

Effects of a psychological intervention on Quality of life in infertile couples

Nasrin Abedinia, MSc.;¹ Fatemeh Ramezanzadeh, M.D.;¹ Ahmad Ali Noorbala, M.D.;²

¹ Vali-e-Asr Reproductive Health Research Center, Imam Khomeini Hospital Complex, Tehran University of Medical Sciences, Tehran, Iran

² Psychiatric and Psychology Research Center, Roozbeh Hospital, Tehran University of Medical Sciences, Tehran, Iran.

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Abstract

Objective: This study aimed to determine factors affecting depression in infertile couples and effect of psychological intervention on pregnancy rate of infertile couples.

Materials and Methods: In this study, 638 infertile patients referring to a university infertility clinic were evaluated. Among them, 140 couples with different levels of depression in at least one of the spouses were found and the study was continued by dividing them randomly into two groups, entering a randomized clinical trial. Patients in the case group received 6-8 sessions of psychotherapy before infertility treatment and were given daily Fluoxetine 20- 60 mg at the same period, and the control group did not receive any intervention. Three questionnaires including Beck Depression Inventory (BDI), Stress Scale (Holmes-Rahe) and a sociodemographic questionnaire were applied for all patients. Pregnancy rate was compared between two groups.

Results: Depression was initially found in 48% of women and 23.8% of men. The mean \pm SD Beck scores fell from 18.7 \pm 9.7 to 10.7 \pm 5.8 in the group psychologically treated before receiving infertility treatment ($P < 0.001$). Pregnancy rate was 47.1% in case group and 7.1% in control group. Pregnancy rate showed a significant relation with duration and cause of infertility and the level of stress in both groups ($P < 0.001$). Pregnancy rate was shown to be higher in couples with a second level of education in men ($P < 0.001$).

Conclusion: The psychological intervention was found useful in alleviating depression and promoting pregnancy rate, it is crucial to mandate psychology counseling in all fertility centers.

Key words: Infertility, Depression, Psychological interventions, Psychotherapy, Pregnancy

Introduction

Approximately 50 to 80 millions of people in the world are experiencing infertility in their lives (1)

Correspondence :

Fatemeh Ramezanzadeh , Vali-e-Asr Reproductive Health Research Center, Imam Khomeini Hospital, Keshavarz Blvd., Tehran, 14194, Iran. Tel: +98 (21) 66939320
E-mail: ramezanz@sina.tums.ac.ir

Researchers have examined a number of psychological correlates to the experience of infertility, Studies have concluded that those who experience infertility also experience stress (2). Anger, tension, depression, anxiety, guilt, and frustration

satisfaction and adjustment (6,7), loss of libido, premature ejaculation, impotence, and the inability to achieve orgasm (8,9) also have been identified in

those experiencing infertility. Many authors consider the psychological consequences of infertility to resemble responses to grief. Although active grieving often includes a depressive affect; it must be distinguished from clinical depression. It is estimated that around 40.8% of infertile women experience depression and 86.8% experience anxiety (10).

Nowadays, with emphasis on psycho-bio- social model of illnesses and treatments. psychological dimension, physiological process, environment and interpersonal relation are in permanent contact with each other and can plan the illness or health. Psychological treatment techniques including psychotherapy and cognitive- behavioral therapy are known not only to prevent and cure different mental problems such as: anxiety, depression, and phobia but also play a positive role in physical health and pregnancy successfulness (11) In recent decades, the necessity of psychological counseling and interventions for infertile couples has been expressed with different indications (12-15).

The recognition of life quality with precise attention to the effect of psychological interventions in infertile persons which is a new phenomenon in Iran, may be an effective step for approaching the problem of infertility based on the psycho- social model of illness.

Materials and Methods

The study population included all infertile couples visiting Tehran University Vali-e-Asr Infertility Clinic for the first time between March 2007 and February 2009. Infertility was defined as at least 1 year of unprotected coitus without contraception. The study was conducted in 2 stages. First, 638 infertile couples were assessed for depression in a cross-sectional study (Step 1 of the study).

The Beck Depression Inventory (BDI), which includes 21 aspects of depression, was created by Beck in 1961 and the reliability (0.96) and validity (0.89) of this test was confirmed during the first decade following its introduction. Scores range as follows: No depression, 0–16; mild depression, 17–27; moderate depression, 28–34; and

severe depression, 35–63 (16,17). In 1976, from a list of 43 stressful life events, Holmes and Rahe created the SRRS, a scale to measure stress. In addition, the rate of stress was further determined using a 6-point assessment scale classifying psychosocial factors that cause stress (18). In this study the BDI, the SRRS (Stress Rahe - Holmes

Range Scale), and demographic-social questionnaires were used for data collection. This questionnaire included age, education, occupation, income, duration of marriage and infertility, attitude to infertility, number of children, supportive and coping mechanisms.

When the BDI score was 17 or higher, an interview based on the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV) was conducted by a clinical psychologist to confirm the depression. All couples with a diagnosis of depression were asked to participate in Step 2 of the study. The 140 couples who accepted to continue, filled informed consent and were randomly numbered from 1 to 140. Then, those with even numbers were assigned to the psychological intervention before infertility treatment (group 1) and those with odd numbers were assigned to the psychological intervention during infertility treatment (group 2). In group 1, infertility treatment was postponed until completion of a 6-month psychological treatment with cognitive-behavioral therapy (CBT), supportive psychotherapy, and 20 to 60mg per day of fluoxetine depending on the severity of the depression and the participant's condition. In group 2, the same psychological treatment was provided during infertility treatment.

Cognitive-behavioral therapy included recognition of negative thinking to help the participants distinguish phobia from reality and thereby change their cognitive structure. For example, infertile women often believe that they will never be able to have a child. Through exercises, this negative pattern was changed to “I will do

anything to have a child of my own.” After 6 months, both groups completed the BDI again. The behavioral techniques used included physical activity (including daily walking), muscle relaxation exercises, imagination exercises, expressing feelings, keeping a balanced diet, and planning free time according to one's interests.

Supportive psychotherapy assessed: (A) the suitability of the psychological treatment, the cause of infertility, and the most suitable infertility treatment for each couple; (B) the depressed participants' psychological and emotional responses to family, friends, and others; and (C) the depressed participants' self-esteem, their relation to partner, friends, colleagues, and others. Information regarding economic and other forms of social support was

obtained using a semi-structured questionnaire modified for

infertile couples. A test–retest analysis showed that the reliability of the questionnaire was 0.92. Data were analyzed using the SPSS package, version 11.5 and logistic regression was performed to eliminate the effects of confounding factors.

Results

The age ranged 19-41 years with the average of 26.3(SD=4.4) for women and 22-53 years with the average of 31.1 for men in this study (SD±5). Duration of infertility was between 1 and 20 years with the average of 6.4(SD±4). Table 1 demonstrates the demographic characteristics of groups. A total of 319 infertile couples (638 individuals) were enrolled, of whom 48% of women and 23.8% of men had depression. Among these women 30% had mild, 12.5% had moderate, and 5.3% had severe depression. Among these men 16.6% had mild, 4.7% had moderate, and 2.5% had severe depression. Depression was two times more common among women than men ($\chi^2 =70.8, df=1, P<0.001$).

The relationship between depression and other factors, such as economic status, cause and duration of infertility, presence of social support, and attitude toward infertility,

were not significant. Depression was more frequent among individuals with a lower level of education ($\chi^2 =10.9, df=2, P<0.004$). The rate of depression was significantly higher among individuals experiencing stress ($\chi^2 =7.6, df=1, P< 0.006$). Depression was more frequent among housewives (92.8%) than working women (60%) ($\chi^2 =15.1, df=1, P<0.001$). Depression was more frequent in 19 to 25 years age group ($\chi^2 =23.8, df=2, P<0.001$). The rate of depression was 80.3% among those with emotional reactions, and those with passive or active reactions 67.5% and 52.6%, respectively ($\chi^2=13.7, df=2, P<0.001$).

To assess the effect of the psychological intervention on the Beck score, before- and after-intervention mean scores were compared by the paired t- test.

Following the psychological intervention, the mean Beck score was significantly lower in group 1 than in group 2 (10.7 and 18.7, respectively), and it significantly dropped from 23.30 to 12.5 for women

Table 1: Demographic characteristics of subjects under study

Variables	Frequency	Education (women) percent
Primary	45	32.1%
Middle—high school	37	26.4%
Diploma	49	35%
Superior than diploma	9	6.4%
Education (Men)		
Primary	34	24.3%
Middle—high school	52	37.1%
Diploma	40	28.6%
Superior than diploma	14	10%
Job situation (women)		
Employed	15	10.7%
House wife	125	89.3%
The reason of infertility		
Male factor	92	32.9%
Female factor	112	40%
Both of them (male& female)	48	17.1%
Unexplained	28	10%
Stress		
Without stress	111	39.6%
Low stress	80	28.6%
Moderate stress	53	18.9%
High stress	36	12.9%

Table 2: Cause and rate of infertility in two groups

Variables	case group	control group
Induction of ovulation	36(25.7%)	26(18.6%)
IUI	28(20%)	18(12.9%)
ART	44(31.4%)	48(34.3%)
Laparoscopy + hysteroscopy	20(14.3%)	30(21.4%)
Donor embryo/ oocyte	6(4.3%)	8(5.7%)
Surgery of husband	6(4.3%)	10(7.1%)
$\chi^2=7.25$	df=5	P-value=0.20

Cause of infertility		
Male factor	22(31.4%)	24(34.3%)
Female factor	25(35.7%)	31(44.3%)
Both (male &female)	14(20%)	10(14.3%)
Unexplained	9(12.9%)	5(7.1%)
$\chi^2=2.54$	df=3	P-value=0.47

($P<0.001$) and from 14.1 to 8.9 for men ($P<0.001$). The mean score was 20.7 in Step 1 of the study (for the 638 original participants) and 22.5 at the end of Step 2 (for the 144 couples with at least 1 depressed member). The paired t test showed that for participants aged 19 to 25 years, mean scores also fell more in group 1 (from 24.0 ± 7.9 to 12.3 ± 5.1 , $P<0.05$) than in group 2. Moreover, in group 1, the mean Beck score dropped from 24.1 ± 7.5 to 12.2 ± 5.2 for housewives and from 18.3 ± 10.0 to 14.7 ± 7.0 for employed women ($P<0.001$). In group 2, the mean Beck score rose by about 2 points for housewives and 7 points for employed women ($P<0.001$), and by about 4.5 points for working and 2 points for unemployed men ($P<0.001$). Although the rate of depression was not significantly related to income, the mean Beck score dropped by about 9.3 points in group 1 for low-income participants ($P<0.05$). In Step 1 of the study, the Beck scores were higher for highly stressed participants in both group 1 and group 2. In group 1, the mean Beck score fell more (by 11 points) from Step 1 to Step 2 for participants who considered infertility caused by external forces than for those who considered it due to divine will. Pregnancy rate was 47.1% in case group and 7.1% in control group. Pregnancy rate showed a significant relation with duration and cause of infertility and the level of stress in both groups ($P<0.001$). Pregnancy rate was shown to be higher in couples with a second level of education in men ($P<0.001$). The results showed that 33 women (47.1%) in treatment group and 5 women (7.1%) in control

group got pregnant in the end of study. This clear difference shows the significant effect of psychiatric interventions on pregnancy rate ($P<0.001$). The chance of pregnancy is shown to be 11.6 more in treatment group than in control group in this study (Odd Ratio=11.6, 95% CI=4.2-32.3). In treatment group the most effectiveness of psychiatric interventions is shown on spontaneous pregnancy and ovulation stimulation groups and the lowest effectiveness on laparoscopy-hysteroscopy and surgery of husband (table 2). The pregnancy rate was 15.2% in male factor, 32.1% in female factor, 20.8% in multiple factor and 57.1% in unexplained factor infertility groups. The chance of pregnancy was significantly more in unexplained group in comparison to other groups ($P=0.012$). In order to determine the effectiveness of psychiatric interventions on pregnancy rate the logistic regression analysis was used, Elimination of confounding variables such as women job, and education, psychiatric treatments were shown to be independently effective with 18.03 percent more chance of pregnancy in treatment group (Odds Ratio=18.03, 95% CI=4.50-71.40). Surprisingly psychiatric treatments have different effectiveness in different sub groups of infertility causes. Odd ratio was calculated to be 0.06 in male factors, 0.07 in multiple factor and 0.25 in female factor .Which is significantly higher in the last group.

The relation of pregnancy with education level had been investigated in husbands. Men at primary level of education 11.8%, at middle-high school group 32.7% and at diploma and superior groups 31.5% experienced pregnancy in their wives, showing that rate of pregnancy was significantly higher at middle-high school group ($P < 0.05$).

The results showed that distribution of infertility treatments ($\chi^2=7.25$, $df=5$, $P\text{-value}=0.20$) and causes ($\chi^2=2.54$, $df=3$, $P\text{-Value}=0.47$) were similar in two groups, and chi-square test was not significant.

Discussion

The present study was designed as a randomized clinical trial. A review of the literature revealed no published study of the synergistic effects of medication and psychological treatment in infertile participants in an oriental society.

This study showed that 48% of infertile women and 23.8% of infertile men have depression. Among women with depression, 30% have mild, 12.5% have moderate, and 5.3% have severe depression; among men with depression, 16.6% have mild, 4.7% have moderate, and 2.5% have severe depression. According to a 2002 survey of 0.001% of the Iranian population based on the General Health Questionnaire, the rate of depression was about 3.08% (16) In the study performed by Jones et al (19) 7.2% of infertile couples have moderate and 1.2% have severe depression. In another study the prevalence of depression was estimated at 40.8% among infertile women

(10) It seems that the prevalence of depression among infertile couples is higher in Iran than in some other countries, perhaps because of the importance of having child in our society.

In the present study, the prevalence of depression among infertile women was twice that of infertile men. Matsubayashi et al. (20) reported that depression was more common among infertile than among fertile or pregnant women, and both Newton et al. (21) and Wischmann et al. (22) reported depression to be higher among infertile women than infertile men, and to cause a loss of self-confidence in their depressed study participants.

Hsu and Kuo (23) reported that emotional reactions, especially signs of depression, vary among infertile couples according to their level of education. In the present study, depression was more prevalent among persons with only a primary school

education, but a psychological intervention consisting of both medication and psychotherapy had the greatest effect on these persons. The benefits of psychotherapy in women of limited education can be explained by a greater change in cognition.

Explaining the medical causes of their infertility to these women can bring an end to their negative, self-blaming thoughts. The present study seems to detect the relationship between education, psychological distress, and therapeutic intervention more accurately than other studies with infertile patients. It shows psychological treatment with both medication and psychotherapy to be more effective for housewives than for working women. It is therefore possible that employment

may help improve depression. About 90% of the female population in this study consisted of housewives, with few roles to support identity and self-esteem

besides motherhood. Understandably, infertility was particularly devastating for these women, exacerbating their isolation and social anomaly. These difficulties are common, too, among infertile women in Western societies which nonetheless afford them more opportunities. Another Iranian study also found significantly less depression among infertile women occupied outside the home and among those with a higher education (a variable likely associated with working) (24). Adopting children is not considered more desirable than being childless in oriental societies, and when infertility treatment

fails adoption is seldom an option to alleviate depression from being childless.

In this study the psychological intervention had the most effect in participants aged between 19 and 25 years. According to Johnston et al. (25) psychocognitive signs of anxiety and depression have a significant relationship with increasing age, and

according to Guz et al. (26) and Khayata et al. (27) anxiety and depression

become more common with advancing age and lead to loss of self-esteem. However, Matsubayashi et al. (20) and Beutel et al. (28) do not agree with this relationship. In the present study depression was more frequent in younger participants, especially women, and it is possible that older women have better coping mechanisms, resulting in less depressive reactions. In a study by Schmidt et al. (29) psychotherapy could bring satisfaction among low-income couples undergoing fertility treatment. In the present study, too, psychological treatment led to a

decrease in depression scores among low-income people. It can be concluded that a psychological intervention

may help improve the quality of life of low-income infertile couples, but this needs to be confirmed in future studies.

One of the important factors of depression revealed in this study is the stress that infertile couples experience. Cwikel et al. (30) reported that factors such as stress and anxiety can cause changes in heart rate and cortisol levels. Ardeni et al. (31),

Smeenck et al. (32), and Koryntova et al. (33) also reported a significant relationship between adrenaline levels and depression. Changes in adrenaline and noradrenaline serum levels occur in women undergoing in-vitro fertilization cycles.

The results of this study showed that pregnancy rate in treatment group was 47.1% and at control group 7.1%. The increasing of pregnancy chance in treatment group (40%) demonstrates the effect of psychiatric and psychology interventions on these patients. The results of studies Domar (2000), Terzioglu (2001) Newton (1992) in relation with the effect of psychiatric and psychology interventions on psychiatric disorder and the rate of pregnancy on infertile couples showed that mental interventions in treatment group resulted in decreasing of anxiety, depression and increasing of pregnancy chance and these difference were significant (11, 34-35), and there is also a complex relation between stress and infertility. In a study the results showed that in psychotherapy group pregnancy rate was 41.9%, at control group 13.5% and cognitive-behavioral consulting group 42% (11). Hosaka (2002) and Kupka (2003) reported that psychology consulting in 14% of cases is conducted to spontaneous pregnancy that it can be consequence of decreasing stress. (36-37). The others, reports also are showing that psychiatric and counseling interventions (behavioral, cognitive, psychotherapy) during treatment, diagnosis and especially before IVF increase positive pregnancy test and ,psychiatric and counseling interventions after 6 months of following also increase the pregnancy chance (38-45) although Yong and et al (2000) not only don't confirm this relation even believe that consulting for these persons who are at first IVF cycle aren't effective, although these studies are limited (46). The findings of this study is comparable to others researches, and as a conclusion, psychiatric and psychological interventions have important role in treatment of

infertility to increase pregnancy rate, improve mental health and quality of life.

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