

“When Love Does not bear a Fruit”: Patterns and Prevalence of Sexual Difficulties in Infertile Men and Women as Predictors of Emotional Distress

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ABSTRACT

Background: Self-identity, sexuality, and subfertility have multidirectional effects on each other. Subfertility is known to alter sexual esteem, threaten identity, body image, sexual attractiveness, coital pleasure, and sexual satisfaction. **Objective:** This study aimed to evaluate sexual difficulties as predictors of infertility-specific stress in patients undergoing fertility treatments and to assess the profile of sexual dysfunctions in participants. **Study Setting and Design:** This cross-sectional study was conducted in a tertiary hospital setup of a medical college. **Methods:** Three hundred married men and women diagnosed with infertility participated. The psychological evaluation test, international classification of diseases (10th, CDDG), female sexual functioning index, and international index of erectile functioning were used as measures. **Statistical Analysis:** Data were analyzed using SPSS (version 15, Chicago, USA). Chi-square test was used for univariate analysis between stress and presence of sexual dysfunctions in men and women. Medians, quartile, and cutoff scores were used to profile the sexual issues in participants. **Results:** Prevalence of sexual dysfunctions since marriage was higher in women (75%) than men (60%). Ninety-two percent of women and 86% of men experienced emergence of sexual difficulties after the couple started treatments. **Conclusions:** Sexual dysfunctions appear to be a consistent psychosocial concern for those awaiting conception. These appear to worsen during the treatments. Our findings suggest the need to sensitively approach and explore sexual anamnesis with the couple before recourse to medically assisted reproductive treatments. Psychological interventions for sexual issues in distressed patients before, during, and after treatments such as controlled ovarian hyperstimulation, intrauterine insemination, *in vitro* fertilization, and intracytoplasmic sperm injection are most needed.

KEYWORDS: *Dysfunctions, emotional distress, in vitro fertilization, infertile, intrauterine insemination, intracytoplasmic sperm injection, sexual issues*

INTRODUCTION

Self-identity, sexuality, and subfertility have multidirectional effects on each other. There are times when subfertility may be a consequence of primary sexual dysfunctions. More common is when sexual functioning gets affected as a result of being childless or when medically assisted reproductive therapy evades the sense of intimacy and privacy of couples. Accordingly, continuous treatment

cycles lasting for 2–3 years, number of unsuccessful *in vitro* fertilizations (IVFs), and a duration of more than 6 years of infertility are known to adversely affect one’s sexual desire,

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arousal, performance, and satisfaction.^[1-4] Depressive disorders as a result of “subfertility” are common, as it is an upsetting life event. Depressive disorders are independent causes of dampening of sexual functioning in women.^[5] These sexual impairments were not lasting and may diminish after 6–10 years of diagnosis and treatments. Yet, they are known to cause a lasting negative emotional experience in the early marital and reproductive years of a couple’s life.^[6,7]

Delays in conception leads to altered sexual esteem, identity threats, reduces perceived sexual attractiveness, body image disturbances, pressures for conception, lowered coital pleasure and sexual dissatisfaction. Researchers have proposed that about one-fourth of total participants scored above the cutoff score of 26 on female sexual functioning index (FSFI), which clearly elucidates the presence of female sexual dysfunction.^[8] Men tend to misreport sexual issues, mostly report occasional coital failures or erectile failures.^[1,7,8] “Circumstantial deterioration” in sexual self-esteem in males may be expected, centered around the inability to procreate.^[3] The diagnosis of infertility might lead to more negative emotional outcomes in males. Their emotional states might alter their lifestyle, behavioral choices, and cognitions early in treatments and this might influence their fertility outcomes.^[3] Indian researchers have also documented sexual dysfunctions in women who experienced recurrent treatment failures.^[9] Data emerging from cross-sectional studies purports that nearly 50%–60% of women facing conception issues report sexual problems, particularly hypoactive desire, arousal, poor lubrication, and dyspareunia.^[10,11] Furthermore, due to the latter issues, the overall sexual inclination, frequency of coital activity, and consequently chances of conception declines in patients who were highly distressed, moderately educated and belong to higher social status. Patients who were highly distressed, moderately educated, belong to higher social status.^[10,12] Women with endometriosis often reported sexual issues.^[10,12]

Contrarily, there is a small body of literature which indicates that involuntary childlessness and medically assisted reproductive treatments (MARTs) do not negatively influence the sexual relationships as the shared dyadic stressors of each partner in the marital unit make them cope cohesively with the associated identity crisis.^[13,14] Unsuccessful treatment attempts were longitudinal stressors that stabilized the marital relation, causing an increase in dyadic consensus and cohesion among women undergoing MARTs.^[14]

In the background of these contradictory evidences, the objective of this study was to conduct a clinic-based

study in Karnataka, to estimate whether sexual difficulties serve as a predictor of infertility stress in patients undergoing fertility treatments.

METHODS

Study participants

The participants of this study were 300 married men and 300 married infertile women (total 600 participants, unrelated), between age ranges of 21 and 42 years. The inclusion criteria of the study were patients diagnosed with primary/secondary infertility undergoing various investigations and treatments regimens (assisted conception ovarian induction [OI] and other MARTs (intrauterine insemination [IUI], IVF, and intracytoplasmic sperm injection [ICSI])). These patients were recruited from the outpatient department of infertility center based in Manipal, Karnataka, India. Purposive sampling was done. The study duration was 18 months (April 2015 to December 2016). This study was a part of a larger research project and the ethical clearance from the concerned authorities (Ethical approval number IEC 275/2014) was obtained before the conduct of this work. All ethical standards (as per the World Medical Association’s Declaration of Helsinki) were maintained during the conduct of this work.

Measures

The consenting patients were interviewed on relevant sociodemographic variables, clinical variables, and psychological variables (sexual history) using a semi-structured questionnaire prepared by the principal investigator. Subsequently, participants were assessed for the presence of infertility-specific stress, using the “psychological evaluation test (PET) for subfertility”^[15] and were assessed for the presence of major psychiatric morbidity and sexual dysfunctions using the international classification of diseases-10 classification of mental and behavioral disorders (clinical descriptions and diagnostic guidelines).^[16] Those with major psychiatric morbidity were parallelly referred to the department of psychiatry for needful treatments. For participants who had an identifiable sexual issue after starting treatments and agreed for detailed sexual evaluation, the investigator administered the international index of erectile functioning (IIEF)^[17] and FSFI.^[18]

Description of the measures

Psychological evaluation test

The test is a 15 item questionnaire that detects emotional reactions to infertility. The responses were answered on 4-point Likert scale. The sum of the responses corresponded to a PET score ranging from 15

to 60 points. A PET score of >30 points was defined as cutoff point for the necessity of specialized professional psychological help.^[15]

Female sexual functioning index

It is a brief, multidimensional self-report instrument for assessing the key dimensions of sexual functioning in women. It has five scales subscales and has one total score. Overall test–retest reliability and internal consistency coefficients and divergent validity were high for each subscale and the total score.^[17]

International index of erectile functioning

It is a short, self-report tool, answered on a 5-point scale, assessing domains of male sexual functioning. It has five subdomains and one total score. The tool has high internal consistency for each of the five domains and total scale score. The construct validity, sensitivity, and specificity to effects of treatment were also high.^[18]

Data analysis

Data were analyzed using SPSS (version 15, September 2007, SPSS Inc., Chicago, IL, USA). Chi-square test was used for univariate analysis between stress and presence of sexual dysfunctions in men and women. Medians, quartile, and cutoff scores were used to profile the sexual issues in men and women who are in treatment (OI/IUI/IVF) phase, as assessed by FSFI and IIEF.

RESULTS

Sample characteristics

The mean age of men was 35 years (range 24–54, standard deviation [S. D.] = 5), 44% educated till high school and 51% of them were in semi-skilled professions. The mean age for women was 29 years (range 29–49, S. D. =5), 37% were educated till high school, and 63% were homemakers by occupation. The mean number of years of marital life for both men and women was 5 years (S. D. = 3 years), with a majority trying for conception since marriage. Sixty-two percent of patients belonged to rural, joint family setups and 96% of patients were taking fertility treatments for the past 1–2 years (OI/IUI/IVF/ICSI). In the sample of 300 women, 66 participants did not meet any identifiable psychiatric condition, 100 had subclinical affective disturbances, 49 met the criteria for adjustment disorder, 28 had anxiety disorder (not otherwise specified), 25 had mixed anxiety and depressive disorder, 16 met the criteria for dysthymic disorder, 12 met the criteria for depressive disorder, and 4 met the criteria for complicated grief reaction. In the sample of 300 men, 123 participants did not meet any identifiable psychiatric condition, 117 had subclinical affective disturbances, 22 had anxiety disorder (not otherwise specified), 14

had Adjustment disorder, 17 had mixed anxiety and depressive disorder, 5 met the criteria for dysthymic disorder, and 2 met the criteria for complicated grief reaction. The presence of later conditions could have affected or altered sexual functioning in participants of the study.

Table 1 presents the univariate analysis for associations between infertility-specific stress and sexual difficulties in men and women.

Main findings in women

Among the 300 women who participated in the study, Table 1 depicts that 239 (80%) were distressed and 61 (20%) were nondistressed. Prevalence of sexual dysfunction since marriage was higher in women (75%) than men. Remarkably, 92% of women experienced the emergence of sexual difficulties after the couple was diagnosed and treated. Presence of sexual difficulties in women after diagnosis, investigation and ongoing treatments such as ovulation induction, intrauterine inseminations, IVF cycles, and their side effects were found to predict infertility distress in them. Table 2 shows during the treatment phase, the women experienced difficulties in all domains of sexual functioning namely low desire, lubrication, arousal, orgasm, pain, and satisfaction.

Main findings in men

As per Table 1, in this study, 217 (72%) men were distressed, whereas only 83 (28%) were found to be nondistressed. The prevalence of male sexual dysfunction was high and 60% of them had dysfunctions since their marriage. Out of these 144 men who had sexual issues since marriage, 8.4% met the criteria for Dhat syndrome (with perception of wastage of semen/overvalued belief in loss of physical vigor due to unwanted loss of semen and this being a causative factor to subjective distress, malaise, impotence, off and on palpitations/vague somatic aches and pains, and easy fatigability). In addition, 86% of men experienced emergence of sexual difficulties, after the couple was diagnosed with fertility problems. Surprisingly, in men who were taking fertility treatments due to having sexual difficulties (such as Dhat, sexual anxieties, premature ejaculation, erectile dysfunctions, retrograde ejaculations) since marriage, undergoing MARTs were found to be a protector for sexual esteem and precluding worsening of infertility stress in them. Probably this was so, as they anticipated that sexual problems were leading to subfertility and undergoing treatments would warrant a pregnancy in their wives, and save them as well as family from “blemished self image.” Table 2 shows that during treatments, men experienced difficulties in desire, erectile functioning, orgasmic

Table 1: Univariate analysis for associations between infertility-specific stress and sexual difficulties in men and women awaiting conception

a. Sexual difficulties among distressed versus nondistressed women				
Female sexual dysfunction	Subfertility specific stress		OR (95% CI)	P
	No (61)	Yes (239)		
No (<i>n</i> =126)	36 (29)	90 (71)	1	
Presence of nonorganic sexual dysfunction since marriage before diagnosis of subfertility (<i>n</i> =68)	17 (25)	51 (75)	1.20 (0.61-2.34)	0.59
Presence of sexual difficulties after diagnosis and treatments for subfertility (<i>n</i> =106)	8 (8)	98 (92)	4.90 (2.16-11.10)	<0.001

b. Sexual difficulties among distressed versus nondistressed men				
Male sexual dysfunction	Subfertility specific stress		OR (95% CI)	P
	No (83)	Yes (217)		
No (<i>n</i> =51)	10 (20)	41 (80)	1	
Presence of organic sexual dysfunction since marriage before diagnosis of subfertility (<i>n</i> =142)	58 (40)	84 (60)	0.35 (0.64-0.76)	0.008
Presence of sexual difficulties after diagnosis and treatments for subfertility (<i>n</i> =107)	15 (14)	92 (86)	1.49 (0.62-3.60)	0.37

OR=Odds ratio, CI=Confidence interval

Table 2: Profile of sexual issues in men and women who are in treatment phase, as assessed by female sexual functioning index and international index of erectile functioning (cutoff scores, the medians, and quartile scores)

Infertile women (<i>n</i>=48)			Infertile men (<i>n</i>=48)		
FSFI variables	Median scores (1st and 3rd quartile)	Cutoff score	IEEF variables	Median scores (1st and 3rd quartile)	Cutoff score
Sexual desire	2.40 (1.80-3.60)	4.28	Sexual desire	7.00 (5.00-8.00)	9.00
Lubrication	2.10 (1.20-3.30)	5.08	Erectile functioning	20.00 (17.00-24.00)	25.00
Sexual arousal	2.10 (1.20-3.60)	5.45	Orgasmic functioning	8.00 (6.00-8.00)	9.00
Sexual orgasm	2.00 (1.20-3.60)	5.05	Intercourse satisfaction	10.00 (7.00-12.00)	13.00
Sexual pain	3.20 (1.60-4.80)	5.04	Overall satisfaction	7.00 (5.00-9.00)	9.00
Sexual satisfaction	2.40 (1.60-4.80)	5.51			
Total score on sexual functioning in women	15.00 (10.00-20.00)	26.50	Total score on sexual functioning in men	52.00 (41.50-60)	65.00

FSFI=Female sexual functioning index, IIEF=International index of erectile functioning

functioning, intercourse satisfaction, and overall coital satisfaction.

DISCUSSION

As cited in the literature, the results of this study advocate that sexual dysfunctions are high in infertile men and women. Owing to this, nearly 50% of patients, who visited the fertility clinic, had histories of nonconsummated marriages. A huge number of participants reported of principally psychogenic sexual dysfunctions, since marriage, prior to diagnosis of infertility. In addition, there were differences in perceptions of men and women about their sexual issues.

Women in comparison to men found sexual problems that emerged during the treatment phase four times more distressing than those which existed since their marriage. Sexual problems that emerged during fertility treatments made women more apprehensive as they attributed them to the consequences of repeated investigations,

procedures, treatment failures, side effects of ovulation induction medications, painful injections, and a fear that they might never have a spontaneous conception. The results are supported by evidences from a systematic review emphasizing reductions in lubrication, orgasm, and sexual satisfaction in infertile women.^[19] A recent case-control study on 809 participants has revealed that as the duration of subfertility exceeds (>5 years), women experience a gradual deterioration on nearly all domains of sexual functioning as assessed on FSFI.^[20] Another survey comparing 281 infertile patients from three different countries against 289 fertile controls has documented that “when procreation becomes the ultimate goal it causes a decay in coital pleasure. It also causes depressed mood, anxiety, fears, communication problems among marital partners and body image issues (feelings of being defective, inadequate or unattractive).”^[5] Women with histories of spontaneous abortions, multiparity, endometriosis, and particularly undergo higher stress and more invasive treatments such as IVF (>4 cycles of

failures in past) are at a risk for sexual problems.^[14,21] Our results resonate with a recent study reporting that women with “higher infertility-related distress were more likely to report sexual dysfunction and fertility stress domains (i.e. social, relational, and sexual concerns) were correlated with almost all sexual outcomes.”^[22]

In men, occurrence of sexual problems during treatments made them twice as much distressed than before. The men on the other hand also reported that they felt threatened on having sexual dysfunctions since marriage; however, they were able to accept and adjust to these stressors during the treatment phase. They perceived that fertility treatments offered a hope for patients with erectile and ejaculatory problems and a chance of conception even if a coital activity was impaired. Men too, like the women, were more distressed and experienced greater sexual difficulties during the treatment phases due to anxiety-provoking regimens such as frequent semen sample analysis or collections; however, the psychological effects of these on them were reported to be milder and perceived by them to be mostly reversible. “Demand/forced intercourse” during the fertile days on menstrual cycle, suggested as “timed intercourse,” was an active component of specific OI and IUI protocols at our study site. Coital activity during these times was perceived to be stressful, lacking in spontaneity, low in erotic valence, and nonpleasurable by both men and women. The latter is also reported by many others.^[23-26]

Our results are in line with literature that states that traumatizing and medical procedures can arouse anxiety and consequently cause temporary erectile failures and increase sexual problems in women.^[23] As cited by others, couples in our study also reported that treatment-specific anxiety is high during cycles of IUI and IVF, they catch on to the use of specific medical vocabulary. Words such as “poor quality of eggs/sperms, premature ovarian failures, absence of healthy sperms, no sperms” contribute to low self-image, feelings of defectiveness, and harm to one’s sexual identity.^[23] Furthermore, physical side effects of certain medications led to mood alterations effects indirectly altering sexual interest as well as behavior.^[23-28] The data from this study support the existing literature where the influence of sexual desire, issues such as lack of sexual arousal, dyspareunia, inability to reach orgasm, and negative body image in subfertile women was found to be related to sexual dysfunctions.^[29-31] Literature also states that sexual quality of life was dependent on variables such as female age, severity of depression, duration of marriage, and sexual dysfunction (a score of above 26.55 as identified on FSFI).^[32] Depressive symptoms and coital functioning were also independent

predictors of a women’s overall sexual quality of life (sexual confidence, sexual well-being, and intimate partner relationship).^[32] Recent studies also report that anxiety and depression were both associated with erectile dysfunction, anxiety demonstrating the strongest association. Only anxiety was associated with premature ejaculation and the latter dysfunction was not found to be associated with depression.^[33]

A clear dialog is there among social stress, relational stress, and sexual stress in infertility as MARTs impact couples’ psychosexual health.^[22,34] Accordingly, psychosexual counseling for couples has been known to be beneficial in improving their distress, well-being, and marital and sexual outcomes.^[35] Recent studies have supported the use of sexual counseling within the better model emphasizing.^[36] Structured psychological support is much needed for depressive and anxiety disorders in couples, which are the main predictors of sexual problems.^[37] The above findings must be considered in the light of limitations. The limitations of our work are lack of size for evaluation of sexual functioning, confounding effects of variables such as “presence of psychiatric co-morbidities” in participants which could have altered their sexual relations and scores, biases due to use of self-reported measures and social desirability effects and limited generalisability of this study. Further studies planned on grounds on this work can use a mixed-method approach and explore the factors associated with these stressors and sexual dysfunctions, in terms of age, educational status, standard of living, etc., psychological profile, and issues in infertile marital partner versus the corresponding (possibly fertile) partner. Along with this tapping, interpersonal or marital conflicts between them due to sexual stressors/treatments can also be considered by future researchers.

CONCLUSIONS

These results suggest the need to sensitively approach and explore accurate sexual anamnesis with the couple before recourse to reproductive medicine. The importance of sexual assessment as well as multiple faceted Infertility specific stress (ISS) for men and women is highlighted. Couple-centered interventions for sexual issues in distressed patients awaiting conception both before and during the stages of diagnosis and treatment are much indicated.

Data availability statement

The data that support the findings of this study are available on request from the corresponding author.

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Conflicts of interest

There are no conflicts of interest.

REFERENCES

- Drosdzol A, Skrzypulec V. Evaluation of marital and sexual interactions of Polish infertile couples. *J Sex Med* 2009;6:3335-46.
- Wischmann T, Stammer H, Scherg H, Gerhard I, Verres R. Psychosocial characteristics of infertile couples: A study by the 'Heidelberg Fertility Consultation Service'. *Hum Reprod* 2001;16:1753-61.
- Slade P, Emery J, Lieberman BA. A prospective, longitudinal study of emotions and relationships in in-vitro fertilization treatment. *Hum Reprod* 1997;12:183-90.
- Takefman JE, Brender W, Boivin J, Tulandi T. Sexual and emotional adjustment of couples undergoing infertility investigation and the effectiveness of preparatory information. *J Psychosom Obstet Gynecol* 1990;11:275-90.
- Oddens BJ, den Tonkelaar I, Nieuwenhuysen H. Psychosocial experiences in women facing fertility problems – A comparative survey. *Hum Reprod* 1999;14:255-61.
- Yangin H, Kukulu K, Gulşen S, Aktaş M, Sever B. A survey on the correlation between sexual satisfaction and depressive symptoms during infertility. *Health Care Women Int* 2016;37:1082-95.
- Sundby J. Long-term psychological consequences of infertility: A follow-up study of former patients. *J Womens Health* 1992;1:209-17.
- Nelson CJ, Shindel AW, Naughton CK, Ohebshalom M, Mulhall JP. Prevalence and predictors of sexual problems, relationship stress, and depression in female partners of infertile couples. *J Sex Med* 2008;5:1907-14.
- Valsangkar S, Bodhare T, Bele S, Sai S. An evaluation of the effect of infertility on marital, sexual satisfaction indices and health-related quality of life in women. *J Hum Reprod Sci* 2011;4:80-5.
- Aggarwal RS, Mishra VV, Jasani AF. Incidence and prevalence of sexual dysfunction in infertile females. *Middle East Fertil Soc J* 2013;18:187-90.
- Jain K, Radhakrishnan G, Agrawal P. Infertility and psychosexual disorders: Relationship in infertile couples. *Indian J Med Sci* 2000;54:1-7.
- Mishra VV, Nanda S, Vyas B, Aggarwal R, Choudhary S, Saini SR. Prevalence of female sexual dysfunction among Indian fertile females. *J Midlife Health* 2016;7:154-8.
- Tao P, Coates R, Maycock B. Investigating marital relationship in infertility: A systematic review of quantitative studies. *J Reprod Infertil* 2012;13:71-80.
- Repokari L, Punamäki RL, Unkila-Kallio L, Vilska S, Poikkeus P, Sinkkonen J, *et al.* Infertility treatment and marital relationships: A 1-year prospective study among successfully treated ART couples and their controls. *Hum Reprod* 2007;22:1481-91.
- Franco JG Jr., Razera Baruffi RL, Mauri AL, Petersen CG, Felipe V, Garbellini E. Psychological evaluation test for infertile couples. *J Assist Reprod Genet* 2002;19:269-73.
- World Health Organization. The ICD-10 Classification of Mental and Behavioural Disorders: Clinical Descriptions and Diagnostic Guidelines. Geneva: World Health Organization; 1992.
- Rosen RC, Riley A, Wagner G, Osterloh IH, Kirkpatrick J, Mishra A. The international index of erectile function (IIEF): A multidimensional scale for assessment of erectile dysfunction. *Urology* 1997;49:822-30.
- Rosen R, Brown C, Heiman J, Leiblum S, Meston C, Shabsigh R, *et al.* The Female Sexual Function Index (FSFI): A multidimensional self-report instrument for the assessment of female sexual function. *J Sex Marital Ther* 2000;26:191-208.
- de Mendonca CR, Arruda JT, Noll M, Paulo MD, do Amaral WN. Sexual dysfunction in infertile women: A systematic review and meta-analysis. *Eur J Obstet Gynecol Reprod Biol* 2017;215:153-63.
- Iris A, Aydoğan Kirmizi D, Taner CE. Effects of infertility and infertility duration on female sexual functions. *Arch Gynecol Obstet* 2013;287:809-12.
- Smith NK, Madeira J, Millard HR. Sexual function and fertility quality of life in women using *in vitro* fertilization. *J Sex Med* 2015;12:985-93.
- Facchin F, Somigliana E, Busnelli A, Catavorello A, Barbara G, Vercellini P. Infertility-related distress and female sexual function during assisted reproduction. *Hum Reprod* 2019;34:1065-73.
- Marci R, Graziano A, Piva I, Lo Monte G, Soave I, Giugliano E, *et al.* Procreative sex in infertile couples: The decay of pleasure? *Health Qual Life Outcomes* 2012;10:140.
- Wischmann TH. Sexual disorders in infertile couples. *J Sex Med* 2010;7:1868-76.
- Cousineau TM, Domar AD. Psychological impact of infertility. *Best Pract Res Clin Obstet Gynaecol* 2007;21:293-308.
- Wirtberg I, Möller A, Hogström L, Tronstad SE, Lalos A. Life 20 years after unsuccessful infertility treatment. *Hum Reprod* 2007;22:598-604.
- Bodenmann G, Ledermann T, Blattner D, Galluzzo C. Associations among everyday stress, critical life events, and sexual problems. *J Nerv Ment Dis* 2006;194:494-501.
- Byun JS, Lyu SW, Seok HH, Kim WJ, Shim SH, Bak CW. Sexual dysfunctions induced by stress of timed intercourse and medical treatment. *BJU Int* 2013;111:E227-34.
- Luk BH, Loke AY. The impact of infertility on the psychological well-being, marital relationships, sexual relationships, and quality of life of couples: A systematic review. *J Sex Marital Ther* 2015;41:610-25.
- Carter J, Applegarth L, Josephs L, Grill E, Baser RE, Rosenwaks Z. A cross-sectional cohort study of infertile women awaiting oocyte donation: The emotional, sexual, and quality-of-life impact. *Fertil Steril* 2011;95:711-6.e1.
- Latif EZ, Diamond MP. Arriving at the diagnosis of female sexual dysfunction. *Fertil Steril* 2013;100:898-904.
- Shahraki Z, Tanha FD, Ghajarzadeh M. Depression, sexual dysfunction and sexual quality of life in women with infertility. *BMC Womens Health* 2018;18:92.
- Cao HM, Wan Z, Gao Y, Zhang JL, Zhang Y, Xiao HP, *et al.* Psychological burden prediction based on demographic variables among infertile men with sexual dysfunction. *Asian J Androl* 2019;21:156-62.
- Luca G, Parrettini S, Sansone A, Calafiore R, Jannini EA. The Inferto-Sex Syndrome (ISS): sexual dysfunction in fertility care setting and assisted reproduction. *J Endocrinol Invest*. 2021 May 6. doi: 10.1007/s40618-021-01581-w. Epub ahead of print. PMID: 33956331.
- Bokaie M, Simbar M, Yassini Ardekani SM. Sexual behavior of infertile women: A qualitative study. *Iran J Reprod Med* 2015;13:645-56.
- Karakas S, Aslan E. Sexual counseling in women with primary infertility and sexual dysfunction: Use of the BETTER model. *J Sex Marital Ther* 2019;45:21-30.
- Ramezanzadeh F, Aghssa MM, Abedinia N, Zayeri F, Khanafshar N, Shariat M, *et al.* A survey of relationship between anxiety, depression and duration of infertility. *BMC Womens Health* 2004;4:9.