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Original Research Article

Effect of psychological intervention on marital satisfaction rate of infertile couples

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The aim of this study was to determine the effect of psychological intervention on the rate of marital satisfaction of infertile couples who attended the infertility center in a maternity hospital in Arbil, Kurdistan Region, Iraq . A cross-sectional study with 638 infertile couples assessed for depression, 140 couples with a member who had a Beck Depression Inventory (BDI) score of 17 or higher were randomized to receive psychological treatment either before or during infertility treatment. Logistic regression was performed to eliminate confounding factors and in the later stage, 140 volunteer couples were assigned to two groups of intervention (70 couples) and control (70 couples). The intervention group was treated With Psychological treatment (cognitive-behavioral therapy and supportive psychotherapy) for a period of six months. Evaluation and Nurturing Relationship Issues, Communication, and Happiness (ENRICH) Marital satisfaction test, Stress scale (Holmes-Rahe) and a demographic-social questionnaire were used for data collection. Data were analyzed with t-test, paired t-test, chi-square, and logistic regression. Marital satisfaction after psychological intervention was more common among subjects with level of education of high school or more, housewives, age 19-25 years, duration of marriage or infertility of less than five years or unknown cause of infertility, and subjects without stress or with low stress. These relationships were statistically significant (p< 0.001). Considering the prevalence of marital dissatisfaction among infertile couples and the effect of psychological intervention, special attention should be given to psychological treatments in these subjects. This would help in improving their mental health and quality of life.

Key words: Marital satisfaction, behavioral cognitive therapy, supportive therapy, infertility.

INTRODUCTION

Millions of couples who get married with the hope to plan a family of their own come to realize that they are infertile (Coeffin-Driol and Giami, 2004). It seems that reproduction is one of the most important events in life. The root of the desire of having children lies in our environmental and cultural history and has been of importance to man since the beginning of his creation. Infertility is one of the major problems in life which can produce a lot of stress for infertile couples and could also affect the quality of marital relationships. Affected couples feel less closeness in their relationships and they fear the ending of their marriage and sometimes they show signs of depression or other psychiatric disorders. Research has shown that the stressful experience of infertility is associated with a wide range of psycho-cognitive disorders such as low self-esteem, increased tension, anxiety, depression, anger, feeling of

inferiority or hopelessness, sexual functional disorders and marital problems (Menning, 2006) The psychological effect**s** of infertility on marital relationship are usually associated with disputes between the couples. A research shows that couples are mostly unsatisfied with themselves and their marriage (Link and Darling, 1986) studied the effect of infertility on each subject and between subjects as well as socially. These effects include social isolation, too much stress in the relationship between couples and social stress. Another study shows that infertility does not only cause important psycho-cognitive changes in the subjects but also produces deep effects on marital and sexual relationships and it may have a profound impact on marital stability (Hosseinzadeh Bazargani, 2003). Some studies have examined the impact of infertility on marriage and sex between couples (Burns and Covington, 1999; Read, 1999). Many of such studies reported conflict, communication problems and disagreements over medical treatment, lack of empathy, and differential investment in the infertility treatment process among majority of the couples (Andrews et al*.,* 1991; Berg and Wilson, 1991). However, others reported that the crisis of infertility enhanced intimacy and improved couple communication (Burns and Covington, 1999). Monga et al (2004) reported that Women in infertile couples reported poor marital adjustment and quality of life compared with controls. Men may experience less intercourse satisfaction, perhaps because of the psychological pressure to try to conceive or because of the forced timing of intercourse around the woman's ovulatory cycle (Monga, 2004).

MATERIALS AND METHODS

The study population included all infertile couples visiting an Infertile Health Center in Maternity Hospital in Erbil – Kurdistan for the first time between March 2010 and February 2013. Infertility was defined as at least 1 year of unprotected coitus without conception. 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), containing 21 aspects of depression was created by Beck in 1961 and the reliability (0.96) and validity (0.89) of this test was confirmed for Kurdish People and scores range as follows: No depression, 0–16; mild depression, 17–27; moderate depression, 28–34; and severe depression, 35–63 (Noorbala , 2008) and (Rooshan, 1980). In 1976, from a list of 43 stressful life events, Holmes and Rahe created the SRRS (Social Readjustment Rating Scale), 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 (Karam Sohbani, 2005; Poorafkari, 1992). In this study the BDI, the SRRS, Enrich marital satisfaction questionnaire and demographic-social questionnaires were used for data collection. 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 gave 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 by clinical psychologist (individually). In group 2, the psychological treatment was not performed.

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.” The behavioral techniques used included physical activity (including daily walking), muscle relaxation exercises, imagination exercises and 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 in their relation to partner, friends, colleagues, and others. Information regarding economic and other forms of social support were obtained using a semi-structured questionnaire modified for infertile couples. After 6 months, both groups completed the ENRICH marital satisfaction questionnaire again. ENRICH was used to evaluate marital satisfaction. This questionnaire is a valid means of research as it consists of 12 items and has been used in various studies to assess marital satisfaction. Olsen used this questionnaire to assess marital satisfaction and he believes that this scale is related to changes which occur during one's life and it has high sensitivity for changes that take place inside the family (Atkinson et al., 2004). Each item of the questionnaire deals with one important psychological aspect. The evaluation of these aspects in a marital relationship can explain potential problems which exist between couples and they could also determine ways to improve these deficiencies. Enrich can also be used as a diagnostic tool in couples who wish to improve their relationship. Olsen and other researchers reported the validity (alpha coefficient) of this questionnaire to be 0.92. This questionnaire comprised of 47 questions and for the Iranian population, the alpha

coefficient is 0.95. Scaling is based on Likert scale (Solamanian, 1994). Considering the fact that this questionnaire was administered on infertile couples, five of the 47 questions which were related to children were eliminated. The number of questions in this study were mean=50, SD=10. The Holmes-Rahe scale is a renewed social adjustment scale which contains 43 important stressful events in life. The rate of stress was determined using axis 4 which is a 6-point assessment scale used for classifying psycho-social factors which cause stress (Sadock and Sadock, 2003). 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 Statistical Package for Social Sciences (SPSS), version 11.5 and logistic regression was performed to eliminate the effects of confounding factors.

Statistical analysis

Couples infertility characteristics were compared between groups using chi square statistics for discrete variables and Student's t-test for continuous variables. Due to non-normal distribution, Mann-Whitney U test was used for comparison of infertility duration between groups. In men and women subgroups, discrete variables and continuous variables were compared between control and study groups using chi square statistics and Student T-test, respectively. Paired T-test was used to determine the Enrich score differences within groups for baseline and after 6 month intervention. For marital satisfaction comparisons between groups and within groups (for baseline and after intervention) based on satisfaction categories, Mann-Whitney U test and Wilcoxon Singed Ranks test were used, respectively. To describe groups' difference in spouses' characteristics (i.e., education, age, stress and baseline Enrich score), a mixed model ANOVA, treating couples as within-group factor was used. In the multivariate analyses, to handle the within subjects (couples and time of assessment) and between subjects (groups) effects, a 2 group × 2 spouse ×2 time mixed model ANOVA was used to examine marital satisfaction before and after a 6-month period for the two groups. In these analyses, spouses' scores of marital satisfaction were defined as dependent variable and variables differed between groups defined as covariates.

RESULTS

Couples' characteristics are shown in Table 1. Comparison between groups showed significant differences in education and baseline Enrich score. Overall, couples in the study group attained higher educational level than control group (P=.026), however, the difference was not detected in the men and women subgroup analysis. Furthermore, men's baseline Enrich score was higher in control group than the study group (159.51 in control group versus 148.40 in study group) (Table 2, *P*=0.010). No other significant differences were observed between the two groups and these differences between groups were adjusted by multivariate analysis.

In the univariate analysis of factors listed in Table 1, sex (*P*=0.003), type of infertility (*P*=0.042), stress (*P*=0.004) and age (*P*<0.001) were associated with higher baseline Enrich score. But in the multivariate analysis only sex (P<.001), stress (p=0.004) and age (p=0.009) remained statistically significant. Data showed that in the baseline, men were more satisfied than women (overall and in both groups). Furthermore, having no stress and higher age is related to have higher baseline marital satisfaction. Subjects with stress have more marital dissatisfaction (unsatisfied or severely unsatisfied) (38%) than the subjects without stress (19%) and baseline marital satisfaction in women within 19-25 years old was significantly lower than others (p=0.027).

The mean Enrich scores for men and women at baseline and after intervention are shown in Tables 2 and 3. The data showed a significant decrease in marital satisfaction over time in the control group and a significant increase in study group. Relatively the level of satisfaction increased from 100 (71%) to 126 (90%) in study group and decreased from 105 (75%) to 97 (69%) of subjects.

Marital satisfaction rate after a 6-month period was related to sex (*P*<0.001), stress (*P*=0.010), age (*P*<0.001), baseline satisfaction (P<0.001) and groups (P<0.001) in the univariate analysis. But in the multivariate analysis, only baseline satisfaction and groups remained statistically significant in the model (*P*<0.001, for both). Marital satisfaction after six months was higher in the study group and in couples with higher baseline satisfaction. On the average, the level of marital satisfaction in the study group showed a rise of about 20 points. This difference in scores were equal in both sexes, for all subjects whether with stress or not, those with primary or secondary infertility type and all age groups (Table 4 and 5.)

DISCUSSION

The results of this study showed that 15.7% of the subjects had marital dissatisfaction, 67.1% had received moderate satisfaction and 17.1% were satisfied with their marital relationship. Among the females, 9.6% were dissatisfied, 33.9% were relatively satisfied, and 6.4% were satisfied with their marital relationships, while among the males, 6.1% were dissatisfied, 32.2% were relatively satisfied and 10.7% were satisfied. It seems that marital dissatisfaction is more common among females than males, which may be due to the fact that women are more interested in having children than men. Another finding of this study was that

Table 1. Demographic characteristics and baseline measurements for couples in the study and control group

Factor	Total	Study group	Control group	P-value
Couple's no. (%)	140	70 (50)	70 (50)	----
Mean age, year (SD,range)				0.873*
Men	31 (5.22-53)	31 (4.24-43)	31 (6.22-53)	0.762
Women	26 (4.19-41)	27 (4.20-41)	26 (5.19-38)	0.517
Couples**	29 (4.23-42)	29 (4.23-42)	29 (5.21-42)	0.873
Education, no. (%)				0.026*
Men				0.173
Primary school	34 (24)	12 (17)	22 (32)	
Secondary school	52 (37)	26 (37)	26 (37)	
High school	40 (29)	23 (33)	17 (24)	
Academy or more	14 (10)	9 (13)	5 (7)	
Women				0.253
Primary school	45 (32)	19 (27)	26 (37)	
Secondary school	37 (27)	18 (26)	19 (27)	
High school	49 (35)	26 (37)	23 (33)	
Academy or more	9 (6)	7 (10)	2 (3)	
Median duration of infertility, year (range)	5 (1-20)	5 (2-16)	6 (1-20)	0.416
Type of infertility, no. (%)				0.070
Primary	123 (88)	65 (93)	58 (83)	
Secondary	17 (12)	10 (7)	12 (17)	
Cause of Infertility, no. (%)				0.468
Male factor	46 (33)	22 (31)	24 (34)	
Female factor	56 (40)	25 (36)	31 (44)	
Both Male and Female factors	24 (17)	14 (20)	10 (14)	
Unknown	14 (10)	9 (13)	5 (7)	
Stress, no. (%)				0.165*
Men				0.466
Yes	44 (31)	20 (29)	24 (34)	
No	96 (69)	50 (71)	46 (66)	
Women				0.128
Yes	71 (51)	31 (44)	40 (57)	
No	69 (49)	39 (56)	30 (43)	
Couples**				0.387
Man	11 (8)	7 (10)	4 (6)	
Woman	38 (27)	18 (26)	20 (29)	
Both	33 (24)	13 (19)	20 (29)	
No one	58 (41)	32 (45)	26 (36)	

* P-value is reported for comparison between couples in groups based on Mixed Model ANOVA (without adjustment).
** Numbers represent the average of man and woman in a couple.

the rate of marital satisfaction is higher in subjects who are educated up to high school level or higher and psychiatric therapy and counseling had the most effect on this group of subjects (Table 1). It seems that the level of education is related to marital satisfaction such that marital satisfaction rate increased in subjects with higher levels of education. Psychiatric intervention (medication and psychotherapy) was more effective in housewives, age range 19-25 years with infertility duration of less than five years, and marital satisfaction was more in these subjects. Prior studies had not found an accurate relationship between marital satisfaction and level of education, occupation, age or

Table 2. Marital satisfaction at baseline and after intervention in the study and control groups

Marital satisfaction	Study group (n= 70 couple)			Control group (n= 70 couple)		
	Baseline	After intervention	P-value	Baseline	After 6 months	P-value
Satisfaction, no (%)						
Men			**<.001**			**.011**
Satisfied	10 (14)	34 (48)		20 (29)	13 (19)	
Relative satisfied	46 (66)	32 (46)		47 (67)	48 (68)	
Unsatisfied	14 (20)	4 (6)		3 (4)	9 (13)	
Women			.001			.068
Satisfied	9 (13)	24 (34)		9 (13)	4 (6)	
Relative satisfied	45 (64)	41 (59)		50 (71)	52 (74)	
Unsatisfied	16 (23)	5 (7)		11 (16)	14 (20)	
Mean Enrich score (SD)						
Men	148.40 (20.88)	169.24 (23.39)	<.001	159.51 (23.29)	151.67 (25.45)	<.001
Women	144.73 (22.74)	164.14 (21.83)	<.001	150.33 (23.88)	143.37 (23.45)	<.001
Couples**	146.56 (18.06)	166.69 (20.63)	<.001	154.92 (19.59)	147.52 (21.38)	<.001

** Numbers represent the average of man and woman score in a couple.

Table 3. Marital satisfaction in control and study groups.

Marital satisfaction	Baseline			After 6 months intervention		
	Study group	Control group	P-value	Study group	Control group	P-value
Satisfaction, no (%)						
Men			.005			<.001
Satisfied	10 (14)	20 (29)		34 (48)	13 (19)	
Relative satisfied	46 (66)	47 (67)		32 (46)	48 (68)	
Unsatisfied	14 (20)	3 (4)		4 (6)	9 (13)	
Women			.552			<.001
Satisfied	9 (13)	9 (13)		24 (34)	4 (6)	
Relative satisfied	45 (64)	50 (71)		41 (59)	52 (74)	
Unsatisfied	16 (23)	11 (16)		5 (7)	14 (20)	
Mean Enrich score (SD)			.010*			<.001*
Men	148.40 (20.88)	159.51 (23.29)	.003	169.24 (23.39)	151.67 (25.45)	<.001
Women	144.73 (22.74)	150.33 (23.88)	.158	164.14 (21.83)	143.37 (23.45)	<.001
Couples**	146.56 (18.06)	154.92 (19.59)	.010	166.69 (20.63)	147.52 (21.38)	<.001

* P-value is reported for comparison between couples in groups based on Mixed Model ANOVA (without adjustment).
** Numbers represent the average of man and woman score in a couple.

Table 4. Marital satisfaction in control and study groups.

Marital satisfaction	Baseline			After 6 months intervention		
	Study group	Control group	P-value	Study group	Control group	P-value
Satisfaction, no (%)			.131*			<.001*
Men			.040			<.001
Very dissatisfied	7 (10)	2 (3)		3 (4)	9 (13)	
Relative dissatisfied	11 (16)	12 (17)		5 (7)	10 (14)	
Relative satisfied	41 (59)	34 (49)		22 (32)	36 (51)	
Satisfied	8 (11)	13 (19)		25 (36)	9 (13)	
Very satisfied	3 (4)	9 (13)		15 (21)	6 (9)	
Women			.681			<.001
Very dissatisfied	11 (16)	9 (13)		4 (6)	12 (17)	
Relative dissatisfied	11 (16)	12 (17)		2 (3)	12 (17)	
Relative satisfied	37 (53)	36 (52)		36 (51)	40 (57)	
Satisfied	8 (11)	10 (14)		19 (27)	5 (7)	
Very satisfied	3 (4)	3 (4)		9 (13)	1 (2)	
Mean Enrich score (SD)			.010*			<.001*
Men	148.40 (20.88)	159.51 (23.29)	.003	169.24 (23.39)	151.67 (25.45)	<.001
Women	144.73 (22.74)	150.33 (23.88)	.158	164.14 (21.83)	143.37 (23.45)	<.001
Couples**	146.56 (18.06)	154.92 (19.59)	.010	166.69 (20.63)	147.52 (21.38)	<.001

* P-value is reported for comparison between couples in groups based on Mixed Model ANOVA (without adjustment).
** Numbers represent the average of man and woman score in a couple.

Table 5. Marital satisfaction at baseline and after intervention in the study and control groups

Marital satisfaction	Study group (n=-70 couple)			Control group (n= 70 couple)		
	Baseline	After intervention	P-value	Baseline	After 6 months	P-value
Satisfaction, no (%)			<.001*			<.001*
Men			<.001			.002
Very dissatisfied	7 (10)	3 (4)		2 (3)	9 (13)	
Relative dissatisfied	11 (16)	5 (7)		12 (17)	10 (14)	
Relative satisfied	41 (59)	22 (32)		34 (49)	36 (51)	
Satisfied	8 (11)	25 (36)		13 (19)	9 (13)	
Very satisfied	3 (4)	15 (21)		9 (13)	6 (9)	
Women			<.001			.009
Very dissatisfied	11 (16)	4 (6)		9 (13)	12 (17)	
Relative dissatisfied	11 (16)	2 (3)		12 (17)	12 (17)	
Relative satisfied	37 (53)	36 (51)		36 (52)	40 (57)	
Satisfied	8 (11)	19 (27)		10 (14)	5 (7)	
Very satisfied	3 (4)	9 (13)		3 (4)	1 (2)	
Mean Enrich score (SD)						
Men	148.40 (20.88)	169.24 (23.39)	<.001	159.51 (23.29)	151.67 (25.45)	<.001
Women	144.73 (22.74)	164.14 (21.83)	<.001	150.33 (23.88)	143.37 (23.45)	<.001
Couples**	146.56 (18.06)	166.69 (20.63)	<.001	154.92 (19.59)	147.52 (21.38)	<.001

** Numbers represent the average of man and woman score in a couple.

duration of infertility while such relationship was found in our study.

The results of this study showed that there is no relationship between marital satisfaction and cause of infertility whereas psychiatric intervention (medication and psychotherapy) has the most effect on marital satisfaction in couples with unknown cause of infertility and it has the least effect on male and female cause of infertility. Link and Darling (1986) reported that marital dissatisfaction is more common when the female factor is the cause of infertility (Link, 1986). It seems that the findings of this study are not in agreement in regard to the relationship between causes of infertility and marital satisfaction whereas in the study performed by Lee et al. (2000) there was a relation between marital satisfaction and both male and female factored infertility(Lee, 2000). The results of this study show that marital satisfaction rate is lower in subjects with stress. Psychiatric intervention (medication and psychotherapy) can help increase marital satisfaction rate in these subjects. These treatments were more effective in the group with severe stress.

Another study showed that stress can indirectly increase marital disputes and decrease self confidence, marital satisfaction, quality of life and sexual satisfaction. Stress can affect self-assessment, self-satisfaction, marriage, compatibility and health and it is related to and has a special effect on women (Lee, 2001). Stress is an important factor that reduces the quality of spermatozoa (Lovely et al., 2003). Women experience more stress while undergoing treatment while men are at lower risk of developing cognitive disorders or low self-esteem and they have more self-confidence (Andrews, 1991; Andrews, 1992; Beutel, 1999; Pook, 1999; 2004; Peterson, 2003). These authors reported that women and their partners who experience equal social stress have higher marital satisfaction and compliance rates when compared to couples who undergo mild stress. If both couples have the same feeling for becoming parents, their quality of life would improve. However, marital satisfaction decreases when the husband has more desire for becoming a parent as compared to his wife. Some studies do not confirm the relationship between stress and infertility (Bringhenti, 1997; Lovely, 2003). Stress can be reduced through the use of behavioral-cognitive therapies (Eugster, 1999; Boivin, 2003; Facchinetti, 2004). It seems that the results derived from this study are in concordance with those of other studies.

This study showed that psychiatric intervention (medication and psychotherapy) is effective in the treatment of marital satisfaction in infertile couples, even though marital satisfaction rate was more in females prior to receiving psychiatric intervention (medication and psychotherapy). Response to treatment was more in women than men. The fall in Enrich score in the control group shows the effect of psychiatric intervention. The study performed by Domar (2000), Terzioglu (2001) and Newton (1992) showed that the psychiatric treatments given to the intervention group results in a decrease in anxiety and depression and an increase in marital satisfaction rate and success in becoming pregnant; this relationship is statistically significant (Domar, 2000; Terzioglu, 2001; Newton ,1992). Research has shown that marital satisfaction is less common in infertile than fertile couples. Reports also show that marital satisfaction and compliance of infertile woman is less than their husband. We found no difference in regard to sexual activities of fertile and infertile woman as compared to men. Literature has shown that sexual problems and less orgasm satisfaction is more common among infertile males (Leiblum, 1998; Monga, 2004; Coeffin-Driol, 2004; De Klerk, 2005).

However, the results of another study showed that marital dissatisfaction exists in both groups but sexual satisfaction is less common in infertile than fertile couples (Verhaak et al., 2002). Also, psycho-cognitive signs, especially anxiety, is effective in marital satisfaction (Bringhenti, 1997). The use of behavioral-cognitive models helps improve sexual activities and satisfaction, as well as hope and marital relationship skills. The use of these treatments can increase the number of spermatozoa (Titov, 2010). Cognitive therapy, even after a 6-month follow-up shows that psychiatric signs decrease and marital satisfaction increases. Therefore cognitive-behavioral therapies can be effective in the treatment of infertility (Slade et al., 1997). The results derived from this study are in concordance with the results of other studies. It could be inferred that psychiatric intervention (medication and psychotherapy) plays an important role in the treatment of infertility and increases the rate of satisfaction of infertile couples. The following suggestions can help improve the quality of life of married couples and treatment success.

1- Cooperation between infertility treatment centers and psychiatric and psychological centers.

2- Increase in knowledge of gynecologists and infertility specialists about the importance of stress and mental and psychological problems on infertile subjects and about the process of treatment and their cooperation in referring patients to psychiatrists or psychologists.

3- The role of the mass media in informing subjects who attend psychiatric and psychology centers about the increased rate of success of infertility treatment methods.

One of the major limitations of this study was the lack of knowledge of subjects about the psychological problems that exist in infertile people and their belief that it is not necessary to seek help from a psychologist or psychiatrist, which resulted in their lack of cooperation in this study. We hope that the results of this study and those of other studies can be effective steps in the treatment of these patients.

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