physical, mental, social, and economic problems and challenges. Infertility is associated with increased psychological stress. Trying to conceive, expensive and frustrating medical treatment and psychological problems associated with the relationship may instable the relationship between couple. Many studies on infertile couples show the effect of infertility on sexual and emotional states of individuals. Women worry that infertility may influence their status and security and they experience loneliness. All infertile couples suffer from infertility stress to various degrees and about half of them have not had marital adjustment (Savadzade, 2013). Studies have shown that 86% of infertile women deal with the stress of infertility in their lives and specifically infertile people experience infertility stress on the scale of social concerns, relationship, sex, rejection of without children style and stress of the need for being parents. Psychological factors such as anxiety and depression can be a threat on the outcome of IVF treatment. Several mechanisms have been proposed for the effects of stress on fertility such as disrupt the secretion of gonadotropins, local effects of catechol amines on the uterus and fallopian tubes and impair immunological function in the maintenance of pregnancy and implantation. Anxiety by the increase of cortical and prolactin also lead to infertility resonance (Shahrestani, 2012). So if under treatment people are mentally healthy, experience less stress and fertility is likely to increase, therefore authors suggest that infertility treatment programs should be accompanied by a part of psychological treatment. Psychological treatments with infertility treatment programs make infertile people resistant by enhancing their mental health and in addition, increases the effectiveness of infertility treatments, and encourage the infertile person to seek the treatment (Shahrestani, 2013).

Review of Literature

Infertility

Most couples are expecting their first child after marriage. Fertility rate is an important issue that must be considered. Fertility rate, predicts power and possibility of being pregnant in different month after the marriage. This amount is naturally 25% in the first month, and 60% in first six months. Within a year, however, the chances of a successful pregnancy, is between 80 to 90 % and in two years between 90 to 95 %. Studies have shown that the higher the age, the lower the likelihood of fertility.

Infertility is referred to as "a woman with a desire to have children and having enough sex without using any means of contraception, does not get pregnant within a year.

Stress and Infertility

Several researchers have explained the relationship between stress and infertility. The mechanism of this association is not clear. Psychological stress can affect fertility in several ways such as: Interfere with the secretion of gonadotropins, local effect of catecholamine into the uterus and the fallopian tubes, the process of replacing the zygote becomes immune to interference and the impact on behaviors such as drug abuse and sexual problems, etc.

Psychological Problems of Infertility

The impact of infertility on various aspects of women's lives depends on several factors including the type of infertility, cause of infertility, duration of infertility and on the socio-economic status (AbbasiShavazi, 2007).

Infertility can be a serious crisis because threatens the main objective of life which is being mother or father (Akhundi, 2000).

The results of several studies suggest that infertility causes a wide range of psychological problems including: Anxiety, depression, frustration, isolation, loss of self-esteem, fear, loneliness, guilt and shame, lack of personal and sexual identity, lack of personal control, reduction of mental health and sexual and marital problems that significantly affect their quality of life (Farahani, 2001; Bashsrat, 2003; Heidari, 2011; Manoochehri, 2006; Hamid, 2011).

Depression is the most common reaction in infertile couples which is created in response to long stressand because of multiple absences.

Reactions to infertility associate with responses such as depression, guilt and inadequacy. The role of individual differences in the quantity and quality of the reaction should be considered (Farahani, 2001).

Depression: Some studies have shown that depression in infertile women is two times more than fertile women (Savadzade, 2013; Hamid, 2011).

Psychology Theories to Explain the Impact of Infertility

Several theories have explained the impact of the psychological aspects of infertility and there is no specific and comprehensive theory that can explain the infertility due to differences between individuals in terms of their infertility influence, we can feel lack of an effective theory.

According to my psychology theory which is based on psychoanalysis; when one lacks something essential to the understanding of oneself, it can damage people's perceptions of their experience, including feelings of hopelessness, stress, anger, anxiety and a feeling of shame and ...Infertile women because of failing to implement the social and individual feel defect and incompetence and men feel shame and anger. The concept of social stigma that arises from the failure to carry out social norms, in men and women, include a self-perceived defect, failure and loss of respect.

System theory to the family, the family as a system to other systems such as the woman's family, man's family and other interactive systems are linked. All elements of the system are involved in the phenomena and events, work together, change, become ill and treated. It is also necessary to consider several generations of the family to solve the problem. According to this theory throughout the family life cycle there is a series of expected steps that most of the people pass in the foresee ably. Parent ship as a life stage represents the consolidation of a new family and the couple's infertility does not let them to be transferred to this forecasted stage, therefore regulatory activities and functions of family life and the role of each fold is damaged (Burns and Covington, 2000).

Stress and Infertility

Stress is the most common word used in everyday life, and it is called any event that the person receives as a threat. Body in order to defend itself responds as "fight and flight" which indicates the nature of life design.

Based on the interaction of the sympathetic nervous system and adrenal medulla is called sympatho-adreno-medullary system. Under stressful conditions hypothalamus acts as the highest setting automatic and involuntary body's hormones secrete ACTH (Adrencorticotropichormon), these hormones have been received by the adrenal cortex, and in response, the epinephrine hormone (adrenaline) and nor epinephrine flow (nor adrenaline) into blood stream. These hormones, lead to the responses of fight or flight that result in increase of symptoms such as increased heart rate, dry mouth, sweating, etc.

The relationship between stress and infertility is not clear yet; however, no doubt that infertility causes substantial stress, but the answer to this question that the stress can cause infertility or decreasing stress can lead to increase of likelihood of pregnancy, can be investigated. Infertile women due to the severe and prolonged treatments and use of ineffective strategies become discouraged, which can lead to inefficient use of strategies to increase the vicious cycle of despair and abandon infertility treatment incomplete (Agha yousefi, 2011).

Although IVF has overcame a number of obstacles to fertility and open a window of hope for many infertile couples, but it can also lead to some problems. Many studies have considered psychological disorders associated with IVF and that different methods of infertility treatment may cause 10 to

50%symptoms of anxiety and depression in women. Patients undergoing IVF treatment are worried and in cycles leading to failure, they often become depressed or anxious. There is only 25% chance of successful embryo transfer and 18% of live births. As a result the conflict of infertile women with infertility stress is understandable. Irrational cognitions about parents and families and relatives pressures are two important variables predicting anxiety and depression in infertile women (Shahrestani, 2012).

Effectiveness of Cognitive-behavioral Approach to Improving the Mental State of Infertile Patients

Many studies have confirmed and been effective in cognitive - behavioral improvement in mental status of infertile couples. The psychological improvement factor of these people can be known as reduction in stress. Stress reduction can be achieved by modifying and adapting maladaptive, problematic, and absolutely subjective and irrational beliefs and values, detection and correction of errors and cognitive schemas about the problem of infertility (Manoochehri, 2006).

Another important point that can be noted in justifying the effectiveness of the intervention is effect of psychological support group which provides a safe place for mental drain and talk about unsaid matters. In many studies, the dysfunctional attitudes and irrational beliefs have been identified as an intermediary and the underlying variables such as anxiety disorders. Irrational beliefs are understood as being immutable, resistance to change and, non-functional and environmental stress starts and mainly experienced by individuals as facts. You can get a vicious cycle of communication between the experience of anxiety and beliefs and dysfunctional attitudes that reinforce each other in such a way (Shahrestani, 2012).

Stress Management and Disease Progression (need for Cognitive Therapy in Stress Management)

According to cognitive approaches they are not incidents and events that make people uncomfortable but their way of thinking which as a result of their beliefs, schemes and attitudes affect the way information is processed and cause individual emotional responses (Prochaska and Neurcross, 1999).

Therefore it accordingly seems odd beliefs and way of thinking about the problem of infertility, forms the type and intensity of reactions, so it is logical to be able to take advantage of the principles and techniques of cognitive - emotional, behavioral approaches to reform the way of thinking and irrational beliefs and individual concerns (Manouchehri, 2006).

The Effect of Stress Management Training on Infertility

Several studies in the field of health psychology believe that consistent use of coping strategies, such as stress management is an important factor in shaping people's physical and mental health. Studies have shown that stress and anxiety management training and the application of management techniques have led to fertility of infertile women that has no physical damage to their infertility (Hamid, 2011).

Stress Management Techniques

Stress management, occurs by cognitive - behavioral techniques and by utilizing techniques such as identifying and correcting dysfunctional thoughts (Automatic thoughts), relaxation techniques and problem-solving skills and behavioral techniques such as hypnosis, relaxation, desensitization (Safarzadeh, 2012).

Stress management by application of relaxation techniques and cognitive skills in group activities to reduce stress and anxiety, increased awareness to determine the sources of stress, attention and replacing negative thoughts and increases overcoming cognitive and interpersonal skills training, reduction of depression, anxiety, stress and thoughts stages were successful, the results of the research conducted in this area show the effectiveness of this therapy.

Philips *et al.,* (2008) indicated that stress management technique has been successful in method of reducing cortical level and enhancing perceived relaxation ability in women with breast cancer who have passed 8-4 weeks of surgery.

Research Hypotheses

First hypothesis: perceived stress among infertile women undergoing IVF has a high score.

Second hypothesis: Stress management training can reduce the perceived stress in infertile women undergoing IVF treatment.

MATERIALS AND METHODS

The purpose of this researches application and in terms of methodology has been the design of clinical trials with pre-test - post-test control group.

The study sample included all infertile women undergoing IVF Infertility Treatment Center of Shiraz in the spring and summer of 2014; it should be mentioned that this center is one of the most important centers for infertility treatment in Shiraz and because of reputation of the center many people from towns and villages of the south refer to the center for treatment.

The sample according to the degree of confidence 90% and ability 80% the fertility rate in the treatment group 35% and the fertility rate in the control group 45% and the corresponding formula 35 patients in each group were determined. The study group consisted of 70 infertile women referred to the center for the treatment of infertility with IVF, which were referred to the researcher by obstetrics, gynecology and infertility Specialist.

After obtaining the consent of the cycles of ovulation induction and after completing a basic form that included questions about demographic characteristics such as (age, education, place of residence, duration of infertility, type of treatment received, etc.) they were enrolled. The perceived stress assessment when the patient entered cycles of ovulation, induction was done by completing questionnaires and was kept in a separate file. The team consisted of IVF Obstetricians and Embryology treatments were unaware of the individuals' concessions then patients were randomly divided into 2 groups of control and test (by age and cause of infertility) and they were matched pairs. In this scheme, intervention (stress management training) as the independent variable and the perceived stress and IVF outcome were considered as dependent variable. Demographic variables (age, occupation, education, family income) are influential.

Entrance Criteria

In all patients, the usual hormonal HSG and sperm motility were evaluated; patients of tubular disorders, ovulation disorders who had not responded to previous treatments of ovulation induction or IUI were volunteers of IVF. The patients were experiencing their first IVF cycle. Ovulation induction method according to standard methods using GnRh agonist, no marital or family discord, no stress in the past month, no education in the fields of medicine and psychology

Exit Criteria: 1-History of participation in stress management workshops 2- The use of psychiatric drugs 3- Patients who had previously undergone IVF

Statistical analysis was performed using SPSS 16. For quantitative variables the t-test and for qualitative variables the chi-square test was used. Spearman and Pearson correlation test was used to examine the relation between variables.

For data collection, infertility stress questionnaire of Newton and colleagues were used which is multidimensional tool. This questionnaire was originally developed by Newton at London Health Sciences Centre and due to that more research on infertility due to lack of specialized tools only examined the personality, anxiety and depression in infertile, therefore the questionnaire of Fertility Problem Inventory which is a 46-item multidimensional tool by Newton *et al.,* (1999) and which reviews and assesses the perceived stress of infertility in 5 dimensions of social, sexual, communication, lack of acceptance of lifestyle without children and need to be parents. The tool is scored based on a Likert scale of degree from completely disagree (1) to strongly agree (6). In Newton and colleagues study the internal consistency of perceived stress on the social dimension is 0.87 and in sexual dimension is 0.77, in communication dimension 0.82, in lack of acceptance of lifestyle without children 0.80 and in need to be parents is 0.84 and overall stress is 0.93. The Newton questionnaire of infertility stress in Iran, by Alizade and colleagues (2005), for obtaining validity of one sample of 30 infertile people and Cronbach's alpha coefficient was used and in social dimension 0.78, sexual 0.77, communication 0.78, lifestyle without children 0.75, need for being parents 0.84 and overall stress 0.91 were obtained respectively.

Data Analysis

First hypothesis: perceived stress among infertile women undergoing IVF has a high score.

Table 1: Perceived stress in the study groups

Test value=231.84							
Upper limit	**Lower limit**	**Sig**	**P-value**	**Average**	**Df**	**T**	
-52.81	-76.17	0.05	0.000	167.34	34	-11.225	Control group
-54.70	-79.54	0.05	0.000	164.71	34	-10.981	Test group

According to above table in two groups of control and test based on p-value has significant difference with 231.84 and given that both the upper and lower limits of the mean difference are negative therefor the average level of perceived stress in both groups was significantly lower in the high score. This result reveals that stress of both groups does not have a high score.

Second hypothesis: Stress management training can reduce the perceived stress in infertile women undergoing IVF treatment.

Table 2: Effects of Stress Management Training on the perceived stress in the case group

Dependent t-test (pretest and posttest)					
T	**Sig**	**P-value**	**Df**	**Average**	**Test group**
24.517	0.05	0.000	34	40.48	
				164.71	Pre test
				124.22	posttest

Based on the above table the stress amount in test group in the pre-test and post-test were evaluated that there were significant differences with respect to the p-value, also by reduction of stress amount of posttest results reveal that stress management training has reduced perceived stress in infertile women.

Conclusion

First hypothesis: perceived stress among infertile women undergoing IVF has a high score. In (table 1) the perceived stress amount in understudy groups has been presented. Accordingly, the amount of stress in two groups based on the p-value is significantly different from 84.231 and considering the mean difference between the upper and lower limits both values are negative therefore average level of perceived stress in both groups was significantly lower in the high score. Therefore, it shows this result that the stress amount of both groups does not have a high score.

Second hypothesis: Stress management training can reduce the perceived stress in infertile women undergoing IVF treatment.

According to table 2 the stress amount in test group was evaluated in pretest and posttest which there is a significant difference according p-value amount and in test group the average score of pretest is 164.71 and posttest 124.22 which by reduction of perceived stress amount average after the test this result is shown that stress management training leads to reduction in perceived stress in infertile women (p= 0.000). In addition, by the evaluation of an effect size of 1.20 it was determined that stress management training has a very large effect size and can dramatically affect the perceived stress.

RESULTS AND DISCUSSION

Psychological Problems of Infertility

Infertility is a crisis which affects different dimensions of the couple's life and it is one of the most stressful incidents of people's lives. Different factors affect people's resistance to stress.

From overall Perceived stress of infertility there was a significant difference between the two groups (post-test) (p= 0.000). Average stress changes in the questionnaire include life without children and need to be parents have the highest score. Based on the findings, the attitude toward the child and the parents are the most common causes of infertility stress. The results are similar to other studies in this area (Latifnejad, 2010; Noor, 2008; Gholami, 2008; Fahami, 2010; Abolghasemi, 2008; Pahlavani, 2002; Hoseini, 2013; Shaker, 2006; Nil, 2005). Such findings also were found in Collins (1992) studies. He stated that women report more stress than men about their infertility, but infertility stress factors on both

sides was very similar. Both sexes have a strong focus on having children, which are why, it is an important factor in causing stress and predicting the outcome of IVF treatment for both sexes.

In a study by Andrews (1992), also the women's attitude towards infertility and its importance to having children had a relationship with the stress of infertility. He reminds increased the importance of health care based on a sense of control and optimism (within the realism) and providing social support in the treatment of these people.

Cousineau (2007) knows infertility as a stressful situation which is experienced by couples around the world. He states that the consequences of infertility are in several dimensions which can be social consequences or suffering and personal consequences. Advances in assisted reproductive technologies such as IVF, can give hope to many couples that the problem is treatable. Although there are barriers of medical insurance coverage and the cost is exorbitant.

Infertility Medical may unwontedly lead to experiencing emotional responses by couples, such as anxiety, loss of control, stigma and disorders in adults with developmental path. Evidence of the relationship between stress and fertility treatment suggests that it leads to reduction in pregnancy rate in patients. Fortunately, psychological interventions, particularly methods with emphasis on stress management and coping skills, indicate a beneficial effect in the treatment of patients' infertility. But more research is needed in this area to better understand the relationships.

In addition to the caused by infertility, treatments also cause too much stress. In Hammarberg study (2001) women indicate the experience of IVFa difficult one and strategies to reduce the stress are necessary.

Effect of Stress Management Training on Infertility Stress

Irrational thoughts about having children cause stress in these people. Infertility counseling is effective in improving the quality of life and modifying ideas, counseling can change the understanding of infertility in women who believe that having children is essential to have a life with happiness.

The findings of the study show that infertile women under stress management training had lower stress amount at the end of the study. These findings are similar to numerous studies that have been done in this area (Gharaee, 2004; Coobforushzade, 2009; Golbaryazdi, 2012; Hamid, 2011; Latifnejad, 2011). The results of Agha (2011) studies emphasize that techniques of coping strategies training to increase the use of restraint, seeking social support, accountability, strategic problem solving, estimate the positive and reduce the use of escape and avoidance strategies in infertile women.

Van Daele (2012) conducted a meta-analysis study. The purpose of this meta-analysis was to assess the effectiveness of psychological interventions to reduce stress and gain more insight in determining the effect of the adjustment features. Studies between 1990 and 2010 were selected according to predetermined criteria and were examined. For each study, the standardized average difference was calculated to measure the results of the degree of primary stress. Nineteen studies met the inclusion criteria; he concludes that the interventions that were presented in a shorter period of time have better results.

Suggestions

- Notice the important psychological aspects of the problem
- The use of counseling and psychology services in addition to medical treatments
- Collaboration with physicians, experienced psychologists
- Implementation of psychological therapy sessions treatment for infertile couples
- Empowerment infertile couples especially women and support infertile women to escape from loneliness and blamed by society and increase public awareness for the reduction of infertility can partially reduced many problems that are facing and help mental health and stability of family of these people.

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