The Effects of Infertility on Sexual Functions and Dyadic Adjustment in Couples that Present for Infertility Treatment.

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SUMMARY

Objective: The aim of this study was to determine the effects of infertility on sexual functions and dyadic adjustment in infertile couples that seek infertility treatment.

Materials and Methods: The Beck Depression Inventory (BDI), Golombok-Rust Inventory of Sexual Satisfaction (GRISS), and Dyadic Adjustment Scale (DAS) were administered to the infertility group (n = 220) and control group (n = 110). None of the study participants had an Axis I psychiatric disorder.

Results: There wasn't a significant difference in BDI score between the 2 groups. None of the study participants had clinical depression. Men in both groups reported more problems according to GRISS total scale and subscale scores (except the avoidance subscale) than the women. Women in both groups reported more problems according to GRISS avoidance subscale score than did the men. Men in the control group reported more problems on the GRISS frequency subscale, as compared men in the infertile group. Women in the control group reported more problems based on GRISS total score, and GRISS frequency, satisfaction, touch, and avoidance subscale scores, as compared to the women in the infertile group. The men in the infertile group were more satisfied with dyadic adjustment than the women in the infertile group. The men and women in the control group had higher DAS total score, and DAS consensus and emotional expression subscale scores.

Conclusion: The differences in sexual functions between the infertile and control groups were not significant. Both women and men in the infertility group reported more dyadic adjustment problems than those in the control group.

Key words: Infertility, depression, sexual dysfunction, couple, marital

INTRODUCTION

Infertility is a significant health problem that affects 1/6 of all couples. Due to the rapid development of assisted reproductive techniques, it has become a common topic in the society (Yenilmez 2003). Infertility has a negative affect on self-respect and self-identity (Müler et al. 1999). Social and familial pressures to reproduce couples with infertility get exhausted due to the social and familial pressures to reproduce. In addition, physical, psychological, and economic difficulties associated with assisted reproductive techniques may affect the couples in the future (Monga et al. 2004).

Men and women perceive their bodies and infertility differently, and exhibit different coping mechanisms and psychiatric symptoms (Özçelik et al. 2007). Regardless of the fact that infertility may or may not be due to the female in a couple, it is expected that she will be more negatively affected by infertility than the man (Repokari et al. 2007), as she will undergo complicated in vitro treatments even when the man has the infertility problem (Özçelik et al. 2007). Research shows that women in infertile couples have more psychiatric symptoms than men (Christie et al. 1998; Lee et al. 2000; Wischmann et al. 2001; Özçelik et al. 2007).

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Table 1. Comparison of sociodemographic data from the infertile and the control groups.

	Infertile Group (n= 220)		Control Group (n = 110)		P
	Mean ± SD		Mean ± SD		
Difference in age between spouses (years)	4.17 ± 2.97		3.49 ± 2.28		<0.05
Age at the time of marriage (years)	24.25 ± 5.52		23.27 ± 3.58		ns
Duration of marriage (years)	8.41 ± 5.47		9.66 ± 5.81		ns
Level of education (years)	8.28 ± 3.38		10.50 ± 4.28		<0.001
	n	%	n	%	
Place of birth					
Rural	122	55	40	37	<0.001
Urban	98	45	70	73	
Place of residence					
Rural	52	24	7	6	<0.001
Urban	168	76	103	94	
Professional status					
Unemployed	97	44	31	28	<0.001
Employed	123	66	79	72	
Level of income					
≤500 TL	117	53	10	9	<0.001
500-1500 TL	99	45	67	61	
≥1500TL	4	2	33	30	
Type of marriage					
Without dating	133	61	40	36	<0.001
With dating	87	39	70	64	
Kinship between spouses					
Yes	21	10	5	4.5	ns
No	199	90	105	95.5	

ns: not significant; P < 0.05: significant difference; P < 0.01: highly significant difference ; P < 0.001: very highly significant difference.

The stress related to infertility leads to marital conflict, a decrease in the frequency of sexual intimacy, and feelings of inadequacy as a woman or man (Monga et al. 2004). Schmidt et al. (2005) suggest that couples that undergo infertility treatments view the diagnosis and treatment as a threat, which strengthens the marital bond. On the other hand, Leiblium et al. (1998) compared 3 groups in terms of marital harmony; couples that had undergone unsuccessful infertility treatment, couples that had children via infertility treatments, and couples that adopted children. Couples that had no children had significantly less marital harmony and more marital problems than the other 2 groups; however, there wasn't a significant difference in marital harmony between the couples that adopted children and those that had children via infertility treatment. Other studies reported that there wasn't a significant difference between infertile couples and fertile couples in terms of harmony and marital satisfaction (Wright et al. 1991).

Finding related to the effects of infertility on sexual satisfaction are inconsistent. In 1 study women had less sexual satisfaction than men (Müler et al., 1999), whereas Monga et al. (2004) did not observe a significant difference between men and women in terms of sexual satisfaction. Infertile couples must constantly monitor ovulation and menstrual cycles, and view sexuality as a means to an end¾reproduction. This may cause women to consider sexual intercourse as meaningless during infertile periods (Elliott 1998). In addition, tracking pregnancy may lead some men to lose their interest in sex or develop erectile dysfunction, and they may be anxious due to the pressure to perform well. Oppositional thoughts about getting pregnant may cause inhibited ejaculation (Elliott, 1998).

Some studies suggest that sexual dysfunction decreases fertility and that premature ejaculation is the most common dysfunction related to infertility (Müler et al. 1999; Schindel et al. 2008). Depression and sexual dysfunction are common among infertile couples, but men may also have an effect on women's sexual function problems (Nelson et al. 2008). A study on infertile women in India reported that 52.5% of the participants had at least 1 sexual dysfunction, and that the

Table 2. Comparison of infertile group data according to gender.

	Women (n = 109)	Men (n = 111)	P
	Mean ± SD	Mean ± SD	
DAS total	59.63 ± 8.99	59.95 ± 8.38	Ns
	Median (25%-75%)	Median (25%-75%)	
DAS cohesion	14 (11-17)	14 (11-17)	ns
DAS consensus	10 (4-16)	8 (3-15)	ns
DAS affectionate expression	3 (1.5-4)	3 (2-4)	ns
DAS satisfaction	32 (29-34)	34 (31-35)	<0.01
GRISS total	21 (14-30)	43 (40-46)	<0.001
GRISS frequency	2 (1-3)	4 (3-4)	<0.001
GRISS communication	2 (0-4)	6 (4-7)	<0.001
GRISS satisfaction	3 (2-5)	8 (7-8)	<0.001
GRISS touch	2 (0-4)	11 (10-12)	<0.001
GRISS avoidance	2 (0-4)	1 (0-2)	<0.001
BDI	6 (4-11)	5 (4-10)	ns

DAS: Dyadic Adjustment Scale; GRISS: Golombok-Rust Inventory of Sexual Satisfaction; BDI: Beck Depression Inventory. ns: not significant; P < 0.05: significant difference; P < 0.01: highly significant difference; P < 0.001: very highly significant difference.

Table 3. Comparison of control group data according to gender.

	Women (n = 64)	Men (n = 46)	P
	Mean ± SD	Mean ± SD	
DAS cohesion	13.43 ± 4.6	14.02 ± 3.77	ns
	Median (25%-75%)	Median (25%-75%)	
DAS total	66 (59.75-74)	68 (62.5-72.5)	ns
DAS consensus	17 (10-24)	16 (9.5-22)	ns
DAS affectionate expression	5 (4-7)	5 (4-7)	ns
DAS satisfaction	31 (27.75-34)	32 (29-34)	ns
GRISS total	27 (18-41)	44 (41-47.5)	<0.001
GRISS frequency	3 (2-4)	4 (3-4)	<0.01
GRISS communication	2 (1-4)	6 (4.5-7)	<0.001
GRISS satisfaction	4 (2-8)	8 (7-9)	<0.001
GRISS touch	3 (1-5)	11 (10-12)	<0.001
GRISS avoidance	4 (2-6)	1 (0-4)	<0.001
BDI	8 (4-13)	6 (3-10.5)	NS

DAS: Dyadic Adjustment Scale; GRISS: Golombok-Rust Inventory of Sexual Satisfaction; BDI: Beck Depression Inventory. ns: not significant; P < 0.05: significant difference; P < 0.01: highly significant difference; P < 0.001: very highly significant difference.

most common types of sexual dysfunction were a decrease in the frequency of sexual intercourse and anorgasmia (Jindal et al. 1990). In another study that included 100 infertile Iranian women, only 7% of the women reported healthy sexual functioning and the most common disorder was sexual arousal disorder (Khademi et al. 2008). Cultural differences may play a role in the differences in findings about the relationship between infertility and sexual dysfunction (Nelson et al., 2008).

There are a limited number of studies that have investigated the relationship between infertility and sexual functions in Turkey (Özkan et al. 2006; Karlıdere et al. 2007). Karlıdere et al. (2007) grouped infertile couples according to the cause of infertility to make comparisons, but did not include a control group. Özkan et al. (2006) investigated infertility in a group of women. Although many studies have investigated infertility, they did not use standardized scales that measure sexual functions and did not include control groups. In addition, most of these studies investigated only infertile women, rendering the findings insufficient.

The present study aimed to investigate the effects of infertility on sexual functions and dyadic adjustment in infertile couples undergoing infertility treatment, as compared to a control group. If infertility has negative effects on sexuality and dyadic adjustment, infertile couples may be more successful reproducing and overcoming such negative effects if they are indentified.

METHOD AND MATERIALS

The infertile group consisted of couples with primary infertility that were not able to have children for at least 1 year and sought treatment at the Eskişehir Osmangazi University Medical School Reproductive Health Center. Couples were assessed for the study after they applied for treatment. Couples were informed about the study and consent forms were signed. Attending and resident psychiatrists assessed each participant for Axis I disorders according to the American Psychiatric Association (1994) Diagnostic and Statistical Manual of Mental Disorders 4th Edition (DSM IV). After interviewing and assessment, couples without Axis I disorders that had at least an elementary school education and had no other illness other than infertility were included in the study.

The control group consisted of couples aged 18-45 years that had at least 1 child, could bear children within a year, never had infertility treatment, didn't have psychiatric or other medical illness, and had at least an elementary school education. The control group participants were randomly chosen from among the relatives of hospital staff, medical school students, and the patients that met the study inclusion criteria.

The Eskişehir Osmangazi University Medical School Ethics Committee approved the study protocol. The infertile group consisted of 240 participants (all couples, 120 men and 120 women) and the control group consisted of 152 participants (all couples, 76 men and 76 women). Participants that did not fully complete the assessment forms were excluded from the study. Statistical assessment consisted of 220 participants from the infertile group (216 from couples, 111 men and 109 women) and 110 participants from the control group (86 from couples, 46 men and 64 women). Participants were assessed using a sociodemographic data form, the Beck Depression Inventory (BDI), the Golombok-Rust Inventory of Sexual Satisfaction (GRISS), and the Dyadic Adjustment Scale (DAS).

Table 4. Comparison of BDI, DAS, and GRISS total and subscale scores for the women in the infertile and the control groups.

	Infertile Group (n = 109) Median (25%-75%)	Control Group (n = 64) Median (25%-75%)	P
DAS total	60 (52.5-66)	66 (59.75-74)	<0.001
DAS cohesion	14 (11-17)	13 (10.75-17.25)	ns
DAS consensus	10 (4-16)	17 (10-24)	<0.001
DAS affectionate expression	3 (1.5-4)	5 (4-7)	<0.001
DAS satisfaction	32 (29-34)	31 (27.75-34)	ns
GRISS total	21 (14-30)	27 (18-41)	<0.01
GRISS frequency	2 (1-3)	3 (2-4)	<0.01
GRISS communication	2 (0-4)	2 (1-4)	ns
GRISS satisfaction	3 (2-5)	4 (2-8)	<0.01
GRISS touch	2 (0-4)	3 (1-5)	<0.01
GRISS avoidance	2 (0-4)	4 (2-6)	<0.001
GRISS anorgasmia	5 (4-7)	5 (4-7.25)	ns
GRISS vaginismus	5 (2-7)	5 (3-7)	ns
BDI	6 (4-11)	8 (4-13)	ns

DAS: Dyadic Adjustment Scale; GRISS: Golombok-Rust Inventory of Sexual Satisfaction; BDI: Beck Depression Inventory. ns: not significant; P < 0.05: significant difference; P < 0.01: highly significant difference; P < 0.001: very highly significant difference.

BDI was developed by Beck et al. (1961) and was adapted to Turkish by Hisli (1989); it has significant validity and reliability. BDI consists of 21 questions that are answered on a 4-point Likert-type scale (0-3). The maximum BDI score is 63 and the minimum score is 0. Total scores of 17 and above indicate possible depression.

GRISS was developed by Rust and Golombok (1986), and Tuğrul et al. (1993) reported that the Turkish version is reliable and valid. It consists of 28 questions that assess sexual problems and their severity. Its subscales include impotence, anorgasmia, vaginismus, communication, frequency, avoidance, touch, and satisfaction. Higher scores indicate lower quality of sexual functioning and dyadic adjustment.

DAS was developed by Spanier (1976), and Fışıloğlu and Demir (2000) reported that the Turkish version is reliable and valid. DAS consists of 32 items and couples rate their relationship according to their perception of it. DAS is commonly used to assess dyadic adjustment and marital satisfaction. DAS includes 4 subtests: dyadic consensus, dyadic satisfaction, affective expression, dyadic cohesion. Total score represents the level of marital satisfaction and contentment. DAS scores vary between 0 and 151, and higher scores indicate greater marital or relationship harmony.

Frequency analysis was performed with the data acquired from the infertile and control groups. Student's t-test was used for the data with normal distribution according to the Kolmogorov-Smirnov test. The Mann-Whitney U (MW) test was used for data that were not normally distributed. Fisher's c^2 test was used to compare the birthplace and professional status of the participants in the infertile and the control groups. Pearson's c^2 test was used to compare the level of income, marital status, and kinship between the couples. McNemar's c^2 test was used to compare the place of residency. Spearman's rank correlation analysis (rs) was used to investigate the relationship between DAS and GRISS total scores in the men and women separately. Spearman's rank correlation (rs) was used to assess the relationship between GRISS and DAS total scores, and sociodemographic features for variables without normal distribution. Kendall Tau-b was used for variables with approximate interval values or sequential scale values. In order to assess the consistency between the couples from the sample group in terms of GRISS and DAS scores, Kendall Tau-b correlation was used, which indicates the association between the variables. As this correlation investigates the consistency of test scores that are obtained from couples, participants not in a couple were excluded from the analysis. This study's effect size was 0.99. Statistical significance was considered $p < 0.05$ (Özdamar 2009).

RESULTS

Mean age of the men in the infertile group (n = 111) was 34.8 ± 6.4 years. Mean age of the women in the infertile group (n = 109) was 30.7 ± 5.6 years. There was a significant difference in age between the men and women in the infertile group (t [218] = 4.974, P < 0.001). Mean age of the men in the control group (n = 46) was 34.1 ± 4.5 years. Mean age of the women in the control group (n = 64) was 32.1 ± 4.7 years. There was a significant difference in age between the men and women in the control group (t [108] = 2.213, P < 0.05); however, there wasn't a significant difference in age between men in the control group and those in the infertile group. Additionally, there wasn't a significant difference in age between women in the control

Table 5. Comparison of BDI, DAS, and GRISS total and subscale scores for the men in the infertile and the control groups.

	Infertile Group (n = 111) Mean ± SD	Control Group (n = 46) Mean ± SD	P
DAS total	59.95 ± 8.38	67.86 ± 10.11	<0.001
	median (25%-75%)	median (25%-75%)	
DAS cohesion	14 (11-17)	14 (11.5 -17)	ns
DAS consensus	8 (3-15)	16 (9.5 -22)	<0.001
DAS affectionate expression	3 (2-4)	5 (4-7)	<0.001
DAS satisfaction	34 (31-35)	32 (29-34)	<0.05
GRISS total	43 (40-46)	44 (41-7.5)	ns
GRISS frequency	4 (3-4)	4 (3-4)	<0.05
GRISS communication	6 (4-7)	6 (4.5 - 7)	ns
GRISS satisfaction	8 (7-8)	8 (7-9)	ns
GRISS touch	11 (10-12)	11 (10-12)	ns
GRISS avoidance	1 (0-2)	1 (0-4)	ns
GRISS impotence	8 (7-8)	8 (7-9)	ns
GRISS premature ejaculation	6 (4-7)	6 (4-8)	ns
BDI	5 (4-10)	6 (3-10.5)	ns

DAS: Dyadic Adjustment Scale; GRISS: Golombok-Rust Inventory of Sexual Satisfaction; BDI: Beck Depression Inventory. ns: not significant; P < 0.05: significant difference; P < 0.01: highly significant difference; P < 0.001: very highly significant difference.

group and those in the infertile group. When the difference in age between the men and women was compared between the 2 groups, women in the infertile group were significantly younger than their husbands, as compared to the women in the control group (t [328] = 2.101, P < 0.05). The difference in age between the men and women in the infertile group was 4.2 ± 2.9 years, versus 3.5 ± 2.3 year in the control group.

There wasn't a significant difference in such sociodemographic factors as age when married or the duration of marriage between the infertile and control groups. The level of education in the control group was significantly higher than that in the infertile group

(t [328] = –5.115, P < 0.001). More of the participants in the infertile group were born in towns and villages than those in the control group (c^2 [1, n = 330] =10.69, P < 0.001). More participants in the infertile group lived in towns and villages for the last 5 years, as compared to those in the control group (c^2 [1, n = 330] = 14.44, P < 0.001). Comparison of professional status and level of income showed that more of the participants in the infertile group were unemployed (c^2 [1,n = 330] = 7.82, P < 0.01). Approximately half of the participants in the infertile group had low-level income (£500 TL) (c^2 [1, n = 330] = 92.68, P < 0.001). There was a significant difference between the groups in terms of marriage type. More of the couples in the infertile group met through friends and relatives, and got married without dating, whereas more of the couples in the control group dated and then got married (c^2 [1, n = 330] = 17.09, P < 0.001). There wasn't a difference between the 2 groups in terms of kinship between couples. A comparison of the sociodemographic factors in the 2 groups is shown in Table 1.

Of the 220 participants in the infertile group, 48 (22%) had inexplicable infertility and 178 (78%) had infertility due to organic causes. Among these 220 participants, 21 (9%) were infertile due to reasons related to the women, 111 (51%) were infertile due to reasons related to the men, and 40 (18%) were infertile due to reasons related to both the women and men. Mean duration of infertility was 7 years in the infertile group, and 42% (n = 92) of the infertile group received treatment and 56% (n = 123) did not.

Four groups were formed based on gender and were analyzed for the effects of infertility on dyadic adjustment and sexual functions. The infertile group and the control group were compared within groups according to gender. Then, women in the infertile group were compared to the women in the control group, and men in the infertile group were compared to those in the control group

The Kolmogorov-Smirnov test was used to evaluate the data obtained from the men and women in the infertile group. Only DAS total score was normally distributed. There wasn't a significant difference in BDI, DAS cohesion, DAS consensus, DAS affective expression, or DAS total score between the men and women. As compared to the women in the infertile group, the men in the infertile group had significantly higher GRISS total scale score (z = –10.58, P < 0.001), GRISS frequency subscale score (z = –7.01, P < 0.001), GRISS communication subscale score (z = –8.99, P < 0.001), GRISS satisfaction subscale score (z = –10.18, P < 0.001), and GRISS touch subscale score (z = –12.65, P < 0.001). DAS dyadic satisfaction subscale scores were significantly higher in the men in the infertile group than in the women (z = –2.65, P < 0.01). Women in the infertile group had significantly higher

Table 6. Analysis of the relationship between DAS and GRISS total score, and sociodemographic variables.

	Infertile Group (n = 220)				Control Group (n = 110)			
	Women (n = 109)		Men (n = 111)		Women (n = 64)		Men (n = 46)	
	DAS Total	GRISS Total	DAS Total	GRISS Total	DAS Total	GRISS Total	DAS Total	GRISS Total
Difference in age between spouses (years)	0.094	0.040	–0.041	0.021	–0.041	–0.073	0.037	0.171
Age at the time of marriage (years)	–0.095	–0.064	0.056	0.055	–0.122	0.071	0.015	0.203
Duration of marriage (years)	0.058	0.145*	0.119	0.074	0.097	–0.164	0.086	–0.127
Level of educational level (years)	0.066	0.042	0.126	0.024	–0.038	–0.184*	0.003	0.006
Place of birth	0.016	0.005	–0.044	–0.041	0.011	0.072	0.016	–0.184*
Place of residence	–0.023	–0.038	0.136	0.042	0.018	–0.135	0.105	–0.087
Professional status	–0.046	0.167*	0.001	0.026	–0.053	–0.104	_	_
Level of income	0.073	0.121	0.147	–0.002	–0.025	–0.233*	–0.218*	0.110
Type of marriage	0.008	–0.005	0.093	0.064	0.045	0.032	–0.211*	0.036
Kinship between spouses	–0.136	–0.086	–0.066	0.082	–0.130	0.113	–0.262*	0.124

DAS: Dyadic Adjustment Scale; GRISS: Golombok-Rust Inventory of Sexual Satisfaction. *P < 0.05

GRISS avoidance subscale scores than the men in ($z = –3.69$, $P < 0.001$) A comparison of the data obtained from the men and the women in the infertile group is shown in Table 2.

Among the data obtained from the men and the women in the control group, only DAS cohesion subscale sores were normally distributed. There wasn't a significant difference in BDI, or DAS total and subscale scores between the men and women in the control group. As compared to the women in the control group, the men in the control group had significantly higher GRISS total scale score ($z = –5.63$, $P < 0.001$), GRISS frequency subscale score ($z = –3.22$, $P < 0.001$), GRISS communication subscale score ($z = –6.01$, $P < 0.001$), GRISS satisfaction subscale score ($z = –5.65$, $P < 0.001$), and GRISS touch subscale score ($z = –8.20$, $P < 0.001$). Women in the control group had significantly higher GRISS avoidance subscale score than the men ($z = –4.51$, $P < 0.001$). A comparison of the data obtained from the men and the women in the control group is shown in Table 3.

Comparison of the data obtained from the women in the infertile and control groups using the Kolmogorov-Smirnov test showed that none of the variables were normally distributed. There wasn't a significant difference between the 2 groups in terms of BDI, DAS satisfaction, DAS cohesion, GRISS communication, GRISS vaginismus, or GRISS anorgasmia scores. As compared to the women in the infertile group, those in the control group had significantly higher DAS total scale score ($z = –4.27$, $P < 0.001$), DAS consensus subscale score ($z = –4.67$, $P < 0.001$), and DAS affective expression subscale score ($z = –5.46$, $P < 0.001$). The women in the control group also had significantly higher scores than the women in the infertile group on the GRISS total scale ($z = –2.61$, $P < 0.01$), GRISS frequency subscale ($z = –2.70$, $P < 0.01$), GRISS satisfaction subscale ($z = –2.66$, $P < 0.01$), GRISS avoidance subscale ($z = –3.76$, $P < 0.001$), and GRISS touch subscale ($z = –2.89$, $P < 0.01$). A comparison of the BDI, DAS, and GRISS total scale and subscales data is shown in Table 4.

Comparison of the data obtained from men in the infertile and control groups showed that none were normally distributed, except for DAS total score. There wasn't a significant difference between the 2 groups in terms of GRISS total and all subscale scores, except for GRISS frequency subscale score. There wasn't a significant difference between the 2 groups in terms of DAS cohesion subscale. Men in the control group had higher DAS total scale score ($z = –5.05$, $P < 0.001$), DAS consensus subscale score ($z = –4.30$, $P < 0.001$), DAS affective expression subscale score ($z = –5.00$, $P < 0.001$), and GRISS frequency subscale score ($z = –2.12$, $P < 0.05$). Only the DAS satisfaction subscale score was higher ($z = –2.41$, $P < 0.05$) among the men in the infertile group, as compared to the men in the control group. A comparison of the BDI, DAS, and GRISS total scales and subscales data obtained from the men in the infertile and control groups is shown in Table 5.

Spearman's correlation test was used to evaluate the relationship between DAS and GRISS total scores among the women and men in the infertile and control groups. Women in the control group had $P > 0.05$, $rs = 0.176$, men in the control group had $P > 0.05$, $rs = –0.231$, women in the infertile group had $P > 0.05$, $rs = 0.169$, men in the infertile group had $P > 0.05$, $rs = 0.165$. There wasn't a statistically significant relationship between the 4 groups in terms of GRISS and DAS total scale scores.

Among the entire study population (n = 330), DAS cohesion

subscale scores for the men and the women were similar ($P > 0.05$ Mmen = 62, Mwomen = 62). There was a difference between men and women in terms of GRISS sexual satisfaction score (Mwomen = 22, Mmen = 43, $P < 0.001$). In order to assess inter-couple cohesion, DAS scores of the spouses were evaluated using Kendall Tau-b correlation; the coefficient was 0.206, which is low, but had a significance of $P < 0.001$. In accordance, the couples were coherent; however, in terms of sexual satisfaction there was no cohesion between the GRISS scores of the spouses ($P > 0.05$, Kendall Tau-b coefficient = 0.055,). GRISS scores for the men in the infertile group was Mmen = 43, whereas it was Mwomen = 21 for women. Women had significantly lower GRISS scores ($P < 0.001$) (MW test = 1057.00, z = –10.58). In the control group Mmen was 44.5 and Mwomen was 27. Women in the control group had lower GRISS scores (MW = 532.00, z = –5.630, $P < 0.001$).

The relationship between DAS and GRISS total score, and sociodemographic variables was evaluated. There was a positive correlation between GRISS total score, and the duration of marriage ($P < 0.05$, rs = 0.145) and professional status ($P < 0.05$, $t_b = 0.167$) among the infertile women. There wasn't a correlation between GRISS and DAS total score, and sociodemographic variables. There was a negative correlation between GRISS total score and level of educational ($P < 0.05$, rs = –0.184) and level of income ($P < 0.05$, $t_b = –0.218$) among the women in the control group. There was a negative correlation between GRISS total score and place of birth ($P < 0.05$, $t_b = –0.184$) among the men in the control group. There was also a negative correlation between DAS total score and level of income ($P < 0.05$, $t_b = –0.218$), type of marriage ($P < 0.05$, $t_b = –0.211$), and kinship between spouses ($P < 0.05$, $t_b = –0.262$) among the men in the control group. Results of the analysis of the relationship between DAS and GRISS total scale score, and sociodemographic factors among the groups are shown in Table 6.

DISCUSSION

Comparison of sociodemographic factors in the infertile and control groups showed that the infertile group had more participants that were born and living in towns and villages. Unemployment and low-level income (≤500 TL) was more prevalent in the infertile group than the control group. The difference in age between the men and the women was significantly greater in the infertile group, which means that women in the infertile group were significantly younger than their husbands. More of the couples in the infertile group got married without dating and more of the couples in the control group got married after dating. In addition, the level of educational was higher in the control group.

There were 2 studies that evaluated sexual functions and marital harmony in infertile women. Similar to the results of the present study, Oğuz (2004) found that fewer of the women in the infertile group had a low-level of income (<500 TL) and reported getting married without dating; however, Oğuz (2004) did not observe a difference between the 2 groups in terms of the difference in age between the spouses, level of educational level, and place of birth. Tashbulatova (2007) reported that more than half of the infertile group had a low-level of income (≤500 TL) and that there was a positive correlation between income and sexual functioning. Tashbulatova (2007) suggested that dyadic adjustment positively affected sexual functioning in the couples and that most of the infertile group consisted of couples that got married without dating. There was a positive correlation between getting married without dating and sexual dysfunction. Results of the present study suggest that getting married without dating was more prevalent in the infertile group; however, there wasn't a difference between the 2 groups in terms of sexual functions. The present results do not suggest that the type of marriage affected sexual functions and do not support Tashbulatova's (2007) findings.

Tashbulatova (2007) reported that Lauman et al. suggest that there is a negative correlation between level of educational and sexual functions and that there is a positive correlation between level of educational and satisfaction, sexual desire, and orgasm. Results of the present study indicate that the control group had a higher level of education and that there wasn't a difference between the 2 groups in terms of sexual functions.

Another study (Müler et al. 1999) suggests that there is a positive correlation between the difference in age between spouses and men's sexual satisfaction and that the frequency of sexual activity is the most important predictor of sexual satisfaction. The present study's results show that the difference in age between spouses was greater in the infertile group, but that there wasn't a difference between the 2 groups in terms of sexual functions. The frequency of sexual intercourse was higher among the men in the infertile group, but there wasn't a difference between the men in the 2 groups in terms of other sexual function subscales.

GRISS total score, which indicates the quality of sexual experience, showed that there was a positive relationship between duration of marriage and professional status among the women in the infertile group, which means that as women in the infertile group stayed married longer and worked, the quality of their sexual experiences declined. There wasn't a statistically significant relationship between sociodemographic variables and marital harmony among the women in the infertile group. There also wasn't a statistically significant relationship between sociodemographic variables and marital harmony or quality of sexual experiences among the men in the infertile group. There was a positive relationship between the level of

education as well as level of income, and quality of sexual experiences among the women in the control group. Living in a city was associated with a decrease in the number of sexual problems among the men in the control group. As the level of income increased, kinship between spouses declined and more spouses got married after dating, and problems in dyadic adjustment decreased among the men in the control group.

BDI depression scores indicated that none of the study participants had clinical depression. There wasn't a difference between the groups in terms of BDI score. This result was expected because participants with Axis I disorders were excluded from the study. Men in the infertile group reported having more problems than women in the infertile group on all subscales of quality of sexual experience, except for the avoidance subscale. Women in the infertile group reported more problems compared to men in the infertile group on the avoidance subscale. Karlıdere et al. (2007) reported that there wasn't a difference between the men and women in the infertile group, in terms of sexual function score, but the men in all groups reported more problems on the communication and touch subscales, and the women in all groups reported more problems on the avoidance subscale. The results of the present study show that men in the infertile group reported more problems related to sexual dysfunction. The results of the present study support others that suggest 51% of infertility is due to the men in infertile couples and that 80% of those men have sexual dysfunction (Eliot 1998; Özçelik et al. 2007); however, similar results were also reported in the control group, which suggests that there isn't a significant relationship between infertility and the results.

The results of the present study not support others that suggest couples accept infertility more easily than sexual dysfunction, because it is less stigmatizing. It also not supports other studies which suggested that infertility may lead to sexual dysfunction (Müler et al. 1999; Schindel et al. 2008). This is because there was no difference between the men in both groups in terms of impotence and erectile dysfunction, and as the men reported more problems with sexual functioning it was not related to infertility.

Many studies report that 1 out of 3 people experience at least 1 type of sexual dysfunction during a lifetime (CETAD 2006a). In Turkey the most common problems that lead to sexual dysfunction are a lack of knowledge about sexuality (62%) and prejudice/taboos (40%). Other problems include the social approach to sexuality not clear in the text and traditions/customs, psychological problems, and stress (CETAD, 2006a). When the power and the prevalence of the sexual problem precursors in the society are taken into account, it is difficult to determine the relationship between infertility and sexual dysfunction. It was observed in the present study that the men in both groups reported more sexual problems than the women. The women may have reported fewer sexual problems due to cultural reasons. In Turkish culture it is unacceptable for women to discuss or acknowledge their sexuality. Most sexual beliefs in Turkish society are exaggerated, common, and wrong. Most of these beliefs are condescending towards women and trivialize them; sexuality and sexual satisfaction is only for men, and women are considered to be men's property for sexuality (CETAD, 2006a). That is why, there may be different reasons behind the results that suggest a gender difference in terms of sexual complaints. One of those reasons could be that the women didn't think they had a right to sexual satisfaction. They may also have been shy about sexuality. They may have had less knowledge about sexuality and therefore reported fewer problems.

Nelson et al. (2008) reported that there wasn't a difference between infertile women and women in the general population, in terms of sexual dysfunction. The results of the present study show that women in the control group reported more problems on the frequency, satisfaction, avoidance, and touch subscales than the women in the infertile group. Studies show that women in Turkey do not know much about reproductive biology. Although it is easy for even little boys to discover how to obtain sexual pleasure, most women live, grow up, give birth, age, and die without such discovery. In Turkey 64% of single women are virgins, which indicates that women in Turkey get married with little sexual experience or knowledge (CETAD, 2006b). There may have been fewer reports of sexual problems in the infertility group because even though infertility treatment aims for reproduction, patients are educated directly or indirectly, and guided towards an active sexual life during treatment. Another reason the women in the infertility group may have had fewer sexual complaints could be that they focused on reproduction rather than sexual pleasure. Although the men in both groups reported similar sexual problems, more of the men in the control group had frequency problems than those in the infertile group. This supports the results of Monga et al. (2004) that indicated the need to reproduce might increase the frequency of sexual intercourse.

Studies that have investigated the relationship between infertility and marital harmony reported varying results. Some studies suggest that infertile women had more marital harmony problems than infertile men (Daniluk 1988; Benazon et al. 1992; Lee et al. 2000). Monga et al. (2004) reported that infertile men had more marital harmony problems than infertile women. Lee et al. (2001) observed that if infertility was due to women or men only, women had more marital harmony problems, whereas if infertility was due to both women and men, or was inexplicable there wasn't a difference between the genders in terms of marital harmony. Another study suggested that there wasn't a difference between the genders in terms of marital harmony (Markestad et al. 1998). The present study shows that the men in the infertile group had higher DAS satisfaction scores than the women in the

infertile group; however, there wasn't a difference between the infertile men and women in terms of the other DAS scores.

Some studies reported that there wasn't a difference between women in the infertile and control groups in terms of marital harmony (Eliot 1998; Markestad et al. 1998; Wright 1998; Oğuz 2004). Others reported that women in the infertile group had lower levels of marital satisfaction (Bringhenti et al. 1997; Monga et al. 2004). Taşçı et al. (2008) observed that when infertile women were regrouped according to the cause of infertility, no difference was observed between the groups in terms of marital harmony and all groups were harmonious. Weaver et al. (1997) did not observe a difference between infertile and fertile women in terms of marital harmony. The present study's results show that both men and women in the infertile group had lower consensus and affective expression subscale scores on the dyadic adjustment scale than the men and women in the control group. The consensus subscale measures the level of agreement on major marital subjects, whereas the affective expression subscale measures acts of love and agreement on the concept of love. Infertile couples may have equal or higher levels of marital harmony than fertile couples because in order to remain married they have go through the crisis and infertility treatment for long periods, make decisions together, and share affection (Lalos et al. 1985). There may be many reasons for marital problems among the infertile group correlation results in the present study show that there wasn't a significant relationship between sexuality and marital problems. A significant relationship was not observed between the sociodemographic factors and marital harmony among the women and men in the infertile group. There was a relationship between the level of income, getting married after dating, and kinship between the spouses among the men in the control group. Traditions, beliefs, and attitudes about reproduction or infertility were not investigated in the present study. More comprehensive research that investigates the factors that negatively affect dyadic adjustment among infertile couples is warranted.

Other variables, such as low level of education, getting married without dating, and low level of income that were related to sexual problems in other studies were not more prevalent among the infertile group in the present study. Thus, even though it was expected that the infertile group would have more sexual problems, there wasn't a difference between the 2 groups. The socioeconomic differences between the 2 groups in the present study might have limited the usefulness of the results. Another limitation of the present study is that the control group participants did not go through a clinical interview. In addition, the infertile group consisted of 76 couples after 21 men and 3 women were excluded from the study because they did not fully complete the forms. The fact that some spouses were not included in the study may also limit the usefulness of the present results; however, DAS collects self-reported data on the marital relationship from each member of the couple separately. It does not require that the couple answer the questions together or that the answers of each spouse be scored in relation to the answers of his/her partner (Fışıloğlu and Demir 2000). In addition, Kendall Tau-b coefficients for spouses were similar to the coefficients for the entire group.

Sexuality and sexual activity play an important role in the expression of feelings of closeness and intimacy between 2 people (Repokari et al. 2007). Sexual cohesion is also important for marital cohesion (Erberk et al. 2005). As the men in the present study's control group reported sexual problems that were similar to those reported by the men in the infertile group, these problems were considered to be common and independent of infertility; however, lack of sexual knowledge was the most important cause for the reported sexual problems. Thus, it is important to document patient sexual history, perform thorough assessment, and educate during consultations. The present study is among the few that examined infertility in Turkey. It is the first study to compare infertile couples with a control group, which makes the results especially valuable. The present results show that infertile couples had dyadic adjustment problems. We think that psychiatrists must be involved in infertility treatment in order to assess the marital relationship and address any associated problems. In addition, future studies should investigate the risk factors that negatively affect dyadic adjustment in infertile couples, and the prevalence of sexual dysfunction/sexual problems in the society and the related factors.

REFERENCES

Amerikan Psikiyatri Birliği (1994) Mental Bozuklukların Tanısal ve Sayımsal El Kitabı, Dördüncü Baskı (DSM-IV) (Çev. ed.: E Köroğlu) Hekimler Yayın Birliği, Ankara, 1995.

Beck AT, Ward CH, Mendelson M et al. (1961) An inventory for measuring depression. Arch Gen Psychiatry, 4:53-63.

Benazon N, Wright J, Sabourin S (1992) Stres, sexual satisfaction, and marital adjustment in infertile couples. J Sex Marital Ther, 18: 273-284.

Bringhenti F, Martinelli F, Ardenti R et al. (1997) IVF tedavisine alınan kadınların psikolojik değerlendirilmesi: ayırıcı özellikleri ve etkileyen faktörler. Acta Obstet Gynecol Scand, 76: 431-7.

CETAD (2006a) Cinsel sağlık ve üreme sağlığı alanında ulusal ve yerel medya yoluyla savunuculuk projesi, Bilgilendirme dosyası1:Cinsel yaşam ve sorunları, Şahin D, Şimşek F, Seyisoğlu H (ed).

CETAD (2006b) Cinsel sağlık ve üreme sağlığı alanında ulusal ve yerel medya yoluyla savunuculuk projesi, Bilgilendirme dosyası 5: Kadın cinselliği,Yüksel Ş, Cindoğlu D (ed).

Daniluk JC (1988) İnfertility: intrapersonal and interpersonal impact. Fertil Steril, 49:982-990.

Eliot S (1998) The relationship between fertility issues and sexual problems in men. Can j Hum Sex, 7: 295-303.

Erberk E, Beştepe E, Akar H et al. (2005) Cinsellik ve çift uyumu arasındaki ilişki: üç grup evli çiftte karşılaştırmalı bir çalışma. Düşünen Adam, 18:72-81.

Fışıloğlu H, Demir A (2000) Applicability of the Dyadic Adjustment Scale of Marital Quality with Turkish Couples. Eur J Psychol Assessment,16: 214-218.

Hisli N (1989) Beck Depresyon Envanterinin geçerliliği üzerine bir çalışma. Psikoloji Dergisi, 6:118-122.

Jindal UN, Nene UA, Coyaji K et al. (1990)Psychosexual problems of infertile women in İndia. Int J Fertil, 35: 222-5.

Karlıdere T, Bozkurt A, Yetkin S et al. (2007) Is there gender diffrence in infertile couples with no axis-one psychiatric disorder in contest of emotional symptoms, social support and sexual function? Türk Psikiyatri Derg, 18:311-322.

Khademi A, Alleyassin A, Amini M et al. (2008) Evaluation of sexual dysfunction prevalence in infertile couples. J Sex Med, 5:1402–1410.

Lalos A, Lalos O, Jacobsson L et al. (1985) Psychological reactions to the medical investigation and surgical treatment of infertility. Gynecol Obstet Invest,20: 209- 17.

Lee TY, Sun GH (2000) Psychosocial response of chinese infertile husbands and wives. Arch Androl, 45:143-148.

Leety, Sun GH, Chao SC (2001) The effect of an infertility diagnosis on the distress, marital and sexual satisfaction between husbands and wives in Taiwan. Hum Reprod, 16: 1762- 1767.

Leiblium SR, Aviv A, Hamer R (1998) Life afterbinfertility treatment: a long-term investigation of marital and sexual function. Hum Reprod,13: 3569-3574.

Markestad CL, Montgomery LM, Bartsch RA (1998) İnfertility and length of medical treatment effects on psychological, marital, and sexual functioning. Int J Rehabil Health, 4: 233- 243.

Monga M, Alexandrescu B, Katz SE et al. (2004) İmpact of infertility on quality of life, marital adjustment, and sexual function. Urology,63: 126-130.

Müler MJ, Schilling G, Haidl G (1999) Sexual satisfaction in male infertility. Arch Androl, 42: 137- 143.

Nelson CJ, Shindel AW, Naughton CK et al. (2008) Prevalence and predictors of sexual problems, relationship stress, and depression in female partners of infertile couples. J Sex Med, 5: 1907-1914.

Oğuz HD (2004). İnfertilite tedavisi gören kadınlarda infertilitenin ruh sağlığına, evlilik ilişkileri ve cinsel yaşama etkileri. Yayınlanmamış uzmanlık tezi. Bakırköy Prof. Dr. Mazhar Osman Ruh Sağlığı ve Sinir hastalıkları Eğitim ve AraştırmaHastanesi 12. Psikiyatri Birimi.

Özçelik B, Karamustafalıoğlu O, Özçelik A (2007) İnfertilitenin psikolojik ve psikiyatrik yönü. Anadolu Psikiyatri Dergisi, 8: 140- 148.

Özdamar K, 2009, Paket Programlar ile İstatiksel Veri Analizi 1, 5. basım, Eskişehir, Kaan Kitapevi, 513-4.

Özkan M, Baysal B(2006) Emotional distress of infertile women in turkey. Clin Exp Obstet Gynaecol, 33: 44-46.

Repokari L, Punamaki RL, Unkilo-Kallio L et al. (2007) İnfertility treatment and marital ralationships: A 1 year prospective study among successfully treated ART couples and their controls. Hum reprod, 22: 1481- 1491.

Rust J, Golombok S (1986) The GRISS: a psychometric instrument for the assessment of sexual dysfunction. Arch Sex Behav, 15(2): 157-165.

Schmidt L, Holstein B, Christensen U et al. (2005) Does infertility cause marital benefit? An epidemiological study of 2250 women and men in fertility treatment. Patient Educ Couns, 59: 244- 251.

Shindel AW, Nelson CJ, Naughon CK et al. (2008) Premature ejaculation in infertile couples: prevalence and correlates. J Sex Med, 5: 485- 491.

Spanier GB (1976) Meassuring dyadic adjustment: new scales for assessing the quality of marriage and similar dyads. J Marr Family, 38: 15- 28.

Taşçı E, Bolsoy N, Kavlak O et al. (2008) İnfertil kadınlarda evlilik uyumu. Türk Jinekoloji ve Obstetrik Derneği Dergisi, 5: 105- 10.

Tashbulatova D (2007) İnfertil kadınlarda cinsel fonksiyonlara etki eden faktörler. Yayınlanmamış uzmanlık tezi. Çukurova Üniversitesi Tıp Fakültesi Üroloji Anabilim Dalı.

Tuğrul C, Oztan N, Kabakcı E (1993) Golombok- Rust Cinsel Doyum Olceği'nin Standardizasyon Calışması. Turk Psikiyatri Derg, 4: 83-88.

Weaver SM, Clifford E, Hay DM et al. (1997) Psycholsocial adjustment to unsuccessful IVF and GIFT treatment. Patient Educat Counsel, 31: 7-18.

Wischmann T, Stammer H, Scherg H et al. (2001) Psychosocial characteristics of infertile couples: a study by the "Heilderberg fertility consultation service". Hum Reprod, 16: 1753- 1761.

Wright J, Dushesne C, Sabourin S (1991) Psychosocial distress and infertility: men and women respond differently. Fertil Steril 55: 100- 108.

Yenilmez Ç (2003) İnfertilite Olgularında Psikiyatrik Danışmanlık, İnfertil Olgulara Klinik Yaklaşım ve IVF Laboratuar Uygulamaları, 1.baskı, Hassa H(ed), Eskişehir, 353- 368.