

**Counseling-supportive interventions to decrease infertile women's perceived stress: A systematic review**

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**Type of article:** Systematic Review

**Abstract**

**Background:** Infertility all around the world and in every culture is recognized as a stressful and critical experience that threatens individual, familial, marital, and social stability. Thus, in accordance with the importance of a woman's mental health and the possible impact of mental health on treatment outcome, finding a way to deal with perceived stress in women can help improve pregnancy outcomes.

**Methods:** This study is a systematic review on reducing perceived infertility stress in infertile women. The current study was undertaken using multiple databases such as SID, Irandoc, Magi ran, Google Scholar, PubMed, Science Direct, Scopus, Cochrane library, and CINAHL selected from articles pertinent to the study. The selection of papers was undertaken from 1990 through May 2016. The methodological quality was assessed.

**Results:** The initial search yielded a list of 725 papers, and then reviewers studied titles and abstracts. Thereafter, 68 papers were incorporated, and researchers reviewed summaries of all of the searched articles. Finally, the researchers utilized the data gained from 29 full articles so as to compile this review paper. Reviewing the studies conducted on reducing infertility perceived stress, the researchers classified related findings into two main categories: supportive and counseling intervention.

**Conclusion:** Considering the fact that there is an international agreement that fertility centers need to offer counseling programs for psychological problems of the infertile, it is especially important to recognize

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counseling-supportive interventions for decreasing infertile women's perceived stress and to program plans for decreasing women's perceived stress. By investigating counseling-supportive stress, we hope that this study has stepped forward toward health care agent's familiarity with decreasing infertile women's perceived stress and, therefore, improving treatment consequences.

**Keywords:** Infertility, Counseling, Intervention, Supportive intervention, Counseling intervention.

## 1. Introduction

Infertility is defined as lack of pregnancy after one year of unprotected sexual intercourse (without using contraception methods) (1); all around the world and in every culture, it is recognized as a stressful and critical experience that threatens individual, familial, marital, and social stability (2). Several studies in America show that the rate of infertility varies and is between 8% and 33% (3). The overall prevalence of primary infertility in Iran is 5.2%, and secondary infertility is 3.2%. The overall average of infertility in Iran has been reported to be 13.2% (4). The infertility experience, which is also referred to as an infertility crisis, is accompanied with physical, social, and economic stresses that affect every aspect of the individual's life (5). Treatment difficulty, complicated treatment protocol, daily injection, semen analysis, numerous sonography occasions, aggressive treatment, long waiting lists, and financial costs have been repeatedly announced as factors of psychological stress by people seeking infertility treatment (6). Another source of stress for these people is being exposed to making hard decisions in the treatment process such as how many embryos need transferring, or if there is need for the embryo to be extra frozen, and can the extra embryo be donated (7). It may be said that infertility is the most stressful event in the life of the infertile. Sexual worries, guilt, disappointment, and marital problems are often related to infertility (5). Fast scientific and medical developments in infertility technology and the development of fertility centers around the world have led to a better understanding and attention to mental worries and emotional needs of people suffering from infertility. As technology for curing infertility has developed, patients' referring to mental health experts for help to encounter many tensions in diagnostic and therapeutic procedures and also for help to make decisions about treatment protocols and alternative parenting options has increased (8). An important way to make patients ready to experience the treatment intensity and introducing them to some hard decision-making that may come up in the treatment procedure, is psychological support and ideal counseling such as psychotherapy, relaxation, stress management, cognitive-behavioral intervention, grief management, curing marital and sexual disorders, crisis management, self-help groups, etc. (7). Although studies dealt with a variety of interventions in decreasing the stress of the infertile; for example, Latifnejad et al. investigated the effect of collaborative infertility counseling on perceived stress in infertile women (2); Cassill et al. conducted a study about the role of support groups in stress management of couples under treatment with in vitro fertilization (IVF), which showed that a support group can help couples manage their stress (9), there has not been a comprehensive study dealing with effective methods to decrease stress in the sector of support and counseling. From review studies of this type, we can mention a study by Boivin et al. about psychosocial interventions in infertile women, which have shown that these interventions can help improve women's social performance, but it has not shown the role of interventions in decreasing infertile women's stress (10). Considering that today there is an international agreement that fertility centers need to have necessary counseling programs for psychological problems for the infertile (11), and because the researchers have not found a comprehensive review study in counseling-support program about infertile women's perceived stress, we decided to conduct this study in order to have a review on counseling-supportive interventions in decreasing infertile women's perceived stress. The findings of this study can be used to design more effective interventions in order to cure infertile women's psychological problems and, therefore, improve their treatment consequences.

## 2. Material and Methods

This was a systematic review carried out in Mazandaran University of Medical Science in Sari in 2016. The main steps for writing this systematic review study consist of explaining the research question, extraction of key words, search in available data bases, extraction of articles according to selection criteria, and checking the article's quality according to the checklist that will be explained in the following.

### 2.1. Explaining the research question

This study was primarily formed with the question of what should be the counseling-supportive interventions in the decrease of infertile women's perceived stress.

## **2.2. Extraction of key words**

The key words were extracted by the search strategy through medical subject heading terminology. The key words are “infertility,” “counseling,” “intervention,” “supportive intervention,” “coach,” “group counseling,” and “relaxation.”

## **2.3. Search in available databases**

In the review study, the search was done using available information bases such as SID, Irandoc, Magi ran, Google Scholar, PubMed, Science Direct, Scopus, Cochrane library and CINAHL. For further search, the authors searched the article’s reference list to find more studies. The language limitation in this review kept this study and articles to Persian and English.

## **2.4. Extraction of articles according to selection criteria**

By searching in databases and receiving related studies from 1990 to May 2016, we went to the point of study saturation, where repeated studies were eliminated by giving them to the EndNote software. The inclusion criterion was all the studies extracted by the mentioned key words, and they had to answer the researcher’s questions about four items. These questions consisted of research population (infertile women), study type (interventional and the intervention type was related to decreasing the perceived stress), control group (infertile women without intervention), and result (decreased perceived stress). Moreover, they had an acceptable quality after checking. The exclusion criterion was all the studies that were conducted on fertile people were not interventional or were related to consequences of infertility other than stress, such as anxiety and depression, and didn’t have an acceptable quality in the final checking.

## **2.5. Checking the article quality according to the checklist**

In this level, data were extracted through searching in databases, and study quality was checked through study quality evaluation criterion. Checking the study quality was done based on risk of bias, based on Cochrane and according to the instruction below.

### **2.5.1. Random sequence generation (checking for possible selection bias)**

Was analyzed as follows:

- Low risk of bias (randomization process correctly, using a table of random numbers, random numbers generated by a computer).
- High risk of bias (any non-random process, e.g., odd or even date of birth, registration number clinic, or hospital record number).
- Unclear risk of bias.

### **2.5.2. Allocation concealment (checking for possible selection bias)**

Was analyzed as follows:

- Low risk of bias: telephone or central randomization, consecutively numbered sealed packets.
- High risk of bias: open random allocation, bags are not sealed and non-opaque, alternatively, date of birth.
- Unclear risk of bias.

### **2.5.3. Blinding of participants and personnel (checking for possible performance bias)**

For each study, we used methods in which, if possible, participants and personnel receiving the intervention are blinded. If the personnel and participants in the blinded study are considered at low risk of bias or lack of blind unlikely to affect the results. This figure was reported that

- Low risk, high, and unclear bias for participants.
- Low risk, high, and unclear bias for personnel.

### **2.5.4. Blinding of outcome assessment (checking for possible detection bias)**

Was analyzed that, if possible, we evaluate the result of the intervention of the participants have received is blind. In this way blinding results were assessed as follows:

- Low risk, high, and unclear bias.

### **2.5.5. Incomplete outcome data (checking for possible attrition bias due to the amount, nature and handling of incomplete outcome data)**

Was analyzed as follows:

- Low risk of bias (if attrition rate was less than 20% for all outcomes).
- High risk of bias (e.g., numbers or reasons for missing data imbalanced across groups).
- Unclear risk of bias.

### **2.5.6. Selective reporting (checking for reporting bias)**

Was analyzed as follows:

- Low risk of bias (that was clear, all outcome was reported or explained in results).
- High risk of bias (that was not clear, all outcome was reported or explained in results).
- Unclear risk of bias.

**2.5.7. Other bias (checking for bias due to problems not covered by (2-5-1) to (2-5-5) above)**  
*Was analyzed as follows:*

- Low risk of other bias.
- High risk of other bias.
- Unclear risk of other bias.

### **2.6. Extracting data from articles**

After reading the abstract and the complete text of the articles included in this review study, the data needed to write this review study were extracted.

### **2.7. The classification of data and preparation of the final report**

Finally, all the extracted data were classified and reported as a full text article.

## **3. Results**

The findings of this systematic review resulted in the classification of data in the two parts of supportive interventions and counseling interventions.

### **3.1. Supportive interventions**

In general, women express more negative feelings than men during the diagnosis and treatment of infertility. It has been shown in studies that there is a relationship between the skills of social coping and the individual's stress level in infertility, so that the higher the individual's coping skill, the less his or her stress. Moreover, spousal support and family support have a specific role in decreasing the stress of the infertile. Therefore, based on this information, the support of spouse and family has an important role in the individual's skill in coping with infertility stress and can lead to its decrease (12). Supportive methods to decrease stress in infertile women consist of the following.

#### **3.1.1. Coach System**

A new technique of supportive intervention, which is rapidly emerging, is called coaching. This method is a new approach to cooperate with patients to improve self-management strategies in order to prevent the exacerbation of chronic diseases and support lifestyle change. In fact, people will get closer to their health goals through this method (13). In other words, the coach improves the patients' skills in preparing for counseling, about treatment options, and making changes. The coach system improves patients' knowledge, remembering the information and participating in decision-making (14). The coach can help in chronic disease where people experience permanent challenges and also in sensitive decision-makings related to such diseases (15). The role of a coach has been proven to help cope with diseases such as cancer (16) and diabetes (17). Reproductive health and the field of infertility are areas where coaching has useful functions. To improve the treatment result of assisted reproductive methods, a coach can be used to decrease the stress of these methods; therefore positive treatment results increase (18). The health coach is defined as a person who helps the patient gain knowledge, skills, tools, and confidence for active participation in self-care, so that he or she can reach certain health goals. A coach has five main roles: giving support for self-care, filling the gap between doctor and patient, helping the patient to improve the move toward health systems, giving emotional support, and giving services as a permanent figure (19).

#### **3.1.2. Telephone system**

Interventions provided for the client through telephone improves the health results based on personal needs, the management of chronic diseases, and the facilitation of health improvement. Mobile phone-based intervention can be established for adherence to treatment, paying attention to the patient, and improving the behavior change. Because clients have less stress in telephone consultation, because they have more control and their privacy is better protected, they do most of their talking on the phone; therefore, although telephone consultation cannot replace face-to-face consultation, it can play an important and useful role in providing information and in the supportive role in infertility problems (20).

#### **3.1.3. Relaxation including yoga meditation and pacification**

The progressive muscle relaxation technique is a technique designed by American doctor Edmond Jacobson to help decrease muscle tension or muscle contraction. The progressive muscle relaxation technique is an exercise with a set of systematic steps taught to the patient to contract a group of muscles and then relax them regularly. Progressive muscle relaxation increases the activity of the parasympathetic cycle and removes muscle tension. This method is performed by making contrasting situations of tension and relaxation. Because the cost and consequences of

tranquilizers have negative effects on the process of infertility treatment and also causes drug addiction, the relaxation technique can be useful in decreasing infertility's perceived stress in women (21).

### **3.2. Counseling interventions**

According to American Society for Reproductive Medicine (ASRM), the goal of infertility counseling is for every infertile couple and person to learn how to face physical and emotional changes that will happen to them during infertility and also changes that may happen in the treatment process. Furthermore, it is necessary for infertility consultants to have comprehensive knowledge of the base of the problem and also have accurate information about the feelings the infertile have and the culture of the region in dealing with the infertile (22).

#### **3.2.1. Individual counseling**

Infertility counseling began when an infertile couple sought support and education from their medical and psychology groups. More than 30 years ago in the United States, a consumer rights group established the National Infertility Association to emotionally support the infertile by a group of experts and peers. Also in his writings, the founder of this association emphasized special care for emotional issues. In recent years, other countries such as England, Australia, New Zealand, Germany, France, and Spain established such a group one by one. Gradually, mental health practitioners, medical experts, and researchers around the world started to consider the psychological parts of infertility experience and recognized the patients' need for emotional and psychological support and, in some cases, psychological intervention (8). Every individual counseling is defined as a two-person relationship where one person asks for help and the other one gives help. The purpose of individual counseling is to solve the individual's problem and, therefore, improve and change his or her behavior. There are different tendencies in individual counseling, which depend on the consultant. For example, the number of sessions, the duration of each session, and the applied method depend on the consultant's tendency and skill. In general, there are five approaches of individual counseling in people suffering from infertility, which are psychodynamic psychotherapy, cognitive-behavioral treatment, strategic psychotherapy and focus on treatment, crisis intervention, and grief counseling. A consultant can use one or, if needed, all of these options in his or her counseling in order to reduce an infertile women's perceived stress (8).

#### **3.2.2. Group counseling**

One method to alleviate stress in infertile patients to improve treatment results is group counseling. In a time when financial restrictions grow day by day, there is less use of individual treatment methods, and group approaches have replaced them. In group counseling, which is widely popular, they use intragroup treatment factors, constructive interactions among members, and interventions from an educated and knowledgeable leader in order to change nonadaptive feelings, thoughts, and behaviors. The optimal number of group members is thought to be eight to 12. Most therapists hold sessions once a week. Sessions typically last two hours, but the consultant has to set a limit to that (23). During clinical infertility counseling, group counseling was created by the demand of the couples and people who wanted to see other cases with similar problems as their own. Such a counseling group can help share experiences, receive information, improve communication skills, learn relaxation skills, or provide other forms of psychological support (24). In a review study investigating psychological intervention in infertility, it was shown that group counseling, which focuses on teaching and learning skills, significantly had positive effects on the spectrum of psychological intervention results such as expressing feelings and support for discussing infertility thoughts and feelings (10). Although group therapy is rather a new method (in the last 100 years), it has proven to be an efficient method, which is useful in changing behavior, and is time-efficient and cost-efficient, which is useful for treating various problems the infertile experience such as grief, social stigma, infertility stress, anxiety, and depression (8). Furthermore, group counseling reduces the social isolation of infertile women (25). Group counseling also can include logotherapy. Logotherapy has been shown to be able to reduce stress, which can be an effective therapy beside other infertility treatments (26).

## **4. Discussion**

One hundred and forty-eight article abstracts and 68 complete article texts have been reviewed; finally 29 full text articles were used for this article (figure 1). In total, four random clinical trial (RCT) articles were investigated according to article inclusion criteria in order to assess the risk of bias (Table 1-2). In part of the selection bias, only one study received a high risk of bias in part of the sample selection. In part of the blinding from the perspective of the participants and the personnel and the risk of reporting the results due to the nature of the applied interventions in this study (counseling), all the studies received a high risk of bias. In the respect of attrition bias, one study had a low risk, two studies had a high risk and for one study, the risk of bias was not clear. Regarding the bias in the selective report of the results and other biases, all studies got a low risk of bias. The study focuses on the effect of counseling-supportive interventions on decreasing infertile women's perceived stress, so it can be available to

authorities and personnel, for them to take actions toward alleviating infertile women’s perceived stress; by considering the aforementioned issue, it can be concluded that stress in women as a factor of infertility and its intensifier leads to the failure of fertility methods. Therefore, interventions can help improve treatment results. The basis of psychological interventions for the infertile consists of improving the skills for coping with a life without children, lack of dependence on the probability of treatment success, significant decrease in potential struggle with infertility treatment between the couple, improving the communication between the couple and the couple and the doctor, encouraging them to accept the fact that psychological disorders dispose the individual to medical treatments, and giving support to the management of any change that is needed in lifestyle and future programming. Overall, all these issues decrease the individual’s stress and can have positive effects on his or her medical treatment as secondary results (27). As a result, counseling-supportive interventions gain importance.

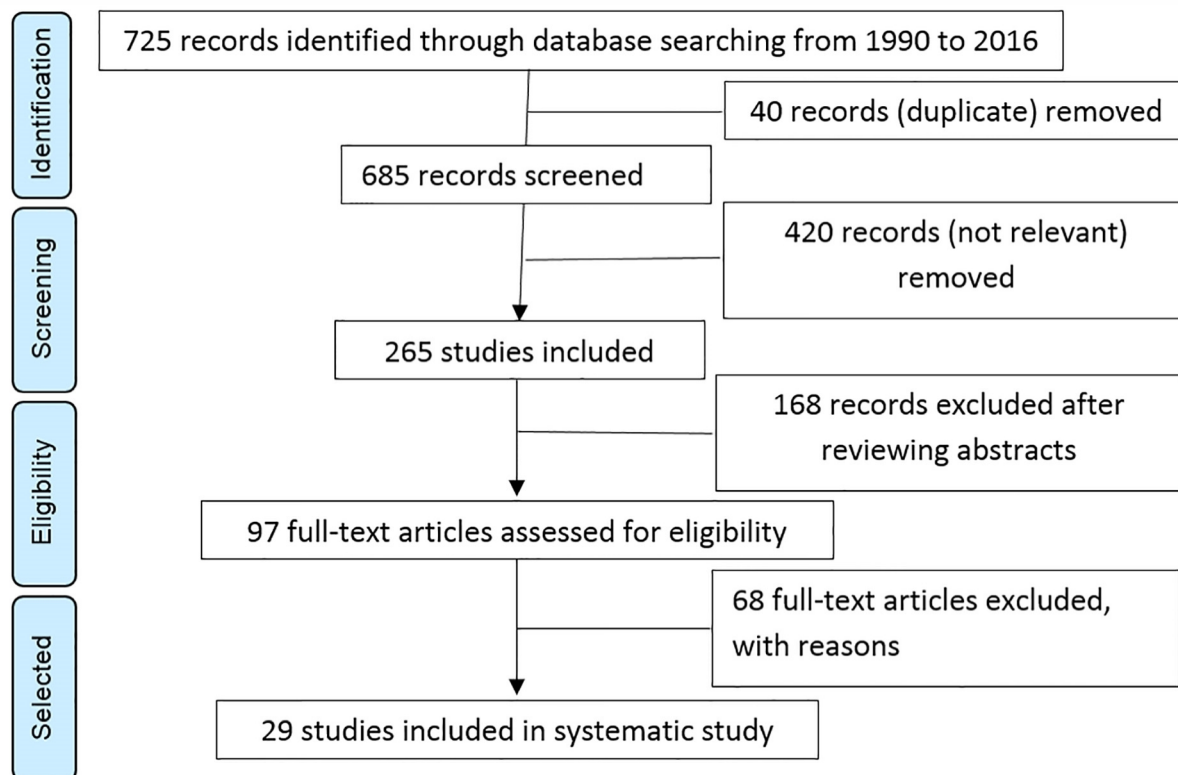


Figure 1. The process of included and exclude articles

Table 1. Characteristic of included studies

| Ref. no. | Type of intervention  | Outcome   |
|----------|---|---|
| 1        | The intervention consisted of three sessions with a social worker trained in experiential psychosocial therapy: one before, one during and one after the first IVF cycle.                               | Results of this study do not support the implementation of our counselling intervention for all first-time IVF couples.   |
| 2        | The experimental group received spiritual group psychotherapy counseling for 12 sessions, 2 hours per week for a 3 months period  | Logotherapy is related to stress reduction and can decrease psychiatric symptoms of worry and perceived stress. This approach tends to improve an infertile person’s ability to deal with their problem of finding the meaning of life. |
| 3        | The intervention group received in five individual collaborative meetings with midwives, gynecologists and clinical psychologist counseling, and the control group received only the traditional advice | Collaborative counseling can reduce perceived stress infertility. This method can be used as a method of stress management in infertile women undergoing IVF.   |
| 4        | Relaxation techniques in the intervention group consisted of 12 sessions.   | Relaxation techniques improve the rate of successful pregnancy outcome (positive pregnancy test) after IVF and ICSI.  |

**Table 2.** Table of “Risk of bias”: review authors’ judgments about each risk of bias item presented across all included studies

| Ref. no. | Random sequence generation (Selection Bias) | Allocation concealment (Selection Bias) | Blinding of participant and personal (Performance Bias) | Blinding of outcome assessment (Detection Bias) | Incomplete outcome Data (Attrition Bias) | Selective reporting (Reporting Bias) | Other bias |
|----------|---|---|---|---|--|--------------------------------------|------------|
| 1        | L   | L                                       | H   | H   | H  | L                                    | L          |
| 2        | L   | L                                       | H   | H   | L  | L                                    | L          |
| 3        | L   | L                                       | H   | H   | UN                                       | L                                    | L          |
| 4        | H   | L                                       | H   | H   | H  | L                                    | L          |

L: Low Risk, H: High Risk, UN: UN Clear

It is noteworthy that studies have shown that, although some couples may not have used these psychological supports, their knowledge of the fact that such services are available has given them confidence. Therefore, it is even apparently clear that counseling and psychological support are effective in decreasing the stress of people who enter assisted reproductive techniques (ART) treatment (7). A new method in the supportive aspect of infertile women’s perceived stress decrease has been the coaching system; although there is not a study to determine its role in infertility, the role has been proven in other chronic diseases. Because not every patient has self-confidence and skills needed to participate in the care, there is need for a coach to develop those skills. Studies have shown that a coach improves patients’ skills in preparation for counseling, counseling about treatment options and making changes. The coach, who is a trained facilitator, can be supportive but cannot make decisions for the patient. In fact, the coach system helps improve patients’ knowledge, remember information, and participate in decision-making. In some centers, coach care systems have merged with the center activities. In California, for example, teammates are used to program counseling in order to improve relationship with doctors (14). Moreover, another supportive part that has to be added to infertility treatments in fertility centers is relaxation. Although psychological problems are the most frequent among infertile couples, their treatment does not gain enough attention; on the other hand, all other treatments applied on these people are medical and physical. In order to improve medical infertility treatments, along with the group of pharmaceutical treatment experts, it is necessary to offer nonpharmaceutical complementary treatments, such as relaxation, in different periods of infertility treatment, and even if needed, after infertility treatment (21).

Many studies have investigated the role of relaxation in decreasing stress, such as the study by Sharma et al. in India, which shows the effect of relaxation against stress (28), and the study by Mobini et al., which shows the effect of relaxation in decreasing anxiety (21). Moreover, the study by Valiani et al. has also shown the effect of relaxation in decreasing infertile women’s stress and, therefore, the improvement in treatment results (29). As a result, this is an appropriate, simple, and inexpensive method to be used. Another supportive intervention to decrease stress in the infertile is the telephone system, which has been somewhat ignored. Designing interventions in identifying the role of telephone counseling (short message, call, application) can specify the effect of this type of intervention and, therefore, its effect on pregnancy consequences. There are different types of counseling interventions in infertility, two main types of which are individual counseling and group counseling. In decreasing infertile women’s perceived stress, group counseling has demonstrated the biggest improvements in decreasing the stress level related to infertility treatments.

**5. Conclusions**

A review on interventions reveals that counseling interventions and perceived social support greatly influence the physical and mental condition, life satisfaction, and various aspects of infertile women’s life quality, and they have been recognized as moderating factors effective in dealing with stress and coping with stressful conditions. Considering the fact that there is an international agreement that fertility centers need to offer counseling programs for psychological problems of the infertile, it is especially important to recognize counseling-supportive interventions for decreasing infertile women’s perceived stress, and to program plans for decreasing women’s perceived stress. By investigating counseling-supportive stress, we hope that this study has stepped forward toward health care agent’s familiarity with decreasing infertile women’s perceived stress and, therefore, improving treatment consequences.

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**Conflict of Interest:**

There is no conflict of interest to be declared.

**Authors' contributions:**

All authors contributed to this project and article equally. All authors read and approved the final manuscript.

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