

The Effect of Couples Coping Enhancement Counseling on Stress and Dyadic Coping on Infertile Couples: A Parallel Randomized Controlled Trial Study

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Abstract

Background: The aim of this study was to determine the effect of couples coping enhancement counseling (CCEC) on stress and dyadic coping of infertile couples.

Materials and Methods: In this parallel randomized controlled trial study in 2020, seventy infertile couples were randomly divided into case and control groups. The intervention was performed in 7 sessions of couple counseling based on CCEC for the intervention group, no intervention was performed in the control group. Fertility Problem Inventory, Dyadic Coping Inventory and demographics questionnaires were completed by both couples separately before the intervention and 4 weeks after the last consultation session. Data were analyzed using IBM SPSS statistics 24 and statistical tests such as mean \pm SD, frequency, percentage, Independent t test, Mann-Whitney test, Chi-square test or Fisher's exact test and Analysis of covariance. Significant level was considered less than 0.05.

Results: The mean stress scores of women in the intervention group before and after intervention decreased from (156.83 \pm 23.57) to (139.43 \pm 22.39) and the mean scores of dyadic coping increased from (126.83 \pm 19.89) to (138.26 \pm 16.92), these differences were statistically significant ($P < 0.001$), also the mean stress scores of men in the intervention group before and after the intervention decreased from (143.80 \pm 23.40) to (128.03 \pm 22.24), the mean scores of dyadic coping increased (131.34 \pm 20.67) to (136.40 \pm 19.38), these differences were statistically significant ($P < 0.001$).

Conclusion: Positive effects of CCEC were observed in reducing infertility stress and increasing dyadic coping in both women and men after the intervention, the effect of the intervention on women was greater than that of men. As a result, this intervention can play an important role in reducing stress and increasing the solidarity and support of infertile couples for infertility treatments (registration number: IRCT20120215009014N367).

Keywords: Coping Skills, Counseling, Couples, Infertility Stress

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Introduction

Infertility is the failure to become pregnant after 12 months of regular and unprotected sex (1). Worldwide, about 8 to 12% of reproductive age couples are affected by fertility problems (2). The prevalence of primary and secondary infertility in Iran was reported to be about 12.8% and 4.9% respectively in 2019 (3). Infertility may have many psychological consequences (4). Inflexible infertility treatment programs, long-term treatments, high treatment costs, constant worries about the outcome of treatment, the need for sex only for fertility, community pressure, family breakdown and loss of spouse interest puts a lot of stress on people and their spouses (5). Infertility stress is similar to post-traumatic stress disorder (6), results of a study by Roozitalab et al. (7) showed that 41.3% of infertile women had posttraumatic

stress disorder symptoms. Stress and anxiety can affect the outcome of infertility treatment (8).

Increased stress due to infertility, leads to the activation of stress management in couples as a unit (9). As a result, the stress in couples is always considered a dual phenomenon, and coping with this stressful event, must include joint coping strategies (10, 11). Two major strategies for coping with stress include individual coping and dyadic coping (12). Dyadic coping includes perceived coping efforts by an individual (dyadic coping by the individual) and perceived coping efforts by the partner (dyadic coping by the partner) (13, 14). One of the counseling programs to increase dyadic coping skills is couples coping enhancement training (15), which improve stress management ability and increases the ability to cope as a couple, the couples' sensitivity to justice and mutual respect, improves the problem-solving skills of the couples (16). It is

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necessary to consider the strategies used to control and manage the consequences of infertility diagnosis (17).

Given that infertility stress studies have often been performed on infertile women and couples have been less studied, the present study aimed to determine the effect of CCEC on stress and dyadic coping of infertile couples.

Materials and Methods

The present study was performed in 2020 as a parallel randomized controlled trial with trial registration number: IRCT20120215009014N367 on seventy infertile couples who were referred to the infertility center of Fatemeh Hospital in Hamadan city of Iran. Inclusion criteria included the desire of both couples to participate in the study, the presence of moderate stress in both couples (score 92-184) according to the fertility problem inventory, couples age between 20-45 years, first marriage and monogamy, having primary infertility, having at least one year of infertility, being literate, not attending other training programs, and being able to attend consecutive training sessions. Simultaneous participation in other treatment programs, the occurrence of stressful events during the counseling period, and positive pregnancy tests were the exclusion criteria. Sample size was calculated using the following equation:

$$n = \frac{\left(z_{1-\frac{\alpha}{2}} + z_{1-\beta} \right)^2 (\sigma_1^2 + \sigma_2^2)}{(\mu_1 - \mu_2)^2}$$

The sample size in each group was estimated to be at least 35 people, considering the confidence level of the test to be 95%, the test power of 90%, the common standard deviation of 34.76, the minimum significant difference between the two groups equal to 30 units and 10% probable loss of samples (12).

Sampling was initially done by availability method from the couples whom applied to and were eligible to participate in the study. Informed consent was obtained before participants who were recruited into the study by a colleague, then both couples completed the questionnaires and finally 70 couples were selected based on eligibility criteria and the score obtained from infertility stress test. The selected couples based on permutation block were divided into experimental and control groups, in this way, 4 blocks were considered as, ABAB, AABB, BAAB, ABBA, BABA, BBAA (A represents the experimental group and B represents the control group), then a list of the above blocks was randomly produced using the R software, so that 35 letter As and 35 letter Bs were produced. A total of 70 samples were assigned to one of the two groups of the test (A) and control (B), respectively, based on the list prepared (Fig.1).

Primary and secondary outcomes were measuring stress and dyadic coping before and after the intervention. In order to collect data, Dyadic Coping Inventory, the Fertility Problem Inventory, and demographics were completed by both couples separately. Dyadic Coping Inventory is a 37-item instrument designed to measure perceived communication and dyadic coping. It has 9 subscales (18).

The Persian version of this questionnaire was approved by Fallahchai et al. (19) with a reliability coefficient of 0.84 and Cronbach's alpha of 0.939 for the whole scale. The Fertility Problem Inventory was designed by Newton et al. (20) to measure perceived infertility-related stress. This questionnaire has 46 questions and 5 subscales. Based on 6-choice Likert the minimum and maximum scores in this questionnaire will be 46 and 276 respectively. A score between 92 and 184 indicates a moderate level of infertility stress. The validity of this questionnaire was confirmed by Latifnejad Roudsari et al. (5) in Iran. The demographic information questionnaire also included information regarding age, occupation, level of education of women and their spouses, place of residence, history of illness, duration of the marriage, duration of infertility, duration and history of treatment and cause of infertility.

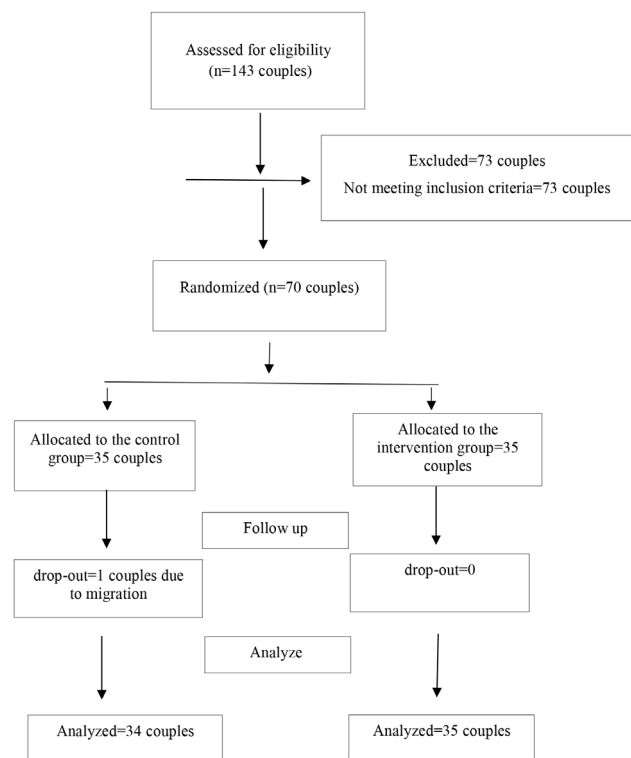


Fig.1: Consort flow diagram of study.

The intervention was performed by holding 7 counseling sessions based on CCEC with one session per week for the intervention group couples by the researcher under the supervision of an expert psychologist (13, 21), reassessment was performed in both groups 4 weeks after the end of the intervention. The couples in the control group did not receive any intervention until the end of the treatment. In order to observe ethical principles, at the end of the intervention with the coordination of the participants, two counseling sessions were held for the control group, and also all the necessary information was provided to them in the form of CDs and pamphlets. The content of the counseling sessions includes: Enhancing individual coping, enhancing dyadic coping, integrating fairness, equity, and boundaries, enhancing marital communication and problem-solving skills (Table 1).

Table 1: Content of counseling sessions

Counseling sessions	Content of counseling sessions
First session	The concept of stress, causes, types and consequences of stress, cognitive assessment of stress, the relationship between stress and emotional reactions according to Lazarus and Folkman
Second session	Definition of coping and its types, stress prevention by predicting stressful conditions and preparation in advance, the role of planning, organizing activities and predicting the situation in stress prevention, methods of coping with unavoidable stress, relaxation training
Third session	Definitions and types of dyadic coping, the importance of dyadic coping in marital relationships, increasing understanding of partner stress, teaching dyadic coping skills, using the funnel and three-step method in dyadic coping and role playing
Fourth session	Reviewing the concepts of exchange, fairness and justice in marital relations, improving the awareness of couples about the importance of fair and reciprocal exchange in the field of marital confrontation, increasing sensitivity to personal needs and partner needs, intimacy in marital relationships
Fifth session	The importance of marital communication skills, negative and positive communication styles in marital relationships, improving speaking and listening skills, discovering inadequate communication behaviors and learning to overcome them
Sixth session	Teaching problem-solving steps, strengthening mutual problem-solving skills in couples
Seventh session	Summarize and review summary of past sessions

Statistical analysis

Data were analyzed using IBM SPSS Statistics 24 (IBM Corp., Armonk, New York, USA). Descriptive statistics such as mean/SD, Frequency and Percentage were used to describe the data, comparison of the two groups in terms of demographic and contextual variables was performed with independent t test or Mann-Whitney test if there was little data and with chi-square test or Fisher's exact test if it was qualitative. Analysis of covariance was used to compare the two groups after the intervention. Significant level in all statistical tests was considered less than 0.05.

Ethical considerations

This master's thesis was approved by the Ethics Committee of Hamadan University of Medical Sciences (IR.UMSHA.REC.1399.485). Necessary explanations were also given to the participants and the confidentiality of the information, and written consent was taken from them in the native language (Persian) before the study.

Results

The mean ± SD age of the women was 29.37 ± 4.97 in the intervention group and 32.63 ± 5.43 in the control group, the two groups were not homogeneous (P=0.01). Other demographic characteristics in the two intervention and control groups were not significantly different and the two groups were homogeneous (P<0.05). The highest cause of infertility was related to women with 34.3% in the intervention group and related to men with 34.3% in the control group. The most

reported treatment type in both groups was IVF (Table 2).

Table 2: Description of demographic and infertility variables of participants

Variables	Intervention group (n=35)	Control group (n=34)	P value
Women's age (Y)	29.37 ± 4.97	32.63 ± 5.43	0.01 ^c
Men's age (Y)	34.26 ± 3.7	36.23 ± 5.7	0.09 ^c
Women's education			0.82 ^a
High school	8 (22.9)	9 (25.7)	
Diploma	15 (42.8)	12 (34.3)	
University	12(34.3)	14 (40.0)	
Men's education			0.17 ^a
High school	18 (51.4)	13 (37.1)	
Diploma	6 (17.1)	13 (37.1)	
University	11(31.5)	9 (25.8)	
Women's employment status			0.61 ^b
Employed	1 (2.9)	3 (8.6)	
Non employed	34 (97.1)	32 (91.4)	
Men's Employment status			0.09 ^a
Employed	30 (85.7)	23 (65.7)	
Non employed	5 (14.3)	12 (34.3)	
Residency			1.00 ^b
Urban	25 (71.4)	26 (74.3)	
Rural	10 (28.6)	9 (25.7)	
Economic situation			0.92 ^a
Good	2 (5.7)	2 (5.7)	
Medium	14 (40.0)	12 (34.3)	
Poor	19 (54.3)	21(60.0)	
Women's smoking			
Yes	0 (0)	0 (0)	
Men's smoking			0.21 ^b
Yes	4 (11.4)	9 (25.7)	
Women's history of physical illness			0.25 ^b
Yes	6 (17.1)	2 (5.7)	
No	29 (82.9)	33 (94.3)	
Men's history of physical illness			-
Yes	2 (5.7)	2 (5.7)	
Marriage duration (Y)	7.8 ± 3.5	7.9 ± 3.1	0.91 ^c
Duration of infertility (Y)	5.45 ± 2.98	5.98 ± 4.76	
Cause of infertility			0.20 ^a
Women	12 (34.3)	8 (22.8)	
Men	7 (20.0)	12 (34.3)	
Women and men	10 (28.6)	5 (14.3)	
Unknown	6(17.1)	10 (28.6)	
Treatment history			0.33 ^a
Yes	17 (48.6)	22 (62.9)	
No	18 (51.4)	13 (37.1)	
Type of treatment			0.23 ^a
Drug	6 (17.1)	6 (17.1)	
IUI	5 (14.3)	7 (20.0)	
IVF	22 (62.9)	20 (57.2)	
ICSI	2 (5.7)	2 (5.7)	

Data are presented as mean ± SD or n (%). ^a; Chi-square, ^b; Fisher's Exact test, ^c; Independent-sample t test, IUI; Intrauterine insemination, IVF; *In vitro* fertilization, and ICSI; Intracytoplasmic

Table 3: Comparison of intervention and control groups in terms of fertility stress and dyadic coping after adjusting the impact of before intervention scores in women

Variables	Group	Before intervention	Adjusted mean after intervention	P value	Effect size
Social concern	Intervention	27.49 ± 7.36	22.00 ± 6.73	<0.001 ^{a, b}	0.694
	Control	28.23 ± 7.24	27.71 ± 6.55		
Sexual concern	Intervention	21.23 ± 7.81	17.17 ± 6.86	<0.001 ^{a, b}	0.592
	Control	20.83 ± 7.33	21.11 ± 7.18		
Relationship concern	Intervention	29.66 ± 7.57	24.34 ± 7.73	<0.001 ^{a, b}	0.631
	Control	29.51 ± 7.86	29.11 ± 7.56		
Need for parenthood	Intervention	46.46 ± 8.55	45.77 ± 8.57	0.04 ^{a, b}	0.297
	Control	44.14 ± 11.91	44.34 ± 11.81		
Rejection of childfree lifestyle	Intervention	32.00 ± 6.45	30.14 ± 6.05	<0.001 ^{a, b}	0.063
	Control	28.46 ± 7.65	28.83 ± 8.16		
Total score of stress	Intervention	156.83 ± 23.57	139.43 ± 22.39	<0.001 ^{a, b}	0.871
	Control	151.17 ± 26.55	151.11 ± 25.96		
Dyadic coping score	Intervention	126.83 ± 19.89	138.26 ± 16.92	<0.001 ^{a, b}	0.402
	Control	127.29 ± 18.06	131.77 ± 16.06		

Data are presented as mean ± SD. ^a; Adjusted for age and before intervention scores and ^b; Analysis of covariance.

Table 4: Comparison of intervention and control groups in terms of fertility stress and dyadic coping after adjusting the impact of before intervention scores in men

Variables	Adjusted mean after intervention	Before intervention	Group	Effect size	P value
Social concern	20.26 ± 6.33	24.80 ± 7.13	Intervention	0.401	<0.001 ^{a, b}
	25.69 ± 6.74	26.09 ± 6.75	Control		
Sexual concern	14.60 ± 6.82	17.51 ± 7.86	Intervention	0.627	<0.001 ^{a, b}
	20.54 ± 7.74	20.14 ± 8.04	Control		
Relationship concern	24.71 ± 6.32	28.23 ± 6.83	Intervention	0.584	<0.001 ^{a, b}
	28.26 ± 6.90	28.06 ± 7.09	Control		
Need for parenthood	41.14 ± 10.33	42.94 ± 10.31	Intervention	0.242	0.03 ^{a, b}
	40.91 ± 12.15	41.34 ± 12.06	Control		
Rejection of childfree lifestyle	27.31 ± 6.13	30.31 ± 6.45	Intervention	0.064	<0.001 ^{a, b}
	27.57 ± 6.50	27.66 ± 6.47	Control		
Total score of stress	128.03 ± 22.24	143.80 ± 23.40	Intervention	0.629	<0.001 ^{a, b}
	142.97 ± 24.70	143.29 ± 25.61	Control		
Dyadic coping score	136.40 ± 19.38	131.34 ± 20.67	Intervention	0.267	<0.001 ^{a, b}
	130.66 ± 15.36	129.31 ± 16.38	Control		

Data are presented as mean ± SD. ^a; Adjusted for before intervention scores and ^b; Analysis of covariance.

sperm injection.

In order to control the variables before intervention and compare the effects of the intervention, analysis of covariance was used and the results are summarized in Tables 3 and 4. Based on the results, after the intervention in men and women in the intervention group compared to men and women in the control group, a significant decrease in all components of infertility stress, including social concern (P<0.001), sexual concern (P<0.001), relationship concern (P<0.001), rejection of childfree lifestyle (P<0.001), and the need for parenthood (women P=0.04, men P=0.03) was observed. Also, the overall stress score in both sexes in the intervention group had a significant decrease (P<0.001). Due to the intervention, the dyadic coping score in both sexes in the intervention group increased significantly compared to the control group (P<0.001, Tables 3, 4).

Discussion

The aim of this study was to determine the effect of CCEC on stress and dyadic coping of infertile couples. Based on the results, CCEC was able to reduce all components of infertility stress, including social concern, sexual concern, relationship concern, rejection of childfree lifestyle, and the need for parenthood in both men and women in the intervention group compared with controls. In most studies, infertile women are usually studied (22-25), and in a few studies, infertile men were studied (26, 27), while in the present study, the focus was on both genders. In line with the present study, in the study of Ordoni Awal et al. (28), the score of all 5 dimensions of the infertility stress questionnaire decreased in the participants after the intervention, Karaca et al. (29) reported that cognitive-

behavioral group therapy intervention reduced the infertility-related psychosocial problems of infertile women. Similarly, in the study of Starabadi et al. (30), the effect of acceptance and commitment-based therapy in significantly reducing infertility stress in infertile couples was identified. Lukse (31) also reported the effect of group counseling in reducing the symptoms of grief experienced by some infertile couples. In contrast with the present study, Hammerli et al. (32), reviewed 21 controlled studies and concluded that psychological interventions were not associated with significant changes in mental status. Consistent with other studies and the present study, women felt more stress than men regarding infertility (33, 34).

According to the results of the study, CCEC significantly increased the dyadic coping score in men and women in the intervention group. The study of Sodani et al. (21) was conducted to determine the effectiveness of couple coping enhancement training on dyadic coping, conflict resolution style, ineffective dialogue, and intimacy security in couples. Based on the findings of this study, receiving training for strengthening couple confrontation could have an effect on couple confrontation variables. In the couple confrontation variable, the mean scores in the post-test had a significant increase compared to the pre-test. The results of a study by Omidian et al. (35) showed that couples coping enhancement training can improve the marital adjustment of wives in a sample of troubled couples in Shahr-e Kord city. Results of a study by Molgora et al. (36) showed that the adoption of positive coping styles by couples leads to increased marital adjustment and the success of ART treatment may be less in couples who do not have this type of reciprocal supportive behavior (36). In a randomized clinical trial conducted by Bodenmann et al. (37), coping-oriented couple therapy did not show better results compared to dyadic coping or relationship satisfaction, but it significantly improved the expression of emotions by partners.

The dyadic nature of dyadic coping style helps to reduce stress in couples (38). Male infertility can lead to infertility treatment problems and marital problems, hence, supportive and preventive measures are required to improve these conditions (39). The findings of a study by Chaves et al. (11), indicated the importance of male coping strategies for marital adjustment and men's emotional adjustment. Infertility is not only a medical issue but also a psychological crisis that threatens families and people's quality of life, and is identified as a health priority (24, 33, 39, 40). Therefore, during infertility treatments, it is necessary to pay attention to the burden of psychological changes caused by infertility diagnosis on couples that can be threatening infertility treatment and to take appropriate interventions to reduce these changes.

This study had several limitations including the self-reporting nature of the questionnaires that may introduce recall bias in the study, limited infertility treatment centers in the city of Hamadan, men's resistance to attend

counseling sessions and the impossibility of more follow-ups due to time constraints.

Conclusion

The results of this study showed that CCEC has been able to significantly reduce infertility stress and significantly increase dyadic coping in both women and men in the intervention group. As a result, training couples on this type of coping with stress can play an important role in reducing stress and increasing the solidarity and support of infertile couples for infertility treatments. These findings may be helpful in infertility psychological and counselling interventions.

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Authors' Contributions

F.M., S.A., L.T., B.Kh., F.K.A.; Conception and design of the study, drafting of the manuscript and statistical analysis. S.A.; Obtaining funding, administrative, technical, or material support, or supervision. All authors read and approved the final manuscript.

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