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Research Article

# The Effect of Collaborative Infertility Counseling on Marital Satisfaction in Infertile Women Undergoing In Vitro Fertilization: A Randomized Controlled Trial

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## Abstract

**Background:** Infertility is a global problem which affects interpersonal and social relationships and threatens marital life of infertile couples. Females with infertility experiences less marital satisfaction than infertile males.

**Objectives:** The present study aimed to examine the effect of collaborative infertility counseling on marital satisfaction in females with infertility, undergoing in-vitro fertilization in Mashhad, Iran.

**Methods:** In this clinical trial, 60 females with primary infertility were selected from Montaserieh infertility research center and randomly allocated into the intervention (n = 29) and control (n = 31) groups. The intervention group received individual counseling, based on the collaborative reproductive healthcare model with collaboration of a midwife, a gynecologist and a clinical psychologist in five sessions during a two-month period. The control group received routine care. Marital satisfaction was evaluated at the beginning of the study and at the day of embryo transfer, using the Hudson index of marital satisfaction. Data were analyzed using statistical tests including independent and paired-samples T-tests.

**Results:** The baseline mean marital satisfaction score of the intervention group was $24.78 \pm 13.20$ and changed to $22.86 \pm 15.01$ after the intervention; therefore, the mean difference between the groups was significant ($P = 0.027$).

**Conclusions:** Collaborative infertility counseling increased marital satisfaction in females undergoing in vitro fertilization. Therefore, this method can be used to improve the marital satisfaction of females with infertility.

*Keywords:* Infertility, Collaborative Counseling, Marital Satisfaction, In-Vitro Fertilization

## 1. Background

Marriage is the most important human relationship and marital satisfaction is a substantial aspect of the couple's marital life (1-3). Infertility is a universal issue which disturbs people's interpersonal and social relationships and affects 80 to 168 million people worldwide (4). Approximately 25% of Iranian couples have experienced primary infertility (5). Regardless of the cause of infertility, female partners incur further treatments, stress, anxiety and sexual problems; they also experience less marital satisfaction than males (6-8). Researches show that fear of losing marital life is the greatest factor that bothers females with infertility (9, 10). Infertility counseling is a new strategy which combines medical and psychological aspects of reproductive health (4). Infertility counsellors try to consider the socio-cultural concerns of their clients and adopt holistic approaches to prepare couples for this stressful life event (11). In this regard, Covington (4) introduced a theoretical framework, known as the collaborative reproductive healthcare model, which is based on biopsychosocial model, in which all physiological, psychological, personal and social aspects of individuals with infertility are considered. Latifnejad Roudsari et al. adopting this collaborative counseling framework, reported that it can decrease the perceived infertility-related stress in females with infertility. Thus, they suggested this model as one of the stress management strategies in females with infertility undergoing in-vitro fertilization (IVF) (12). Vizheh et al. also reported that infertility counseling improves marital satisfaction in couples with infertility (13) However, Anderheim et al. reported that extended encounter counseling with a midwife had no significant effect on psychological well-being of females with infertility (14). Yet, cultural variables might affect the outcome of infertility counseling (4). Considering the few studies conducted in the field of infertility counseling, this question still comes to mind that Can collaborative infertility counseling affect the marital satisfaction in females with infertility?

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## 2. Objectives

The current study aimed to investigate the effect of collaborative infertility counseling on marital satisfaction of females with infertility undergoing in-vitro fertilization.

## 3. Methods

### 3.1. Study Design and Participants

A clinical trial was conducted on 60 females aged 20 - 45 years, with primary infertility, referring to Mashhad Montaserieh infertility treatment center, Mashhad, Iran. This is a referral center for the couples with infertility in Khorasah province. Patients were recruited by consecutive sampling method. Those who met the inclusion criteria were randomly allocated to intervention and control groups.

The sample size was calculated using the results of the pilot study on 10 subjects and the mean differences ± standard deviations of marital satisfaction were 3.1 ± 3.63 and 7.8 ± 7.98, in the intervention and the control groups, respectively. Accordingly, with a type I error probability of 0.05 and a power of 0.80, $\mu_1 = 3.1$, $\mu_2 = 7.8$, $s_1 = 3.63$ and $s_2 = 7.98$, the sample size was determined to be 28 patients for each group. However, to compensate probable attritions and achieving more reliable results, 40 patients were recruited for each group.

The inclusion criteria were: Iranian nationality, literacy, not receiving oocyte donation, not being a gestational surrogate, absence of somatic or psychiatric problems, having no smoking habit, and possessing a general health questionnaire (GHQ) score of less than 28. The exclusion criteria were: lack of ovarian response to the drugs, leaving the treatment for any reason, and experiencing severe family conflicts or traumatic events during the study.

One hundred and fifteen patients were assessed for eligibility. Thirty two patients were excluded and 80 patients were randomly assigned into the intervention and control groups. To this end, the first subject was allocated into the control group through coin tossing, and then, other subjects were grouped alternately. Finally, three patients declined to participate and 60 subjects (29 in the intervention group and 31 in the control group) remained in the study (Figure 1).

### 3.2. The Study Instrument

The study instrument comprised a researcher made questionnaire, the Hudson marital satisfaction index (MSI), the fertility problem inventory (FPI) and the general health questionnaire (GHQ-28). The researcher made questionnaire consisted of three sections. The fires section included questions on demographics (i e, the age and educational level), and infertility related data (i e, time of awareness of the diagnosis, duration of treatment, number of intrauterine insemination (IUI) cycles, number of IVF cycles, source of infertility, the level of hope for treatment success, the parties participated in the treatment and feeling about infertility). The second section was a checklist for the subject attendance in the counseling sessions, and the third section was a special form for the subjects' adherence of the relaxation techniques at home.

The marital satisfaction index (MSI) consists of 25 items and all items are responded on a 5-point Likert scale. The minimum and maximum scores of the MSI are 25 and 75, respectively. The higher the score, the lower the marital satisfaction (15). This scale was translated into Farsi by Shaker et al., and its validity and reliability were confirmed through content validity and internal consistency method (Cronbach's alpha = 0.96) (16). The FPI consists of 46 items and five subscales. All items are responded on a 6-point Likert scale. The minimum and maximum scores of the FPI are 46 and 276, respectively (17). This scale was translated into Farsi by Alizadeh and its validity and reliability were confirmed through content validity and internal consistency method (Cronbach's alpha = 0.91) (18). The GHQ-28 is a self-report questionnaire clinically used to track the mental disorders. It is consisted of 28 items in four subscales and all items are responded on a 4-point Likert scale summing up a score ranging from zero to 84. This scale was translated into Farsi by Joneidy and its validity and reliability were confirmed through content validity and internal consistency method (Cronbach's alpha = 0.86) (19).

### 3.3. Interventions

The researchers identified the subjects with inclusion criteria at initial point of the IVF procedure (basic sonography on days of two and three in menstrual cycle) in Montaserieh clinic. All of the subjects completed the study instruments at the entrance to the study. Then again all of them completed the MSI at the end of the study (i e, after eight-nine weeks). During the study, the control group received routine care. However, in addition to the routine care, the intervention group received five sessions of individual counseling program on the nature of infertility, its causes and treatments, proper communication, problem focused coping strategies and stress management techniques (i e, the Jacobson relaxation technique, to be practiced at least five times a week). The counseling program was conducted in the presence of a midwife (the first author), a gynecologist and a clinical psychologist. Each session lasted 45 - 60 minutes, and was held during IVF treat-

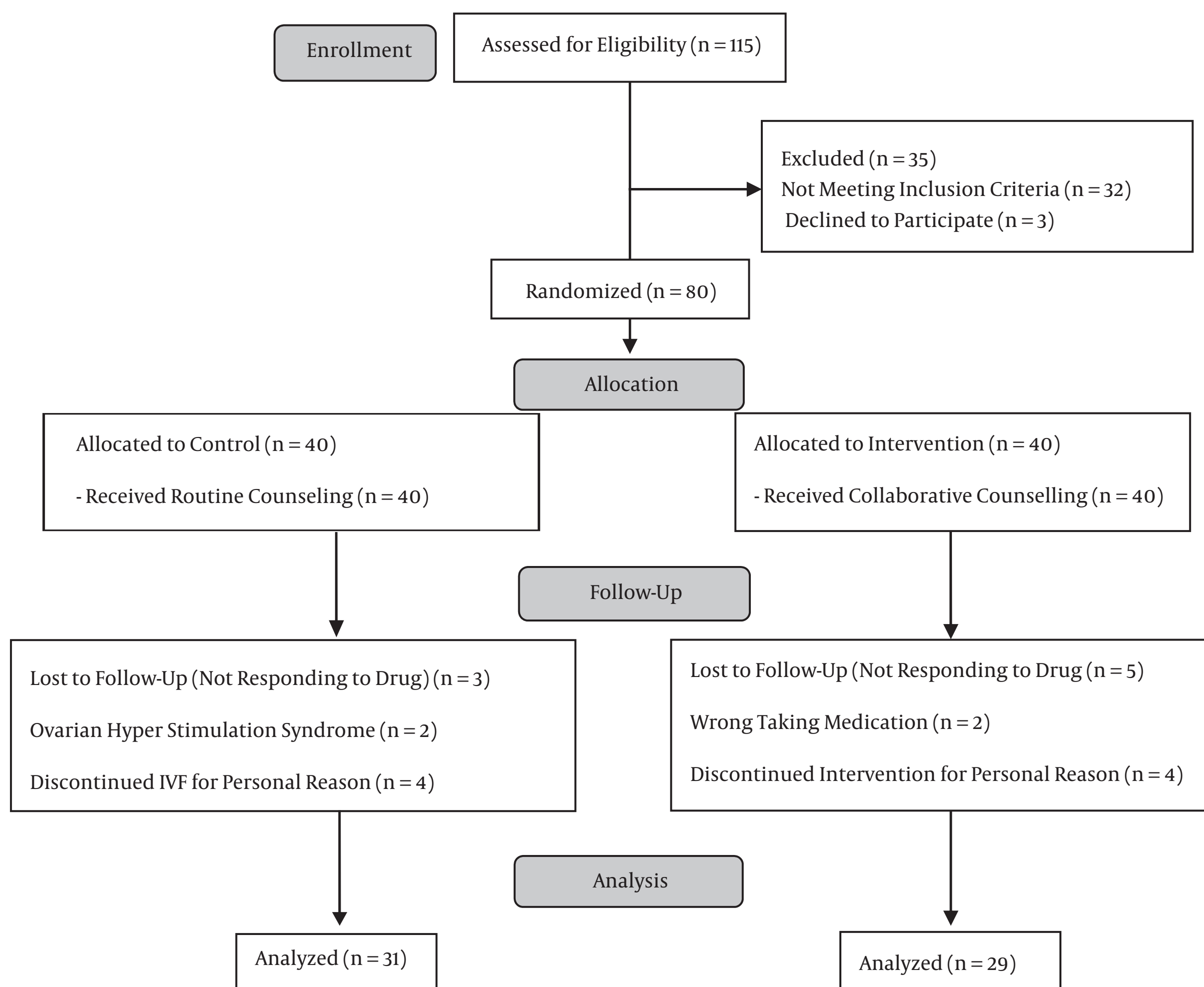


**Figure 1.** Consort Flow Diagram of the Study

ment cycle lasting between eight-nine weeks. Every session consisted of a combination of a short speech, question and answering and role playing. At the end of the first session each subject received an audio CD, an educational pamphlet about the relaxation techniques and a checklist to record the frequency of relaxation techniques at home. The content validity of the educational pamphlet and the audio CD was confirmed by the faculty members in Mashhad Universities of Medical Sciences. The structure of the collaborative counseling sessions is presented in Table 1.

Between the sessions, the main researcher remained in contact with the subjects to remind them of the meetings and coordinate the sessions. The subjects were asked to inform the researcher in case any problems occurred. Finally, a post-test was performed at the end of the fifth session and after embryo transfer procedure, using the MSI questionnaire.

### *3.4. Ethical Considerations*

The present study was approved by the ethics committee of Mashhad University of Medical Sciences. Permission was obtained from the Montaserieh clinic authorities. All subjects signed a written informed consent before participating in the study. The questionnaires were anonymous, and personal information was kept confidential. The participants were informed of their right to leave the study at any time. The staff of the healthcare centers was informed about the results at the end of the study. The researchers observed all ethical issues in accordance with the Helsinki declaration. The study was registered at the Iranian registry of clinical trials (number: 201110267915N1).

**Table 1.** The Outline of the Counseling Sessions

| No. | Purpose | The Time and the Facilitator | Content |
|---|---|---|---|
| 1 | Providing information about infertility, identifying the irrational beliefs about infertility, presenting the Jacobson relaxation technique | Conducted by a midwife, on days 2 and 3 of the first cycle | Greeting, introducing the session's facilitator and the patient to each other, correcting the false beliefs and encouraging the subjects to talk about their feelings and concerns about infertility and its treatment, presenting the Jacobson relaxation technique and its effects on improvement of the treatment outcomes; practicing the Jacobson relaxation technique, giving the subjects an audio CD and an educational pamphlet about the relaxation techniques and a checklist to record the frequency of relaxation techniques at home |
| 2 | Psychological counseling | Conducted by a psychologist and a midwife, around days 19 - 20 of the first cycle after performing sonography | Greeting, introducing the session's facilitator and the patient to each other, reviewing the content of the previous session and the way of doing exercises at home; the psychologist encouraged the subjects to talk about her interactions with their spouse, family and community, and also about their thoughts and feelings about infertility, counseling and discussions were conducted on the list of the subjects irrational beliefs and negative thoughts and beliefs in marital life |
| 3 | Counseling about coping strategies in stressful situations | Conducted by a psychologist and midwife, on the second day of the next cycle (approximately 10 days after the second session) | Reviewing the content of the previous session and the way the subjects practiced them; the psychologist helped females to find an effective support system and offered them effective coping strategies in relation to their infertility -related issues |
| 4 | Reviewing the problem-based coping strategies in relation to infertility, and the efficient communicative skills and stress reduction techniques | Conducted by a midwife, on days 6-8 of the second cycle (approximately one week after the third session) | Greeting, receiving feedback from the subjects about the content of the earlier sessions and train them how to generalize those to their real life, discussing on the role of efficient communication in stress reduction, presenting the principles of effective communication and the aftermaths of poor communication, discussion on problem-based coping strategies in relation to infertility |
| 5 | Describing the oocyte retrieval and embryo transfer procedures, doing Jacobson relaxation technique | Conducted by a gynecologist and the midwife, on day 14 of the second cycle | Describing the oocyte retrieval and embryo transfer procedures, answering the eventual questions of the subjects by the gynecologist; practicing the relaxation techniques |

### 3.5. Data Analysis

The statistical analyses were carried out using SPSS version 11.5 (SPSS, Inc. Chicago, Illinois, USA). The Kolmogorov-Smirnov test was used to test the normal distribution of data. Descriptive statistics such as mean, standard deviation, frequencies and percentages were calculated. Independent samples T-test, Chi-Square and Mann-Whitney U tests were used to cheek the homogeneity of the two groups regarding the demographic and confounding variables. Independent and paired-samples T-tests were used to examine the differences in mean marital satisfaction scores between and within group comparisons, respectively. P-value $\leq$ 0.05 was considered statistically significant.

## 4. Results

The two groups were not significantly different in terms of demographic characteristics, infertility-related and psychological data (Table 2). At the beginning of the study, there was no statistical difference between the two groups regarding marital satisfaction (P = 0.752). Although at the end of the study, T-test showed no statistical difference between the two groups regarding marital satisfaction (P = 0.324), however, a significant difference was observed between the mean differences of marital satisfaction scores of the two groups (P = 0.027) (Table 3). In the intergroup comparison, paired T-test showed that the mean marital satisfaction did not significantly change during the study, in the control group (P = 0.075) and in the intervention group (P = 0.184).

## 5. Discussion

The findings showed that collaborative infertility counseling improved marital satisfaction in females with infertility undergoing IVF. Thus, the results of the study confirmed the research hypothesis. Findings of the

**Table 2.** Characteristics of the Study Subjects (n = 60)[a]

| Variable | Control Group | Intervention Group | P-Value |
|---|---|---|---|
| **Age, y** | | | 0.169[b] |
| 20 - 24 | 4 (12.9) | 3 (10.3) | |
| 25 - 29 | 17 (54.8) | 11 (37.9) | |
| 30 - 34 | 8 (25.8) | 7 (24.1) | |
| 35 - 40 | 2 (6.5) | 8 (27.6) | |
| **Education** | | | |
| Elementary | 8 (25.8) | 4 (13.8) | 0.109[b] |
| High school | 6 (19.4) | 1 (3.4) | |
| Diploma | 11 (35.5) | 15 (51.7) | |
| Collegiate | 6 (19.4) | 9 (31.0) | |
| **Infertility related data, (mean ± SD)** | | | |
| Awareness of diagnosis, m | 6.08 ± 4.31 | 5.62 ± 4.26 | 0.682[c] |
| Duration of treatment, m | 4.03 ± 4.24 | 3.83 ± 3.97 | 0.935[d] |
| Number of IUI cycles | 1.16 ± 1.43 | 1.34 ± 1.34 | 0.495[d] |
| Number of IVF cycles | 0.32 ± 0.54 | 0.44 ± 1.18 | 0.550[d] |
| **Cause of infertility** | | | 0.597[d] |
| Male | 16 (51.6) | 10 (34.5) | |
| Female | 8 (25.8) | 9 (31.0) | |
| Both spouses | 3 (9.7) | 4 (13.8) | |
| Unknown | 4 (12.9) | 6 (20.7) | |
| **Hope for treatment success** | | | 0.173[b] |
| Very high | 10 (34.5) | 9 (31) | |
| High | 9 (31.0) | 12 (41) | |
| Somewhat | 4 (13.8) | 4 (13.8) | |
| Low | 6 (20.7) | 4 (13.8) | |
| **Parties participated in the treatment** | | | 0.359[b] |
| Male | 3 (9.7) | 1 (3.4) | |
| Female | 0 | 2 (6.9) | |
| Both spouses | 28 (90.3) | 26 (89.7) | |
| **Psychological data, (mean ± SD)** | | | |
| Infertility stress score | 163.51 ± 28.30 | 153.62 ± 26.80 | 0.170[c] |
| General health score | 19.45 ± 6.15 | 20.03 ± 6.27 | 0.718[c] |
| **Feeling about infertility** | | | 0.462[b] |
| Shook | 0 | 1 (3.4) | |
| Deny | 0 | 1 (3.4) | |
| Grief, anger, guilt and anxiety | 18 (58.1) | 18 (62.1) | |
| Acceptance | 13 (41.9) | 9 (31) | |

Abbreviations: IVF, in-vitro fertilization; IUI, intra uterine insemination.
[a]Values are expressed as No (%) unless otherwise indicated.
[b]Chi-Square.
[c]Independent sample T-test.
[d]Mann-Whitney.

present study were consistent with those of two earlier studies that investigated the effect of counseling on marital relationship and sexual satisfaction of couples with infertility (3, 20). Moreover, Abedi Shargh et al. examined the effectiveness of mindfulness-based cognitive group therapy in females with infertility and reported that the intervention contributed to the improvement of marital satisfaction (21). However, Anderheim et al. reported that encounter with midwife had no significant effect on psychological wellbeing of females with infertility (14). The

**Table 3.** Differences in the Mean Scores of Marital Satisfaction Between the Groups[a]

| Marital Satisfaction | Group | | Statistical Indicators | |
|---|---|---|---|---|
| | Control | Intervention | 95% CI[b] | P-Value[c] |
| **Pre-test** | 23.74 ± 11.59 | 24.78 ± 13.20 | -7.42, 5.39 | 0.752 |
| **Post-test** | 26.61 ± 14.20 | 22.86 ± 15.01 | -3.79, 11.30 | 0.324 |
| **Mean difference** | -2.87 ± 8.65 | 1.89 ± 7.40 | -8.96, -0.56 | 0.027 |

[a]Values are presented as Mean ± SD.
[b]Confidence interval of the difference.
[c]Independent samples T-test.

inconsistency might not only be attributed to the study instruments, but also to the content and the duration of the interventions. Anderheim et al. used a researcher made questionnaire to measure the psychological effects of infertility and their intervention was shorter than that of the present study. A number of previous studies reported that infertility stress can negatively affect the levels of marital satisfaction (7, 21). Another study also showed that infertility collaborative counseling can reduce the infertility related stress in females with infertility undergoing IVF (12). Therefore, it seems that the improvement of marital satisfaction in the present study can be partly justifiable by reduction of infertility related stress and increase in sexual satisfaction in females with infertility. Also evidence shows that couples are able to learn some skills to improve their marital and sexual relationship (7). Therefore, the observed improvement in the current study may result from the increased knowledge of the subjects about infertility and its impact on marital relationship and learning of some coping strategies and communicative skills covered elaborately in the counseling sessions.

The present study did not have access to the subjects after the end of the study for follow-up care. Moreover, since IVF is only done on females, authors did not have access to the male partners. Therefore, further studies are suggested to assess the efficacy of the same intervention on couples with infertility. Moreover, assessing the long-term effects of the intervention is recommended. Despite the efforts of researchers to eliminate or control the confounding variables of marital satisfaction, some of these variables including personal differences, behavioral differences among gynecologists, midwives and other members of the treatment team in contact with females with infertility during the procedures of sonography, egg retrieval and embryo transfer were uncontrollable. However, to the authors' best knowledge, this is the first study which applied a collaborating counseling for females with infertility undergoing in-vitro fertilization using the collaborative reproductive healthcare model as a theoretical framework. The findings of the study indicate that the infertility collaborative counseling can improve the marital satisfaction in females with infertility undergoing in-vitro fertilization in infertility treatment clinics. Accordingly, healthcare providers can use this method to help females with infertility to have better marital life.

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## Footnotes

**Authors' Contribution:** Study concept and design, Robab Latifnejad Roudsari, Mahboobeh Rasoulzadeh Bidgoli; analysis and interpretation of data, Mahboobeh Rasoulzadeh Bidgoli; drafting of the manuscript, Mahboobeh Rasoulzadeh Bidgoli, Robab Latifnejad Roudsari; critical revision of the manuscript for important intellectual content, Mahboobeh Rasoulzadeh Bidgoli, Robab Latifnejad Roudsari; statistical analysis: Mahboobeh Rasoulzadeh Bidgoli; administrative, technical and material support, Mahboobeh Rasoulzadeh Bidgoli, Robab Latifnejad Roudsari; study supervision, Robab Latifnejad Roudsari.

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