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The Effect of Problem-Solving Skills Training on the Anxiety of Female Candidates for Intrauterine Insemination Treatment

Elham Khoori (PhD)

PhD in Reproductive Health,
Counseling and Reproductive Health
Research Center, Golestan University
of Medical Sciences,
Gorgan, Iran

Fatemeh Zarekia (MSc)

MSc in Midwifery Counselling,
Golestan University of Medical
Sciences, Gorgan, Iran

Shahram Mohammadkhani (PhD)

PhD in Psychology,
Department of Psychology,
Psychology & Educational Sciences
Faculty, Kharazmi University,
Tehran, Iran

Azizeh Ghaseminejad (MD)

Gynecologist and infertility
Fellowship, Department of
Gynecology and Obstetrics, Moheb
Yas Women's General Hospital,
Tehran University of Medical
Science, Tehran, Iran

Navisa Sadat Seyedghasemi (MSc)

MSc in Biostatistics, Health
Department statistics, Golestan
University of Medical Sciences,
Gorgan, Iran,
PHD Student in Biostatic, Kerman
University of Medical Sciences

Corresponding Author:

Fatemeh Zarekia

E.mail: f.zarekia@gmail.com

Address: Golestan University of
Medical Sciences, Gorgan, Iran

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Background: The success of therapeutic results of assisted reproductive techniques is related to several factors, including the extent of female anxiety. The aim of this study was to determine the effect of training problem solving skills on the anxiety of female candidates for intrauterine insemination in Moheb Yas Hospital in Tehran (2015).

Methods: This experimental study was a two-group design (intervention and control) of pre-test and post-test type. The data collection tool was a sociodemographic form and Beck Anxiety Inventory. The samples comprised of 49 female candidates for assisted reproductive technique of intrauterine insemination, with the least Anxiety Score of eight from Beck Anxiety Inventory. Based on this inventory, participants were homogenized in terms of different levels of anxiety and were randomly assigned into intervention and control groups. For intervention group, the problem-solving skills were trained for three sessions of 2-2.5 hours. Then, Beck's Anxiety Inventory was filled in both intervention and control groups, one day and 9 weeks after the end of the intervention. The data was analyzed in SPSS version 16, using the descriptive and analytical statistics (Mann-Whitney, Wilcoxon, and Paired t-test).

Results: There was no significant difference in the anxiety score among the two intervention and control groups before intervention, whereas the anxiety score indicated a significant difference between the two groups ($P=0.001$) one day and 9 weeks after the end of the intervention. Training problem-solving skills significantly reduced the anxiety of the intervention group one day after the intervention, and the decrease also remained stable at 9 weeks after the end of the intervention ($p = 0.001$).

Conclusion: By training problem-solving skills, we can reduce the anxiety among female candidates for intrauterine insemination.

Keywords: Anxiety, Intrauterine insemination, Problem-solving skills

Introduction

Infertility refers to the lack of pregnancy after one full year of continuous sexual contact without using a contraceptive method (1). According to the World Health Organization report, about 8% of couples experience a kind of infertility during their fertility years, and their number reaches 50-80 million people worldwide (2). In the United States of America, according to the studies conducted in 2006 to 2010, one out of every eight couples was recognized as infertile (3). Current evidence suggests that the prevalence of infertility in the world is about 9%, which is similar in the developed and developing countries (3).

The prevalence of infertility disorders is increasing worldwide, but evidence suggests that its prevalence in Iran is rising faster (4). There is no accurate statistics on infertility in Iran. According to a study, the prevalence of infertility in the years 2004-2005 was estimated to be about 24.9% (5) and in another systematic review (2013), the overall average of infertility in Iran was reported 13.2% (6). Studies have shown that the inability of the person to become pregnant through the natural process of reproduction is one of the painful experiences of life that the psychosocial and social conditions of an individual can also increase its significance and make it a psychological and social crisis for the person (7).

Psychological research has found that psychological responses affect the mechanisms of reproductive hormones and the body's defense system. On the other hand, there is a reverse relationship between psychological stress and the success rate of infertility treatment (8). The success of the treatment of fertility assistance can depend on several factors, including the amount of anxiety in the woman during treatment, so that there is a significant relationship between different levels of anxiety and infertility treatment (9). Therefore, infertility and psychological factors are interacting, that is, psychological factors can interfere with infertility, and infertility can have psychological consequences (7).

The study of gender differences on psychological responses of infertile couples indicated that women exhibit higher level of anxiety, depression and reduction of self-esteem than men (10). In the study of Ramazanzadeh et al., conducted on 370 infertile women in Tehran, anxiety was found in 86.8% of the participants (11) and also in a study carried out by Peyvandi et al. on infertile women in Sari, the prevalence of anxiety was reported 49.5% (12). Kissi et al. reported that the prevalence of psychological

problems especially anxiety was more significant in infertile women (13). In these women, the issues such as the probability of the husband's remarrying, the curiosity of the relatives about the issue of infertility, and the perception or understanding the husband's regret for fertile couples are the causes of their mental involvement (14). Studies have shown that the psychological symptoms of infertile people are similar to those with chronic diseases such as cancer, high blood pressure, or heart disease; therefore, as standard psychological interventions are provided for chronic patients, psychological interventions should also be used for infertile people (15).

So far, various methods have been developed, including cognitive-behavioral therapies, educational and counseling programs for helping infertile people, often with relatively long processes. Therefore, in cases where the conditions of the target group are not provided in accordance with the number of sessions required for psychological interventions (as well as those patients who spend a limited period at a medical center for their particular medical treatment), the implementation of long and timely interventions will not be perfectly and desirably applicable. Training problem solving skills is a short-term psychological intervention that can be used alone or in conjunction with other therapeutic approaches (16). Today, problem-solving skills are at the highest level of human cognitive learning and have been considered useful in preventing mental and emotional disabilities (16). In fact, the problem-solving skill is a self-guided cognitive-behavioral skill, in which the individual is able to deal with their everyday life problems through passing the stage of problem-solving skills (problem definition, providing solutions, choosing the best solution and evaluation, executing the solution and evaluating the entire problem-solving process) (17). Therefore, this study aims to determine the effect of training problem-solving skills on the anxiety of infertile women who are candidates for intrauterine insemination in the Moheb Yas General Women Hospital of Tehran and who have the highest referral to this infertility center.

Methods

This experimental study together with pre-test and post-test design began on August 22, 2015 and continued for 15 weeks. The study population included female candidates for intrauterine insemination who referred to the Infertility Clinic of Moheb Yas Hospital in Tehran. Forty-nine

eligible women were selected via convenient sampling. The inclusion criteria of the women were primary infertility, candidate for intrauterine insemination, minimum reading and writing education, no history of receiving any psychological consultation, non-use of antidepressants and anti-anxiety drugs, non-addiction to psychotropic substances and drugs, non-occurrence of severe disaster in the last 6 months (such as death or a severe accident of family members) and no history of other techniques of assisted reproduction. The data collection instrument was a sociodemographic form and a Persian version of Beck's Anxiety Inventory (BAI). The inventory consists of 21 items rated on 4-point Likert scale- zero (not at all), one (slightly), two (average) and three (extremely). Each item indicates a symptom that usually anxious people experience. The interpretation of the score is as follows: 0-7 (without anxiety), 8-15 (mild anxiety), 16-25 (average anxiety), and finally a score of 26-63 (severe anxiety). Therefore, the total score of the inventory is 0-63 (18). The Validity and reliability of the 21-item Beck Anxiety Inventory was determined by Kaviani et al. (2008) in Iranian population and its internal consistency was 92% through calculating Cronbach's alpha coefficient (18).

At first, the participants were explained about the confidentiality of their responses and how to complete the questionnaire. After obtaining the written consent, the participants were asked to fill out BAI and the sociodemographic form. Those who got the anxiety score of eight and above based were included in the study. Then, based on the levels of anxiety, they were matched and randomly assigned into two groups of intervention (25 subjects) and control (24 subjects). After that, the women in the intervention group were trained in problem solving skills for three sessions of 2-2.5 hours in small groups of at least three and a maximum of four participants. The holding time of the sessions was in accordance with the routine days of their referral for medical treatment. So that the first session was on days 2 or 3, the second session was on days 7 or 8, and the third session coincided days 12 or 13 of the cycle. The training was conducted based on Mohammad Khani's protocol (2014) in the form of question and answer and brainstorming (19). The control group did not receive any training, and only the usual medical procedures were performed for them. One day (i.e., 14th day of the cycle and according to the inoculation day) and 9 weeks after the completion of the problem solving

training, the anxiety level of all the participants was measured. The data was analyzed using the SPSS software version 16 and through the descriptive and analytical statistics (paired t-test and in case of failing a normality assumption, Mann-Whitney and Wilcoxon nonparametric tests).

Results

In this study, of 49 women in the control and intervention group, 3 and 2 women were respectively excluded from the study because of the resumption of infertility treatment (due to inadequate growth of oocytes and lack of proper conditions for intrauterine insemination), and eventually 21 women from the control group and 23 women from the intervention group were examined. The sociodemographic findings indicated that the income of the majority (59.2%) was between 200 to 250 dollar and the education level of 40.8% of them was high school diploma. There was no significant difference between the intervention and control groups in terms of these variables.

The anxiety level in the two groups was completely homogeneous before the intervention (Table 1). However, the mean score of anxiety, one day after the end of intervention (operation day) in intervention group was significantly lower than that of control group ($P = 0.002$) (Table 1). In addition, the level of anxiety one day after the intervention in control group increased significantly ($P = 0.001$) (Table 2).

There was a significant difference in the level of anxiety before and 9 weeks after the intervention in the intervention group, that is the anxiety level was still less than the level of anxiety before intervention (Table 1). There was a significant difference between the level of anxiety before and 9 weeks after intervention in the control group, so that in the control group, the anxiety level 9 weeks after the intervention was more than the anxiety level before the intervention ($P = 0.001$) (Table 1).

There was no statistically significant difference in the level of anxiety in one day and 9 weeks after the intervention in the intervention and control group. Thus, the average level of anxiety in intervention group remained stable at 9 weeks after the intervention, and in the control group, the level of anxiety remained high with a very small decrease (Table 3).

Table 1: Comparison of the mean anxiety score in female candidates for intrauterine insemination before and one day after intervention in both intervention and control groups

Time	Group	Number	Mean \pm SD	p-value of Mann-Whitney test
Before the intervention	Intervention	25	18.88 \pm 10.30	0.71
	Control	24	19.91 \pm 11.26	
A day after the end of intervention	Intervention	23	12.78 \pm 10.70	0.002
	Control	21	23.14 \pm 14.05	
9 weeks after the intervention	Intervention	23	12.43 \pm 9.98	0.001*
	Control	21	22.09 \pm 11.17	0.001**

* Wilcoxon, ** paired t-test

Table 2: Comparison of the mean difference in the anxiety score among female candidates for intrauterine insemination before and one day after the intervention in the intervention and control groups

Group	Mean difference of anxiety score	Standard deviation of anxiety score	Standard error of mean difference of anxiety score	p-value of paired t-test
Intervention	6.60	8.59	1.79	0.001
Control	-3.80	4.66	1.01	0.001

Table 3: Comparison of the mean anxiety score of female candidates for intrauterine insemination therapy one day and 9 weeks after intervention in intervention and control groups

Group	Anxiety score	Number	Mean \pm SD	p-value of Wilcoxon
Intervention	One day after the intervention	23	12.78 \pm 10.70	0.75
	9 weeks after the intervention	23	12.43 \pm 9.98	
Control	One day after the intervention	21	23.14 \pm 14.05	0.33
	9 weeks after the intervention	21	22.09 \pm 11.17	

Discussion

The present study supported the effect of training problem solving skills on reducing the anxiety of female candidates for intrauterine insemination. Hence, the level of anxiety of women under training problem-solving skills decreased, and this effect was stable and low in long-term follow-up (9 weeks after intervention). In control group, the anxiety level was still high one day and nine weeks after the intervention. Zarbask et al. (2013) used two methods of training stress management and problem solving on quality of life and life expectancy in infertile women, and found that training stress management and problem-solving to them significantly improved their life quality and their life expectancy in comparison to the control group (20).

In the studies examining anxiety in infertile women, they mentioned that anxiety could be due to the inability of a person to become pregnant through the natural process of reproduction (7).

These women often feel feelings like pain, fear and anxiety (21). Heidari et al. (2002) considered infertility as a source of anxiety for infertile women (22).

In the present study, one of the interesting findings in the control group was that the anxiety increased one day after the end of the intervention (on the day of operation) than before the intervention in intervention group. This finding may indicate that the patients experienced high level of anxiety on the day of operation, and this increased anxiety appeared in the control group that did not receive any training. Furthermore, in control group, the anxiety in 9 weeks after the intervention was significantly more than the anxiety before intervention. On the contrary, in the study by Akbari et al. (2011), who investigated the effect of training problem-solving skills on test anxiety of female students, the results indicated that the mean follow-up anxiety score 4 months after the end of the intervention

was constant and unchanged in the control group. This is contrasted with the result of the follow-up of the present study (23).

This contradiction can be due to the importance and different psychological burden of failure in the two categories examined (exam and infertility). Perhaps a part of the control group's anxiety that did not receive training is due to the influx of associated thoughts with the probability of failure, the multiplicity of using different technologies and prolongation of treatment stages, which can add to their anxiety at this stage. Of course, the above findings require further research on other factors affecting anxiety.

Conclusions

This study indicated that providing short-term counseling services such as training problem-solving skills to infertile women has had positive effects along with medical treatments in order to reduce their anxiety. The results of this research can be used to employ midwifery-counseling students and use their skills to help reduce the emotional and psychological problems of infertile women. On the other hand, this research is one of the first studies that has been focused on the impact of training problem-solving skills on the anxiety of infertile women who are candidates for intrauterine insemination and can be the reason for more detailed studies in this regard

Limitations:

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In this research, all the responses of the research units were self-explanatory and the data recording was considered as accurate and verified and there was no available method to measure the accuracy and survival for the researcher. Another limitation is that, due to the lack of a suitable and distinct training environment at Infertility Center of Mohebb Yas, the patients did not have the necessary concentration and relaxation, and were often tired while responding to questionnaires and receiving the training. Despite the effectiveness of counseling in this study, if appropriate counseling conditions are considered in these centers, the counseling will probably have a more favorable effect.

Acknowledgments

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