

# Is There a Gender Difference in Infertile Couples without an Axis I Psychiatric Disorder in the Context of Emotional Symptoms, Social Support, and Sexual Function?

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## Abstract

**Objective:** It was aimed to evaluate the levels of emotional distress, social support, and sexual function of infertile couples with no psychiatric Axis I disorder, according to gender differences.

**Method:** The study sample of 103 primary infertile couples with no psychiatric Axis I disorder were administered the Beck Depression Inventory, State and Trait Anxiety Inventory, Inventory of Perceived Social Support, and Golombok Rust Inventory of Sexual Satisfaction (GRISS).

**Results:** The sample's depressive symptom severity did not indicate clinical depression, state anxiety was within the normal range, and trait anxiety was high, according to the scales. Compared to men, women had more severe depressive symptoms when they were the cause of the couple's infertility, either alone or when their husbands were also a cause of infertility, higher trait anxiety scores in all infertility groups, and more perceived social support of the family, whether they or their husbands were the cause of infertility. According to the sexual functioning profile obtained by the subscale scores of GRISS, the most common problems of the sexual relationship in all infertility groups were non-communication and non-sensuality for men, and avoidance for women. The emotional distress of women and men correlated negatively with their perceived social support and positively with their sexual functioning.

**Conclusion:** It was concluded that women had more social support and emotional distress than men, and men had more problems of sexual function than women; however, satisfactory social support might decrease the emotional symptoms of both genders.

**Key Words:** Infertility, depression, anxiety, sexual dysfunction, social support

## INTRODUCTION

Infertility is defined as the inability to achieve a pregnancy after at least one year of regularly and unprotected sexual intercourse. Infertility is also defined as a stressor and a life crisis, as it is a case specific situation with unpredictable results (Newton et al., 1999). Spouses may react differently to infertility (Greil, 1997) and this reaction can vary according to the etiology of infertility (Mahlstedt, 1985). Infertility, and the diagnostic and treatment approaches for fertilization lead to sexual dysfunction, depression, anxiety, and relationship problems (Wright et al., 1991; Hammarberg et al., 2001; Ramezanzadeh et al., 2006) by forcing the social support resources and coping mechanisms of the couple, and decreasing their emotional and physical energy (Boivin et al., 1999).

The relationships between infertility and both sexual functioning and emotional state appear to be bi-directional. As sexual dysfunction can be the real cause of male and female infertility (Boivin et al., 2001), it can also be a result of depression and anxiety developed subsequent to infertility and infertility treatment (Ramezanzadeh et al., 2006). Similarly, anxiety and depression can be the cause (Saleh et al., 2003) or the result (Greil, 1997) of infertility. In addition, in contrast to studies that report no connection between emotional status and fertility (Milad et al., 1998; Anderheim et al., 2005), there are studies that show high levels of anxiety and depressive symptom severity can decrease the possibility of pregnancy (Smeenk et al., 2001; Gülseren et al., 2006). Therefore, it was proposed that offering psychiatric treatment and psychological support to those who

present to fertility clinics may increase the possibility of pregnancy (Slade et al., 1997).

Based on the finding that infertile couples initially seek familial or peer support instead of professional help (Boivin et al., 1999), it was proposed that social support might serve as a buffer against infertility related stress (Helgeson, 2003). On the other hand, findings regarding the social support of infertile couples, the effects of this support on the emotional distress and gender differences are controversial. It was reported that social support can increase the emotional distress due to infertility (Boivin et al., 1999), can lead to additional emotional distress (Wilson and Kopitzke, 2002), or can increase anxiety and depressive symptoms (Mindes et al., 2003).

Among the limited number of studies on the emotional aspects of infertility conducted in Turkey, one study reported that emotional symptoms of couples who were informed before the artificial reproduction techniques were different from couples who were not informed (Terzioğlu, 2001). Other studies (Güz et al., 2003; Gülseren et al., 2006; Özkan and Baysal, 2006) compared the anxiety and depression levels of infertile women to healthy women, excluding men. Among these studies, except for one that examined the social support of infertile couple and the emotional effects of social support and sexual life of infertile woman (Özkan and Baysal, 2006), there are no findings regarding the sexual functioning of infertile couples. Based on the lack of data on this subject in Turkey, the present study aimed to determine the possible problems related to infertility in emotional and sexual functioning, according to gender among infertile couples attending for artificial reproduction, and to refer the problematic couples to psychiatric support programs. Based on the assumption that in married and primary infertile couples with no Axis I psychiatric disorder, the women would have more emotional distress, inadequate social support, and problematic sexual functioning in comparison to men, the level of anxiety and social support, severity of depression, and the quality of sexual functioning at the time of presentation were investigated among men and women.

## METHODS and MATERIAL

### Sample and Procedure

Exclusion/inclusion criteria were used in order to investigate the emotional distress due to infertility and issues in sexual function according to gender, as well as to form a homogeneous group. Two hundred and fifty couples that consecutively presented to the Reproduc-

tive Health Center of Gülhane School of Medicine in order to have children with the help of artificial reproduction techniques were invited to the study. Those couples included women who had not previously been pregnant (null gravid) and men without biological children. Among the couples who agreed to participate, those that were a) diagnosed with primary infertility, b) candidates for invasive treatment, such as in-vitro fertilization (IVF), intracytoplasmic sperm injection (ICSI), zygote intrafallopian transfer (ZIFT), and gamete intrafallopian transfer (GIFT), c) with an education of more than 11 years, d) with no general medical disorders or diseases besides infertility, e) with no current or past psychiatric Axis I diagnosis and/or treatment, and f) married (due to the related law) were included in the study.

Although in the beginning of the study level of education was not among the inclusion/exclusion criteria, it was determined that individuals with education levels less than 11 years did not complete the measurement scales correctly and asked for help from the interviewer. Based on reliability and validity studies showing that results can be inaccurate when help is provided during the completion of self-rating scales, education level of less than 11 years became an exclusionary criterion. Couples who were included before the addition of this exclusion were subsequently excluded, as their data might have been inaccurate. As having had a child previously might be a protective factor against emotional distress (Epstein and Rosenberg, 2005), the secondary infertile couples were also excluded.

Couples who agreed to participate were assessed in terms of current or past psychiatric Axis I diagnoses using SCID-I, which was developed according to DSM-IV (American Psychiatric Association, 1994) criteria by First et al., (1997) and Turkish adaptation, reliability, and validity study conducted by Çorapçıoğlu et al. (1999), by a psychiatry specialist (TK) among the authors. Although it has been used in similar studies as a structured diagnostic tool, the reliability of SCID-I diagnoses were confirmed with an appropriate psychiatric interview and examination of past medical records by 3 psychiatry specialists blinded to the SCID-I results (AÖ, AB, and KNÖ).

Of the 220 couples that agreed to participate in the study, 85 (38.63%) had DSM-IV psychiatric Axis I diagnoses. Psychiatric disorders were more frequent among women ( $n = 72$ , 84.71%) in comparison to men ( $n = 33$ , 38.82%). The most frequent diagnoses were adjustment disorder ( $n = 33$ , 33.82), generalized anxiety disorder ( $n = 21$ , 24.71%) and major depressive disorder

**Table I.** Mean age and scale scores in the study groups characterized by the cause of infertility.

|        | UE Group<br>n=22 couples |       | MI Group<br>n=35 couples |                | FI Group<br>n=24 couples |       | BFMI Group<br>n=22 couples |       | p <sup>δ</sup> |
|--------|--------------------------|-------|--------------------------|----------------|--------------------------|-------|----------------------------|-------|----------------|
|        | M±SD                     | p*    | M±SD                     | p <sup>†</sup> | M±SD                     | p*    | M±SD                       | p*    |                |
| Age    |                          |       |                          |                |                          |       |                            |       |                |
| Women  | 33.2±3.2                 | 0.020 | 28.1±4.5                 | 0.001          | 31.9±5.4                 | 0.036 | 30.8±3.5                   | 0.001 | 0.000          |
| Men    | 36.4±5.3                 |       | 32.4±4.9                 |                | 36.1±5.9                 |       | 35.4±4.5                   |       | 0.007          |
| BDI    |                          |       |                          |                |                          |       |                            |       |                |
| Women  | 6.9±4.4                  | 0.795 | 7.1±4.7                  | 0.728          | 11.8±5.6                 | 0.003 | 8.9±5.9                    | 0.047 | 0.006          |
| Men    | 6.2±4.5                  |       | 7.3±6.3                  |                | 7.1±4.7                  |       | 5.9±3.9                    |       | 0.837          |
| STAI-S |                          |       |                          |                |                          |       |                            |       |                |
| Women  | 37.0±7.6                 | 0.389 | 37.3±10.9                | 0.552          | 38.3±7.0                 | 0.414 | 34.5±9.2                   | 0.655 | 0.559          |
| Men    | 38.4±6.5                 |       | 35.8±6.8                 |                | 36.6±6.2                 |       | 33.4±6.1                   |       | 0.073          |
| STAI-T |                          |       |                          |                |                          |       |                            |       |                |
| Women  | 45.0±4.8                 | 0.032 | 48.1±6.8                 | 0.001          | 47.8±5.9                 | 0.014 | 47.1±6.6                   | 0.019 | 0.452          |
| Men    | 42.2±4.2                 |       | 42.7±6.1                 |                | 43.1±5.9                 |       | 42.8±5.8                   |       | 0.889          |
| PFS    |                          |       |                          |                |                          |       |                            |       |                |
| Women  | 26.6±3.7                 | 0.125 | 26.4±6.3                 | 0.012          | 26.5±3.8                 | 0.003 | 24.4±5.3                   | 0.104 | 0.257          |
| Men    | 24.8±3.8                 |       | 23.1±6.4                 |                | 22.3±4.9                 |       | 20.9±7.5                   |       | 0.382          |
| PPD    |                          |       |                          |                |                          |       |                            |       |                |
| Women  | 29.5±6.7                 | 0.199 | 30.8±6.5                 | 0.132          | 30.4±5.0                 | 0.126 | 28.6±7.4                   | 0.151 | 0.657          |
| Men    | 27.5±4.5                 |       | 27.1±9.5                 |                | 27.1±6.3                 |       | 25.3±7.2                   |       | 0.759          |
| GRISS  |                          |       |                          |                |                          |       |                            |       |                |
| Women  | 29.6±12.6                | 0.541 | 24.6±11.5                | 0.621          | 26.2±12.2                | 0.885 | 28.4±16.1                  | 0.888 | 0.550          |
| Men    | 27.8±11.2                |       | 24.8±8.1                 |                | 24.9±7.5                 |       | 24.5±7.6                   |       | 0.881          |

UE: Infertility with Unknown Etiology; MI: Male Infertility; FI: Female Infertility; BFMI: Both Female and Male Infertility.

M: mean; SD: Standard Deviation; STAI-S: State Anxiety Inventory; STAI-T: Trait Anxiety Inventory; BDI: Beck Depression Inventory.

PFS: Inventory of Perceived Family Support; PPD: Inventory of Perceived Peer Support; GRISS: Golombok Rust Inventory of Sexual Satisfaction.

\* Within group comparison of genders with the Mann-Whitney U-test.

† Within group comparison of genders with the Student-t test.

δ Within group comparison of genders with the Kruskal-Wallis test.

(MDD) (n = 9, 10.59%). Other diagnoses were dysthymia (n = 5, 5.21%), obsessive compulsive disorder (OCD) (n = 3, 3.13%), panic disorder (PD) (n = 3, 3.13%), OCD+MDD (n = 2, 2.08%), PD+MDD (n = 3, 3.13%), bipolar-I disorder (n = 2, 2.08%), social phobia (n = 2, 2.08%), psychotic disorder (n = 1, 1.04%), and anorexia nervosa (n = 1, 1.04%). In total, 103 couples that consented to participate and met the inclusion criteria were included in the study, which was approved by the Research Committee of Gülhane School of Medicine Psychiatry Department; 147 couples refused to participate or were excluded.

Of the 30 couples that refused to participate, 25

(83.33%) specified more than one reason. Couples that reported difficulty with transportation from the suburbs to the fertilization clinic (n = 27), that did not want to share their private lives as the explorations already require a lot of sharing (n = 18), that found psychiatric help worthless (n = 12) and unnecessary (n = 10), and that did not communicate any reasons (n = 5) were excluded. A total of 117 couples that benefited from non-invasive ovulation induction technique (n = 28), had a history of pregnancy that ended with curettage or abortion (n = 11), had living children from a previous partner (n = 5), who were diagnosed and being followed-up for a general medical problem (hypertension, diabetes, renal failure, etc.) (n = 32), had an education of less than 11 years (n =

**Table II.** Common sub-dimensions of sexual functioning according to GRISS, based on the cause of infertility.

| SUB-DIMENSIONS |     | UE Group<br>n=22 couples |       | MI Group<br>n=35 couples |       | FI Group<br>n=24 couples |       | BFMI Group<br>n=22 couples |       | p <sup>†</sup> |
|----------------|-----|--------------------------|-------|--------------------------|-------|--------------------------|-------|----------------------------|-------|----------------|
|                |     | n (%)                    | p*    | n (%)                    | p*    | n (%)                    | p*    | n (%)                      | p*    |                |
| Frequency      |     |                          |       |                          |       |                          |       |                            |       |                |
| Women          | Yes | 5 (22.7)                 | 0.349 | 10 (28.6)                | 0.289 | 10 (41.7)                | 0.009 | 9 (40.9)                   | 0.377 | 0.120          |
|                | No  | 17 (77.3)                |       | 25 (71.4)                |       | 14 (58.3)                |       | 13 (59.1)                  |       |                |
| Men            | Yes | 3 (13.6)                 |       | 7 (20.0)                 |       | 2 (8.3)                  |       | 7 (31.8)                   |       | 0.277          |
|                | No  | 19 (86.4)                |       | 28 (80.0)                |       | 22 (91.7)                |       | 15 (68.2)                  |       |                |
| Communication  |     |                          |       |                          |       |                          |       |                            |       |                |
| Women          | Yes | 10 (45.5)                | 0.001 | 8 (22.9)                 | 0.001 | 8 (33.3)                 | 0.001 | 5 (22.7)                   | 0.001 | 0.234          |
|                | No  | 12 (54.5)                |       | 27 (77.1)                |       | 16 (66.7)                |       | 17 (77.3)                  |       |                |
| Men            | Yes | 20 (90.9)                |       | 31 (88.6)                |       | 20 (83.3)                |       | 20 (90.9)                  |       | 0.852          |
|                | No  | 2 (9.1)                  |       | 4 (11.4)                 |       | 4 (16.7)                 |       | 2 (9.1)                    |       |                |
| Satisfaction   |     |                          |       |                          |       |                          |       |                            |       |                |
| Women          | Yes | 5 (22.7)                 | 0.206 | 2 (5.7)                  | 0.693 | 2 (8.3)                  | 0.245 | 5 (22.7)                   | 0.206 | 0.136          |
|                | No  | 17 (77.3)                |       | 33 (94.3)                |       | 22 (91.7)                |       | 17 (77.3)                  |       |                |
| Men            | Yes | 2 (9.1)                  |       | 2 (5.7)                  |       | 0 (0.0)                  |       | 2 (9.1)                    |       | 0.505          |
|                | No  | 20 (90.9)                |       | 33 (94.3)                |       | 24 (100.0)               |       | 20 (90.9)                  |       |                |
| Avoidance      |     |                          |       |                          |       |                          |       |                            |       |                |
| Women          | Yes | 8 (36.4)                 | 0.034 | 12 (34.3)                | 0.009 | 9 (37.5)                 | 0.047 | 8 (36.4)                   | 0.034 | 0.995          |
|                | No  | 14 (63.6)                |       | 23 (65.7)                |       | 15 (62.5)                |       | 14 (63.6)                  |       |                |
| Men            | Yes | 2 (9.1)                  |       | 3 (8.6)                  |       | 3 (12.5)                 |       | 2 (9.1)                    |       | 0.963          |
|                | No  | 20 (90.9)                |       | 32 (91.4)                |       | 21 (87.5)                |       | 20 (90.9)                  |       |                |
| Touching       |     |                          |       |                          |       |                          |       |                            |       |                |
| Women          | Yes | 9 (40.9)                 | 0.000 | 7 (20.0)                 | 0.000 | 6 (25.0)                 | 0.000 | 4 (18.2)                   | 0.000 | 0.267          |
|                | No  | 13 (59.1)                |       | 28 (80.0)                |       | 18 (75.0)                |       | 18 (81.8)                  |       |                |
| Men            | Yes | 22 (100.0)               |       | 34 (97.1)                |       | 24 (100.0)               |       | 22 (100.0)                 |       | 0.580          |
|                | No  | 0 (0.0)                  |       | 1 (2.9)                  |       | 0 (0.0)                  |       | 0 (0.0)                    |       |                |

UE: Infertility with Unknown Etiology; MI: Male Infertility; FI: Female Infertility; BFMI: Both Female and Male Infertility.

Yes: Individuals with problems in this sub dimension; No: Individuals with no problems in this sub dimension.

Statistics are  $\chi^2$  results.

\* Within group comparison of genders.

† Between group comparison of genders.

16), and had a past or current history of psychiatric Axis I diagnosis or treatment (n = 25) were excluded.

The sample composed of 103 couples was divided in to 4 groups according to the etiology of infertility: a) Infertility with unknown etiology (UE) group: 22 couples in which neither partner had a specified problem that can lead to infertility (21.4%); b) male infertility (MI) group: 35 couples in which the men were infertile and the women were non-problematic (33.9%); c) female infertility (FI) group: 24 couples in which the women were infertile and the men were non-problematic (23.3%); d)

both female and male infertility (BFMI) group: 22 couples in which both partners had fertility problems.

The men and women in the couples that were assigned a treatment method (IVF/ICSI/ZIFT/GIFT) by the infertility committee were given a sociodemographic form and the following scales simultaneously before the initiation of the treatment in order to assess their emotional status, sexual functioning, and social support: Golombok Rust Inventory of Sexual Satisfaction (GRISS), Procidano and Heller's Perceived Family Support (PFS) and Perceived Peer Support (PPS) Invento-

**Table III.** The correlation of scales among groups.

| SCALES         | UE Group<br>n=22 couples |        | MI Group<br>n=35 couples |          | FI Group<br>n=24 couples |        | BFMI Group<br>n=22 couples |          |
|----------------|--------------------------|--------|--------------------------|----------|--------------------------|--------|----------------------------|----------|
|                | Women                    | Men    | Women                    | Men      | Women                    | Men    | Women                      | Men      |
| PFS - BDI      | -0.099                   | -0.256 | -0.248                   | -0.423*  | -0.677**                 | -0.185 | -0.007                     | -0.033   |
| PFS - STAI-S   | -0.045                   | 0.205  | -0.122                   | -0.294   | -0.484*                  | -0.241 | 0.055                      | 0.030    |
| PFS - STAI-T   | 0.180                    | -0.069 | -0.132                   | -0.614** | -0.339                   | 0.022  | 0.146                      | -0.207   |
| PPD - BDI      | 0.162                    | -0.116 | -0.304                   | -0.522*  | -0.409*                  | -0.225 | -0.492*                    | -0.339   |
| PPD - STAI-S   | -0.090                   | 0.063  | -0.248                   | -0.354*  | -0.148                   | -0.236 | -0.347                     | -0.572** |
| PPD - STAI-T   | 0.043                    | 0.026  | -0.271                   | -0.371*  | -0.346                   | -0.176 | -0.216                     | -0.638** |
| GRISS - BDI    | 0.074                    | 0.381  | 0.481**                  | 0.603**  | 0.429*                   | 0.460* | 0.174                      | 0.636**  |
| GRISS - STAI-S | -0.397                   | 0.381  | 0.420*                   | 0.217    | 0.347                    | 0.337  | 0.477*                     | 0.399    |
| GRISS - STAI-T | 0.075                    | 0.195  | 0.431*                   | 0.509**  | 0.226                    | 0.428* | 0.229                      | 0.747**  |

Person's two-way correlation "r" values are presented in the table;

\*p<0.05; \*\*p<0.01

STAI-S: State Anxiety Inventory; STAI-T: Trait Anxiety Inventory; BDI: Beck Depression Inventory.

PFS: Inventory of Perceived Family Support; PPD: Inventory of Perceived Peer Support; GRISS: Golombok Rust Inventory of Sexual Satisfaction.

ries, Beck Depression Inventory (BDI), Spielberger State (STAI-S) and Trait (STAI-T) Anxiety Scale. In the first page of each measurement tool the name of the scale and a guideline was included.

### Measurement Tools

The self report scales of BDI, STAI-S, STAI-T, GRISS, PFS and PPS were used in the assessment of emotional status, sexual functioning and social support.

The emotional burden to couples due to infertility was previously studied in the context of anxiety and depression; therefore, similarly as reported in the literature, BDI and STAI-S/T were used in measuring these 2 symptom clusters. On the BDI developed by Beck et al. (1961) the score ranges from 0-63 and scores < 10 imply that there are no depressive symptoms whereas scores > 10 indicate depressive symptoms in varying degrees. The Turkish reliability and validity of the form used in the present study was conducted by Hisli (1989). The STAI-S/T developed by Spielberger (1970) and the Turkish version (reliability and validity conducted by Öner and LeCompte in 1985) has 40 items. The first 20 questions measure the state anxiety and the remaining 20 questions measure trait anxiety, including the general anxiety ten-

dency of the individual. Total score in both sections < 42 is considered normal and scores > 42 indicate high anxiety. It was aimed to measure the anxiety level of infertile individuals at the time of presentation with STAI-S, and the long-term effect of infertility and the propensity to anxiety with STAI-T.

In order to evaluate the different dimensions of sexual functioning, such as frequency, satisfaction, relationship between the partners, GRIIS, developed by Rust and Golombok (1986) for the evaluation of sexual functioning disorders and the quality of the sexual relationship between heterosexual couples, was used. This scale has 2 different forms, one for women and one for men, each of which include 28 items. In addition to the general sexual functionality score, the scale includes avoidance, non-satisfaction (satisfaction), body contact (touching), frequency of sexual contact, and sexual non-communication (communication) subscales for genders, as well as impotence and premature ejaculation subscales for men, and anorgasmia and vaginismus subscales for women. As we sought only to compare men and women in infertile couples and there was no control group, the gender specific subscales were not used in this study. High scores in the evaluation of general sexual functionality indicate



a disruption in sexual functioning and the quality of the relationship. Row scores are converted into standard scores ranging between 1 and 9: scores > 5 indicate sexual problems. The reliability and validity study of the Turkish version of GRISS was conducted by Tuğrul et al. (1993).

In order to determine the level of social support which can function as a buffer against the emotional difficulties of infertile couples, and the difference in that level between men and women, the Perceived Social Support Scale (PSSS), developed by Procidano and Heller (1983), was used. PSSS is composed of 2 parts, each with 20 items. The first 20 items measure the perceived family support (PFS) and second part measures perceived peer support (PPS). None of the parts has a cut off score and higher scores indicate higher levels of social support. Both forms were adapted into Turkish by Sorias (1989).

### Statistical Analysis

Following frequency analysis, Student's t-test was used for the data that fit into a normal distribution and the Mann-Whitney U-test was used for data that fit into an abnormal distribution. In the comparisons between groups, the Kruskal-Wallis test was used.  $\chi^2$  test was used for census data and Spearman's correlation and Pearson's correlation tests were used for comparisons. Data collected with measurement are presented as the arithmetic mean  $\pm$  standard deviation and census data are presented as numbers (%). The SPSS (Statistical Package for Social Sciences) v.11.0 program was used in all analyses and the level of significance was accepted as  $p < 0.05$ .

## RESULTS

Data analysis of the 103 infertile couples (103 women and 103 men) in the study revealed that all the men and women were working outside the home and had medium-high level incomes with a mean monthly income of 2.000 YTL (TUIK, 2005). In all, 92 couples (89.32%) lived in the city where the study was conducted and 11 (10.68%) reported that they would come to their follow-ups from districts close by on the same day. Job distribution of the participants was as follows: 86.41% of the women ( $n = 89$ ) and 80.58% ( $n = 83$ ) of the men were civil workers, 8 (7.77%) women and 12 (11.65%) men worked in non-public corporations as managers, 6 (5.83%) women and 8 (7.77%) men were free traders. The majority of the couples reported living only with their spouses ( $n = 97$ , 94.17%) and 6 (5.83%)

couples that were free traders lived with extended family, including their parents. According to the findings of the face-to-face interview, among the 16 couples who had less than 11 years of education, 8 women (3.63%) were literate, but did not go to school, 3 (1.36%) had 5 years of education, and 5 (2.27%) had 8 years of education; although all the men went to school, 10 (4.54%) did not complete 5 years of education, 4 (1.81%) completed 8 years, and 2 (0.905) completed 10 years of education.

The shortest duration of infertility was in the MI group (range: 2-19 years; mean:  $6.9 \pm 4.1$  years) and longest was in the FI group (range: 3-25 years; mean:  $10.2 \pm 5.4$  years) ( $p = 0.002$ ). The duration of infertility ranged from 2-19 years (mean  $9.8 \pm 5.3$ ) in the UE group and 3-19 years (mean  $8.2 \pm 3.6$ ) years in the BFMI group. The ages, and BDI, STAI-S, STAI-T, PFS, PPD, and GRISS total scores, as well as within group and between groups comparisons are presented in Table I. GRISS sub-dimension scores are presented in Table II. In all groups women were younger than men, and men and women in the MI group were the youngest among all the groups (Table I).

Severity of depressive symptoms did not indicate clinical depression in any of the groups, and depression scores of the women were higher than men in all the groups, except the MI group. Whereas these differences were not statistically significant between the UE and MI groups, they were significant between the FI and BFMI groups ( $p < 0.01$  and  $p < 0.05$ , respectively). The severity of depressive symptoms of the men was similar within groups ( $p > 0.05$ ), whereas the severity of depressive symptoms of the women was different ( $p < 0.01$ ). Accordingly, depressive symptoms of the women were lowest when the reason for the couple's infertility was unknown and were the highest when only the women had problems resulting in infertility (Table I).

The levels of state anxiety were within normal ranges for both genders in all groups, and were similar between groups and within groups ( $p > 0.05$ ). The level of trait anxiety was high in both men and women in all groups, and was significantly high in women; there were no differences between groups of men and women (Table I). PFS scores were significantly higher in the women than men in the MI and FI groups ( $p < 0.01$  in both groups), and were similar between groups ( $p > 0.05$ ). PPS scores were similar both between groups and within groups ( $p > 0.05$ ) (Table I).

The total scores of general sexual functionality were similar in all groups and between groups ( $p > 0.05$ ) (Table

I). In addition, in the numerical comparison of individuals with and without sexual problems, according to the converted scores, within group differences were observed in the common sub-dimensions of sexual functioning, except for satisfaction, but all sub-dimensions were similar between groups (Table II). According to this, the frequency of sexual intercourse was only a significant and frequent problem according to the men in the FI group ( $p < 0.01$ ). Non-communication among spouses was a more frequent problem for men in all groups ( $p < 0.01$  in all groups). Satisfaction from the sexual encounter was the least problematic for both genders in all groups and there were no differences between groups ( $p > 0.05$ ). The highest number of complaints was for the avoidance of sexual contact reported by women, and body contact (touching) reported by men, in all groups (Table II).

### Correlations of the Measurement Tools

The relationships between perceived social support and sexual functioning and depressive symptoms and anxiety level are presented in Table III. Correlation analysis was not conducted as the number of cases of different sexual dysfunction groups was as low as two in some groups; instead the relationships of general sexual functionality were explored.

In the UE group, both dimensions of perceived social support and sexual functioning were not related to the emotional status of either men or women (Table III). While the emotional status of the women in the MI group was not related to perceived social support (family and peer), there was a direct relationship to sexual functioning (Table III). According to this, when the women were not infertile, the severity of their depressive symptoms and the level of both anxiety types did not change with the perceived social support (family and peer); however, problems in sexual functioning paralleled emotional symptom severity. In men there was a negative relationship between emotional symptoms and perceived social support, and a positive relationship with sexual functioning (Table III). When only men were responsible for the infertility of couple, the problems in sexual functioning paralleled their emotional symptom severity, and an increase in perceived social support of men decreased their emotional symptoms.

In contrast to their perceived social support, emotional symptoms of the women in the FI group were directly related to sexual functioning (Table III). When the women were the direct cause of infertility, problems in the area of sexual functioning paralleled the severity of

emotional symptoms, and an increase in perceived social support decreased emotional distress. In addition, while the emotional symptoms of the men were not related to perceived social (family and peer) support, there was a direct relationship to sexual functioning (Table III). According to this, when the men were the direct cause of infertility, the severity of emotional symptoms and levels of both state and trait anxiety did not change in accordance with the level of perceived social (family and peer) support; however, problems in sexual functioning paralleled the severity of emotional symptoms.

In the BFMI group the emotional symptoms of both men and women were negatively related to the level of perceived social support, and were positively related to sexual functioning (Table III). According to this, when both partners contributed to infertility, emotional symptoms decreased as the level of perceived social support increased, and problems in sexual functioning increased or decreased depending on the emotional symptoms.

### DISCUSSION

In the study, the depressive symptom severity of men and women of 103 infertile couple, all of whom did not have an Axis I psychiatric diagnosis nor any general health problems, except for infertility, did not indicate clinical depression, and the sample had normal levels of state anxiety and high levels of trait anxiety. In addition, when the women were directly responsible for infertility (alone or together with the partner), the severity of depression was higher than in men, though this was not the case for men who were the direct cause of infertility. Furthermore, in the group comparisons it was observed that women who were responsible for infertility had more depressive symptoms, whereas the severity of depressive symptoms of men did not differ according to the cause of infertility. The level of state anxiety was similar in men and women in all groups, while the trait anxiety level of women was higher than that of men. In addition, the level of both state and trait anxiety did not differ according to the cause of infertility in men or women. Although the level of state anxiety was normal and similar in men and women, higher levels of trait anxiety and depressive symptoms in women supported our hypothesis that women experienced greater emotional difficulty than their spouses.

The severity of depressive symptoms in the infertile couples we studied was in the normal range, as previously reported (Slade et al., 1997; Terzioğlu, 2001), but also higher than previously reported (Beutel et al., 1999;

Fassino et al., 2002). Our findings support other findings regarding higher depressive symptoms among women than men (Collins et al., 1992; Slade et al., 1997; Newton et al., 1999). In addition, our findings were also compatible with previous studies that reported lower depressive symptoms in women associated with male factor infertility (Khademi et al., 2005), and higher levels of depressive symptoms associated with female factor (Kowalcsek et al., 2001; Güz et al., 2003), and combined male and female factor infertility (Khademi et al., 2005). On the other hand, our finding that there were no differences in the emotional reactions of women based on the cause of infertility contradicts a report by Nachtigall et al. (1992).

There are studies that have evaluated the state anxiety levels of infertile couples and reported similar results to ours (Terzioğlu 2001; Emery et al., 2003) and results differing from ours (Slade et al., 1997; Newton et al., 1999). The studies that report different levels of state anxiety also reported differences in the trait anxiety levels of infertile men and women, and reported that women were more anxious than men, independent of the cause of infertility (Slade et al., 1997; Newton et al., 1999), thus supporting our findings (Wright et al., 1991; Fassino et al., 2002).

It is obvious that the finding of low depressive symptom levels in all the study groups was the result of excluding Axis I diagnoses; however, the observed normal levels of state anxiety might have been related to the timing of the administration of the scales. Inconsistent findings regarding state anxiety in different studies might result from differences in the timing of data collection; use of the scale at the time of presentation, during treatment, and before or after the embryo transfer or oocyte collection phase, might reveal differences in state anxiety levels (Emery et al., 2003). In addition, the level of state anxiety can be high due to the tiring and indefinite path of infertility and infertility treatment, as an emotional reaction to the chronic stress (Mahlstedt 1985), or it can be within the normal range due to desensitization used as a coping mechanism (Kee et al., 2000). The social role imposed by society to women of motherhood/pregnancy can result in the perception that infertility is a threat and thus produces higher anxiety levels (Mahlstedt 1985; Mindes et al., 2003; Güz et al., 2003), and as women can react negatively men can choose to deny and forget (Wright et al., 1991). This point of view can explain the significantly higher levels of depressive symptoms and trait anxiety in women when they were the direct cause of infertility. On the other hand, although there is no

visible loss in infertility, as in death or divorce, paradoxically, in addition to the longing for a child that will never be born there is also the grief for that unborn child (Mahlstedt, 1985). Therefore, depressive symptoms and high levels of trait anxiety should signal a grief process specific to infertility.

As the social support scale used in our study did not have a cut off score it was not possible to define the mean perceived social support scores in the sample as high or low. However, women's perceived family support was higher than men's in the MI and FI groups. Perceived family support was similar within and between groups. Although these findings do not support our hypothesis of lower levels of social support in women in comparison to men, our findings overlapped with the findings of Sorias (1989) who reported that women perceived more peer support than men, whereas both genders perceived family support similarly. However, in infertile couples, in addition to studies showing that women have higher levels of social support than men (Collins et al., 1992; Beutel et al., 1999; Salvatore et al., 2001), there are also studies showing that men have higher levels of social support than women (Newton et al., 1999; Anderson et al., 2003).

The relationships between social support, which was proposed to act as a buffer against the stress of infertility (Helgeson 2003), and the severity of depressive symptoms and anxiety levels were evaluated with correlation analysis. It was found that when the cause of infertility was unknown and when both partners were infertile, the perceived social support was unrelated to emotional symptoms of the individuals. However, for women in female infertility and for men in male infertility, severity of depressive symptoms and anxiety levels had a negative relationship with perceived social support. According to this, when one spouse was the direct cause of infertility, emotional symptoms decreased as social support increased. The opposite of this was also true for both genders; as perceived social support decreased emotional symptoms increased. Previous studies revealed different findings. By pointing out that couples seek family and peer support instead of professional help, it was proposed that social support can decrease (Boivin et al., 1999) or increase emotional symptoms (Wilson and Kopitzke 2002; Mindes et al., 2003). On the other hand, infertile couples with sufficient social support were reported to perceive the situation less problematically than it really was, but in time if the perceived support became less helpful, difficulties would increase (Abbey et al., 1992).



The reasons for increased perceived social support and emotional symptoms in women compared to men are various. It can be proposed that during the evaluation of a possible threat, the availability of social support is more important to women than men (Abbey et al., 1992), or that women need social support more than men under stressful situations and therefore women open up and seek help more easily than men (Sorias, 1989). However, the relationship of the social environment can be positive with infertile women (Guerra et al., 1998), or it can be indifferent (Sandelowski and Jones, 1986) and negative (Güz et al., 2003). Moreover, social support defined as sufficient by women may also lead to emotional distress (Wilson and Kopitzke, 2002). For men, it can be proposed that as they are expected to solve their problems alone they use social support resources less (Sorias, 1989) or do not open themselves up and do not use coping mechanisms sufficiently (Kowalcek et al., 2001). Men can be prone to hiding their emotional distress in order to increase social acceptance or not to miss the available treatment options. In this case, it was proposed that repressed anxieties might create a risk for psychosomatic problems (Demyttenaere et al., 1998). In this regard, in contrast to women who were ready to share their problems, men in our sample were unwilling to, as well, perceived social support of both men and women who shared their problems decreased their both depressive symptom severity and levels of anxiety.

Sexual life should also be investigated in infertile couples, along with the relationship dynamics and emotional status (Boivin et al., 2001). From this perspective, the general evaluation of sexual functioning was similar within and between groups, and the common sub-dimensions of sexual functioning were similar within groups. However, as sexual non-communication and bodily touch were more problematic for men, women displayed avoidance behaviors more than men. In addition, the frequency of sexual intercourse in the FI group and sexual satisfaction in the BFMI group were the other sub-dimensions in which women had more problems than men. Our hypothesis that women have more sexual dysfunction than men was not validated as the general evaluation of sexual functioning of men and women was similar, and additionally, men reported more problems in the sub-dimensions.

Although individuals were specifically diagnosed in the study groups it was seen that they had problems in different sub-dimensions of sexual functioning, according to the scale used. As sexual dysfunction can be the direct cause of infertility and is investigated urologically

and gynecologically (Boivin et al., 2001), there was no information in this regard. Related to this, it was proposed that couples diagnosed with both infertility and sexual dysfunction perceive infertility as a more acceptable problem and prefer to be diagnosed as infertile instead of sexually dysfunctional, therefore solving the avoidance-avoidance conflict temporarily (Nene et al., 2005). On the other hand, it was found that men who did not have sexual dysfunction before the infertility diagnosis developed sexual dysfunction after the diagnosis (Saleh et al., 2003; Jannini et al., 2004). Sexual problems that are at the center of infertility can increase the risk of depression in both genders (Newton et al., 1999; Peterson et al., 2003) and in addition, sexual dysfunction can arise due to anxiety and depression developed at the time of infertility diagnosis and treatment (Ramezanzadeh et al., 2006). In our correlation analysis the sexual functioning of men and women was not related to emotional symptoms, only when the reason of infertility was unknown. Additionally, when one spouse was responsible for the infertility, either alone or with the partner, there was a direct relationship between sexual functioning, and the severity of depressive symptoms and anxiety levels. According to this it was found that when both the men and women were the reason for infertility, either alone or together, sexual functioning could be disrupted as emotional distress increase.

In a comparable study that used GRISS to examine the sexual functioning of infertile couples, similar to our findings there were no gender differences in the general sexual functioning total scores, however, in contrast to our findings, women scored significantly higher on the common sub-dimensions than men (Slade et al., 1997). In studies that used different measurements, one reported that men had more sexual dysfunction than women (Monga et al., 2004) and another reported that sexual dysfunction was more prevalent among women than men (Newton et al., 1999). Although it was proposed that the cause of infertility is not related to sexual satisfaction (Ramezanzadeh et al., 2006), it was reported that male infertility further disrupted both men's and women's sexual functioning (Newton et al., 1999). Another study reported that when the cause of infertility was unknown, there were no differences in terms of sexual satisfaction between men and women, and in the FI and BMFI groups women had less sexual satisfaction (Lee et al., 2001).

Although there can be differences due to measurement or sample characteristics, it is seen that sexual functioning and emotional status of the infertile couples

showed a parallel disruption. In societies in which being a woman equals motherhood and being a man equals productivity, infertility can be a risk to individual sexual identity (Mahlstedt, 1985). Exclusion of childless women by the society (Wright et al., 1989) and questioning men's masculinity (Mahlstedt, 1985) can result in emotional distress, disruption to the couples' relationship, and therefore, sexual dysfunction (Nene et al., 2005). When a woman's sexual intercourse style that is based on the ovulatory cycle for reproduction is combined with the man's anxiety about losing power, sexual dysfunction can develop as the spontaneity of sexuality is lost (Newton et al., 1999; Monga et al., 2004). Sexual interaction based on a calendar more than on the actual sexual interaction might lead to sexual problems by reminding the couple of their infertility (Boivin et al., 2001).

Of the 220 couples that agreed to participate in the study, both the total of Axis I psychiatric diagnoses of the sample (38.63%), and our finding regarding that adjustment disorder, anxiety disorders, and personality disorders were more prevalent are similar to previous findings (Guerra et al., 1998; Chen et al., 2004). However, these couples were excluded with other couples that did not fit the inclusion criteria as they did not represent the aims of the study. In addition, as exclusion of infertile couples with DSM-IV psychiatric Axis I diagnoses resulted in under representation of the quality and quantity of the emotional distress of the sample, it can be viewed as a limitation and a bias. On the other hand, in order to investigate the emotional reactions of infertile couples without psychiatric disorders, this limitation might have resulted in the homogeneity of the sample. As having no control group can be regarded as another limitation, it can be concluded that male and female individuals compose control groups for each other, as the aim was to investigate the gender differences among infertile couples in terms of emotional distress and sexual functioning problems. Exclusion of individuals with less than 11 years of education can be another limitation or bias due to under representation of that population; however, the reliability and validity study of BDI was conducted with

university students who had educations of more than 11 years (Hisli, 1989), and the test retest reliability of STAI-S/T was conducted with 2 different university samples (Aydemir and Köroğlu, 2000). It is believed that these findings overlap with the observations that individuals with less than 11 years of education can only respond to the questionnaires with help.

According to the present study, although women had more social acceptance than men, their emotional distress in terms of depressive symptoms severity and anxiety level was marked. Additionally, men had insufficient social acceptance and more problems in sexual functioning than women. Although it is not relevant to draw conclusions based on results of a homogeneous and original sample, the possible problem areas related to emotional and sexual life as a result of infertility and infertility treatment, and gender differences in this area are clear. Also, informing a couple that these problems can arise in different stages of diagnosis and treatment, and providing the relevant support when a problem is detected is important. In addition, studies reporting lower rates of pregnancy in couples with high levels of anxiety and depression suggest that detecting couples with these kinds of problems and providing the necessary support might increase the rate of pregnancy and decrease the cost of treatment (Mahlstedt, 1985; Slade et al., 1997; Boivin et al., 2001). Moreover, when a sexual functioning disorder is found to be the cause of infertility, informing the couple and referring them to relevant treatment instead of reproduction treatment seems logical. However, when the couple rejects psychiatric treatment and insists on using reproductive techniques, the method that will be chosen will be controversial, both medically and ethically (Boivin et al., 2001). As far as we know, as the number of studies in this area in Turkey is very limited, we believe that our study will be beneficial in providing psychiatric help at the proper time to infertile couples who seek reproductive treatment and we suggest that psychiatrists should directly participate in the evaluation of couples in infertility studies that require the collaboration of different disciplines.

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