

# The relation between infertility factor and sexual functioning, perceived social support and adherence to treatment in infertile women

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## Research Article

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# Abstract

## Background

In some societies, childbearing is a part of women's identity and infertile women are under a great amount of pressure from others. The present study was conducted to evaluate the relation between infertility factor and sexual functioning, perceived social support and adherence to treatment in infertile women.

## Methods

In the present descriptive analytical cross-sectional study, 230 infertile women who referred to the infertility center of Shahrekord during 2022 were enrolled using convenient sampling method. Data were collected using demographic characteristics checklist, Female Sexual Function Index (FSFI), Multidimensional Scale of Perceived Social Support (MSPSS), and General Adherence Scale (GAS) and were analyzed using SPSS software and chi square test, independent t test, one-way variance analysis, Tukey post hoc test and Pearson correlation coefficient.

## Results

There was no significant relation between infertility factor and the mean score of sexual functioning. Among the aspects of sexual functioning, only the mean score of lubrication in the group of male factors was significantly higher than the common factors for men and women ( $p = 0.07$ ). There was also no significant relation between infertility factor and the mean score of perceived social support and the mean score of adherence to treatment ( $p > 0.05$ ). There was a linear positive relation between sexual functioning ( $r = 0.189$ ), perceived social support ( $r = 0.200$ ) and adherence to treatment ( $r = 0.146$ ) in infertile women.

## Conclusions

Results showed no significant relation between sexual functioning, perceived social support and adherence to treatment with infertility factor in infertile women.

## Introduction

Globally, about 10% of the population, 13% of women, 10% of men and 15% of couples during their fertility ages, are suffering from infertility (1–4). The prevalence of primary infertility in Iran in 2019 was 20.2% according to the clinical definition, 12.8% according to the epidemiologic definition and 9.2% according to the demographic definition (5).

Infertility could be stressful for couples but the experience of this stress is different in men and women (6). In a pronatalist society, motherhood is the determinative element of being a woman (7). In fact, infertility as a “social disorder” not only would threaten the family dreams of a woman, but it would also threaten her gender feelings of herself too (8–10). Some societies, like Iran, believe that childbearing is one of the most prominent features of women, therefore, when fertility problems occur, a great amount of pressure would be upon women from others (11). However, it has not been determined whether woman's infertility as the infertility factor is associated with sexual functionality, perceived social support and adherence to treatment or not.

Infertility has a two-way relation with sexual satisfaction (12). Lack of pleasure during intercourse, feeling pressured due to having scheduled intercourse and lack of sexual self-esteem in infertile women had the highest impact on their sexual satisfaction (13). On the other hand, since infertile couples are concerned about having a child during their intercourse, the concern that they would face another failure would increase their stress (14, 15). In a study that was conducted in the infertility center of Yazd, the prevalence of sexual dysfunctions has been reported as 83.76% for the orgasm phase, 80.70% for libido, 76.70% for painful intercourse, and more than 50% for vaginismus (16). The study of Zare et al (2016) showed no significant difference between the sexual functionality in fertile and infertile women (17). Results of the study by Sahraeian et al showed that the rate of marital satisfaction was higher in women with male infertility factor in comparison to women who were infertile themselves (18).

Social support is considered as a necessary support factor for family members and would help them pass the critical situations during their lifetime (19). It has been observed that, in comparison to fertile women, infertile women would receive less social support (20). Results of the study by Sahraeian et al revealed that women who were infertile themselves had received less social support in comparison to women who had infertile husbands (18). On the other hand, infertility would provide a situation for some of the infertile couples to enhance the quality of their relationship and become more intimate (21, 22).

Sexual dysfunction, depression, anxiety, disappointment, feeling of guilt and worthlessness caused by infertility and the economic problems of infertility might affect adherence to treatment in infertile women (23–27). In some of the conducted studies, adherence to treatment was undesirable in infertile women (28, 29); while in the systematic review conducted by Mahoney et al (2019) adherence to treatment has been reported as 26–81% in infertile women (30).

In societies that consider childbearing as a pillar and part of the women's identity based on their cultural norms, and having a child is considered as the source of power for women in the family and society (23, 31, 32), it seems that female infertility factor might be associated with sexual functionality, perceived social support and adherence to treatment in infertile women.

## Methods

The present descriptive cross-sectional study was conducted during 2022 in the Al-Zahra infertility center of Shahrekord after obtaining necessary permissions and ethics code. Based on the study by Direkvand-

Moghadam (33) and using the intended statistical formulas and considering a 10% loss of the samples, 230 eligible women were enrolled in the study using convenient sampling method after obtaining consent. The inclusion criteria were being 15 to 49 years old, having diagnosed infertility, willingness to participate in the study, being able to read and write, not having a history of any known mental disorder or using drugs for treating mental disorders, not having a history of severe mental pressure during the past 3 months such as accident or losing a first degree relative, and not being hospitalized recently due to covid-19; participants were excluded from the study in case of not totally completing the questionnaires.

Data was gathered using demographic characteristics checklist for the characteristics of the husband and wife including age, educational level, occupation, place of residence, ethnicity, monthly income of the family, costs of infertility treatments, insurance coverage for infertility treatments, method of contraception, duration of marital life, history of divorce, duration of infertility, type of infertility, cause of infertility, number of children in case of secondary infertility and medical history; also Female Sexual Function Index (FSFI), Multidimensional Scale of Perceived Social Support (MSPSS) and General Adherence Scale (GAS) were completed by the participants.

FSFI contains 19 questions and has been developed by Rosen, Brown and Heiman in 2000. It evaluates women's sexual functionality during the past 4 weeks in 6 independent aspects of sexual desire, arousal, lubrication, orgasm, satisfaction and sexual pain. The total score of the questionnaire would be achieved by summing up the scores of all the aspects and higher scores indicate better sexual functionality. By equalating the aspects, the minimum and maximum scores for the questionnaire is 2 and 36 respectively. The maximum score for each aspect was 6 and the minimum score of the sexual desire aspect was 1.2, arousal, lubrication, orgasm and sexual pain aspects was 0 and satisfaction aspects was 0.8. Total score of sexual functionality less than 26.55 is considered as sexual dysfunction (34). In the study conducted by Nazarpour et al (2015), Cronbach's  $\alpha$  of this questionnaire was 0.983 using test retest method.

MSPSS is a 12-item scale and evaluates social support from three sources of family, community and friends ranking from 1 (totally disagreed) to 7 (totally agreed). The minimum and maximum scores of the scale are respectively 12 and 84 and also 4 and 28, for each of the subscales of family, community and friends. Higher scores indicate higher perceived social support. Psychometric characteristics of MSPSS have been approved by national and international studies (35, 36). Also Cronbach's  $\alpha$  for this scale has been reported as 0.91, 0.91 and 0.89 in the studies of Besharat (2007), Ozturk et al (2021) and AVŞAR et al (2021), respectively.

GAS has been developed by Hays in 1994 which evaluates patient's desire to follow the physician's orders and contains 5 items scored using a 6-point Likert scale. The lowest score of this scale is 6 and the highest score is 30. Higher scores indicate more adherence to treatment. In the study of Hays, the validity of the scale was approved with an acceptable internal consistency ( $R = 0.81$ ) using structure validity. The Cronbach's  $\alpha$  of the scale was 0.6 using test retest method (39). The Cronbach's  $\alpha$  of this scale was reported as 0.66 in conducted national studies (40).

## Results

In the present study, from 253 studied infertile women, 10 were not willing to participate in the study and 13 were excluded from the study because of their incomplete questionnaires. Eventually, 230 infertile women, with an average age of  $23.37 \pm 6.32$  years and marital duration of  $95.53 \pm 68.89$  months who mostly had primary infertility (144, 62.6%) were enrolled in the study. 27 participants were infertile due to male infertility factor (11.7%), 95 (41.3%) had female infertility 73 (31.7%) had joint female and male infertility and 35 participants (15.2%) had unknown infertility factor. Among the participants, the most common male cause was varicocele (39%) and the most common female cause was polycystic ovarian syndrome (PCOS) (51.8%) (Table 1).

Results of the study showed that the mean scores of sexual function, perceived social support and adherence to treatment in infertile women were  $22.35 \pm 7.07$ ,  $57.07 \pm 16.01$  and  $23.31 \pm 4.69$ , respectively. According to the results, 174 participants (75.7%) had sexual dysfunction and 56 (24.3%) did not have sexual dysfunction; meaning that most of the participated women in the study had sexual dysfunction (Table 2).

The mean score of lubrication was significantly higher in the male factor group in comparison to the joint male and female factor ( $p = 0.037$ ), but in other aspects of sexual function no significant difference was observed between the groups ( $p > 0.05$ ). Also the mean scores of perceived social support and adherence to treatment was not statistically different between the groups of infertility factors ( $p > 0.05$ ) (Table 3).

Results also showed a linear positive relation between sexual function, perceived social support and adherence to treatment in infertile women in a way that improved social support led to better sexual function and more adherence to treatment (Table 4).

Table 1  
Demographic characteristics of the participated infertile women

Variable		Variable	
Woman's age (years) <sup>a</sup>	23.37 ± 6.32	Female factor <sup>b</sup>	
Husband's age (years) <sup>a</sup>	36.58 ± 7.40	Polycystic ovarian syndrome	87(51.8)
Duration of marriage (months) <sup>a</sup>	95.53 ± 63.89	Obstruction of fallopian tubes	19(11.3)
Costs of infertility treatment <sup>b</sup>		Uterine anomaly	6(3.6)
Less than 2 millions	36 (15.7)	Endometriosis	25(14.9)
2–5 millions	45(19.6)	Lack of uterine endometrium	8(4.8)
5–10 millions	48(20.9)	Other causes	23(13.7)
More than 10 millions	101(43.9)	Type of infertility <sup>b</sup>	
Insurance coverage <sup>b</sup>		Primary	144(62.6)
Lack of insurance	78(33.9)	Secondary	86(37.4)
Total insurance coverage	4(1.7)	Infertility treatment <sup>b</sup>	
Partial insurance coverage	148(64.3)	No	29(12.6)
Duration of infertility <sup>b</sup>		Yes	201(87.4)
Less than 1 year	26(11.3)	Type of infertility treatment <sup>b</sup>	
1–5 years	125(54.3)	Medicinal	85(42.3)
5–10 years	42(18.3)	Medicinal and surgical	88(43.8)
More than 10 years	37(16.1)	Other methods	28(14)
Cause of infertility <sup>b</sup>		Duration of infertility treatment <sup>b</sup>	
Male	27(11.7)	Less than 1 year	44(21.9)
Female	95(41.3)	1–5 years	108(53.7)
Both (male and female)	73(31.7)	More than 5 years	49(24.4)
Unknown	35(15.2)		
Male factor <sup>b</sup>			
Azoospermia	27(27)		

<sup>a</sup> Variables are reported as (percent) frequency, <sup>b</sup> Variables are reported as mean ± standard deviation

Variable	Variable
Oligospermia	14(14)
Varicocele	39(39)
Other causes	20(20)
<sup>a</sup> Variables are reported as (percent) frequency, <sup>b</sup> Variables are reported as mean ± standard deviation	

Table 2  
Mean score and standard deviation of sexual function, perceived social support and adherence to treatment

Variable	
Sexual function <sup>b</sup>	
Sexual desire	3.45 ± 0.72
Arousal	3.24 ± 1.30
Lubrication	3.73 ± 1.47
Orgasm	3.82 ± 1.61
Satisfaction	4.12 ± 1.53
Pain	3.97 ± 1.72
Total score of FSFI	22.35 ± 7.07
Sexual dysfunction <sup>a</sup>	
Sexual dysfunction (score of less than 26.55)	174(75.7)
Lack of sexual dysfunction (score of more than 26.55)	56(24.3)
Perceived social support <sup>b</sup>	
Family support	20.39 ± 5.86
Community support	20.45 ± 6.36
Friends support	16.23 ± 6.84
Total score of MSPSS	57.07 ± 16.01
Adherence to treatment <sup>b</sup>	
Total score of GAS	23.31 ± 4.69
<sup>a</sup> Variables are reported as (percent) frequency, <sup>b</sup> Variables are reported as mean ± standard deviation	

Table 3

Comparing the mean scores of sexual function, perceived social support and adherence to treatment between various groups of infertility factors

	Male infertility Mean $\pm$ SD	Female infertility Mean $\pm$ SD	Joint infertility  Mean $\pm$ SD	Idiopathic infertility  Mean $\pm$ SD	P value
Sexual function					
Sexual desire	3.51 $\pm$ 0.51	3.46 $\pm$ 0.77	3.46 $\pm$ 0.77	3.34 $\pm$ 0.75	0.764
Arousal	3.59 $\pm$ 1.12	3.41 $\pm$ 1.35	2.97 $\pm$ 1.30	3.09 $\pm$ 1.46	0.063
Lubrication	4.33 $\pm$ 1.20	3.87 $\pm$ 1.30	3.45 $\pm$ 1.60	3.47 $\pm$ 1.66	0.026*
Orgasm	4.44 $\pm$ 1.43	3.91 $\pm$ 1.41	3.59 $\pm$ 1.72	3.60 $\pm$ 1.87	0.087
Satisfaction	4.71 $\pm$ 1.26	4.12 $\pm$ 1.49	4.02 $\pm$ 1.55	3.91 $\pm$ 1.75	0.170
Pain	4.43 $\pm$ 1.42	4.11 $\pm$ 1.66	3.73 $\pm$ 1.75	3.76 $\pm$ 1.97	0.205
Total score of FSFI	25.04 $\pm$ 5.81	22.89 $\pm$ 6.52	21.21 $\pm$ 7.33	21.17 $\pm$ 8.27	0.061
Perceived social support					
Family support	21.85 $\pm$ 5.45	19.27 $\pm$ 5.99	20.71 $\pm$ 5.91	21.63 $\pm$ 5.35	0.074
Community support	21.19 $\pm$ 7.16	86.19 $\pm$ 6.38	20.59 $\pm$ 6.27	21.17 $\pm$ 5.95	0.650
Friends support	15.59 $\pm$ 6.96	15.29 $\pm$ 6.61	16.42 $\pm$ 7.62	18.86 $\pm$ 5.00	0.064
Total score of MSPSS	58.63 $\pm$ 15.51	54.43 $\pm$ 15.72	57.73 $\pm$ 17.00	61.66 $\pm$ 14.22	0.119
Adherence to treatment					
Total score of GAS	24.78 $\pm$ 4.59	23.06 $\pm$ 4.64	23.18 $\pm$ 4.60	23.14 $\pm$ 5.05	0.391
* P < 0.05, One-way variance analysis					

Table 4  
Correlation coefficient between sexual function, perceived social support and adherence to treatment

	1	2	3
1.Total score of FSFI	-	-	-
2.Total score of MSPSS	r = 0.189 *p = 0.004	-	-
3.Total score of GAS	r = 0.200 *P = 0.002	r = 0.146 *p = 0.027	-
* p < 0.05, Pearson correlation coefficient			

## Discussion

The present study was a descriptive-analytical cross-sectional study which evaluated the relation between infertility factor and sexual function, perceived social support and adherence to treatment in infertile women.

In the present study the most prevalent type of infertility was female infertility (41.3%) and among the female infertility factors, polycystic ovarian syndrome (51.8%) was the most common cause, which was in line with the results of most of the conducted studies (1, 41–43). But in the study by Jannati et al (2019), the most prevalent type of infertility was reported as male infertility, which was different from the results of the present study (28). The difference in these results might be due to the climatic differences of the studied areas and also their cultural and social characteristics. Also, among the studied participants the most common cause of male infertility was varicocele. In a similar study that was conducted by Moridi et al (2019), also, the most common cause of male infertility was reported as varicocele (42). However some other studies have mentioned oligospermia disorder and impaired sperm motility as the most common cause of male infertility (1, 43, 44). In these studies, only spermogram was evaluated to investigate male infertility factor while in the present study other causes of infertility such as anatomical causes like varicocele were also investigated and therefore, the results of the present study has been different from the results of those previous studies.

Results of the present study showed that 174 participants (75.7%) had sexual dysfunction and 56 participant (24.3%) did not have sexual dysfunction meaning that most of the infertile women are suffering from sexual dysfunction. In the study by Karli et al (2019) 93.9% of the individuals with unknown cause of infertility and 89.6% of the participants with ovarian laziness, had sexual dysfunction (45). But in the study by Oindi et al (2019) 31.2% of infertile women had sexual dysfunction and most of them had desirable sexual functionality (46). The difference between the results of this study and the resent study might be due to the differences in study design such as having a control group and smaller

sample size in the mentioned study and also cultural differences, since sampling of these studies have been conducted in different countries.

The mean score of perceived social support and adherence to treatment in the present study was similar to most of the previously conducted studies and had a desirable level (28, 30, 47). In the study of Ataman et al (2021) the perceived social support by infertile women who participated in the study was low and undesirable (48). In the study of Ataman studied participants were under IVF treatment while in the present study participated women were receiving all types of infertility treatment. In the study by Li et al (2011), which evaluated the effective factors on adherence to treatment in infertile women suffering from polycystic ovarian syndrome, it was revealed that 25.6% of the participants had a desirable level of adherence to treatment (29). In the mentioned study, only women suffering from ovarian laziness were studied; the sample size was smaller and the questionnaires were also different.

According to the results, among the aspects of sexual function, there was a significant relation only between lubrication and infertility factor in a way that the mean score of lubrication was significantly higher in the group with male infertility in comparison to the group with joint male and female infertility. Also, in the study by Karli et al (2019), no significant relation was observed between the mean of women's sexual functionality and its aspect with infertility factors (45). However in the study by Baghiani Moghadam et al (2011) (49) and Shuji et al (2014) (50), sexual functionality and sexual satisfaction of infertile women had a lower level than infertile men. In the study by Diamond et al (2017), which evaluated sexual functionality in infertile women suffering from polycystic ovarian syndrome, no significant relation was observed between sexual arousal, orgasm, and satisfaction with infertility factors; but the score of sexual desire was significantly higher in women suffering from polycystic ovarian syndrome and also the score of sexual pain as significantly higher in the group suffering from infertility with unknown cause (51). This contradiction between the mentioned results with the present study might be due to the difference in the used data gathering tools and sample size. Also cultural and behavioral differences might be effective on the sexual functionality of the couples.

No significant relation was observed between the perceived social support and adherence to treatment with the infertility factor in the present study. In line with the present study, no significant difference was observed between perceived social support and its aspects with infertility factors in the studies conducted by Ataman et al (2021) and Ozturk et al (2021) (48). Desirable adherence to treatment in the present study despite its costs and problems might be influenced by the love for having a child and the importance of childbearing in Iranian culture (32).

There was a linear positive relation between sexual function, perceived social support and adherence to treatment in the studied infertile women in a way that improvement of perceived social support would lead to better sexual functionality and more adherence to treatment in infertile women; some other studies have also reported similar results, revealing that improvement of perceived social support have caused better sexual functionality and even more adherence to treatment (18, 40, 47). In the conducted researches, no studies were found with conflicting results and this indicates a significant relation between

these factors and also the importance of supportive factors and the effect of receiving support from the spouse, family and friends on acceptance of and adherence to treatment in infertile women.

## **Limitations Of The Study**

Since the subject of the present study was about infertility, considering the cultural limitations, it was probable that the participants would not answer the questions honestly. Therefore, the researcher tried to reduce the effect of this limitation by ensuring the participants about the confidentiality of their data and providing appropriate guidance.

## **Conclusions**

According to the results of the study, no significant relation was observed between infertility factor and sexual function, perceived social support and adherence to treatment. However, if infertile women would receive appropriate social support, they would have better sexual functionality and more adherence to treatment. So, by providing appropriate education and counselling for the couples for improvement of their perceived social support, their sexual functionality and adherence to treatment would also be improved and consequently, their infertility treatment would be completed.

## **Abbreviations**

FSFI

Female Sexual Function Index

MSPSS

Multidimensional Scale of Perceived Social Support

GAS

General Adherence Scale

PCOS

Polycystic ovary syndrome

IVF

In vitro fertilization

## **Declarations**

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### **Authors' contributions**

MS and ML designed the study, conducted empirical analyses and prepared the first draft. ML and ZG and FS critically reviewed the results and contributed in finalizing the manuscript. All authors read and approved the final manuscript.

### **Corresponding author**

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### **Ethics approval and consent to participate**

This plan with the code of ethics number IR.RUMS.REC.1400.221 is approved by Research Ethics Committees of Rafsanjan University of Medical Sciences And all participants signed the informed consent form and entered the study with informed consent and all methods were performed in accordance with the Declaration of Helsinki.

### **Competing interests**

The authors declare that they have no competing interests.

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### **Availability of data and materials**

The data sets used and analyzed during the current study are available from the corresponding author on reasonable request.

### **Consent for publication**

Not applicable.

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