Original Article

Sexual Dysfunction in Infertile Women With PCOS Undergoing Fertility Treatment

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ABSTRACT

Background: Polycystic ovary syndrome (PCOS) is a syndrome of chronic anovulation, obesity, and androgen excess, and can affect sexual function in reproductive age women.

Aim of the Work: To determine the prevalence of sexual dysfunction in women with primary infertility due to PCOS undergoing fertility treatment and predisposing factors.

Patients and Methods: Observational cross-sectional study that included an Egyptian convenient sample of 186 females with primary infertility due to polycystic ovary syndrome , aging between 18-35 , recruited from Kasr Al-Ainy infertility Clinic.

Results: Using a cutoff score of 26.55 on the FSFI-Q, the prevalence of female sexual dysfunction (FSD) was 30.1 % among the study subjects. The most affected domains were orgasm (45.7%) and satisfaction (53.8%) while the least affected in both groups was the desire domain (30.1 %). Those using Clomiphene citrate , gonadotrophin & IVF had more prevalence of sexual dysfunction (*P value* < 0.005). Females with bad feeling towards their husband & hairsute females had higher prevalence of female sexual dysfunction (*P value* < 0.005).

Conclusion: The present study demonstrated an association between the PCOS infertility and the prevalence female sexual dysfunction. The scope of the problem is basically due to low self-esteem , the bad perception body image of an obese hairsute female , the stress of delayed conception in addition to the superimposed bad relation with their husbands.

Key Words: Infertility, PCOS, sexual dysfunction.

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INTRODUCTION

Sexual function represents a crucial element in the quality of life of human beings[1]. It encompasses issues such as sex, reproduction, pleasure, intimacy, erotism, identity and gender roles, and sexual orientation[2] and is under the dynamic interaction of the physical, economic, religious, psychological and emotional factors[3]. Any impairment in sexual function could have detrimental effects on the quality of life of the affected subjects[4].

Female Sexual Dysfunction (FSD) is defined as a " disturbance of sexual desire, arousal, orgasm, and sexual pain that results in significant personal distress. It is a multifactorial, age-related and progressive problem"[5,6] that is based on disturbances to the female sexual response. Female sexual dysfunction affects approximately 43% of women according to data from the National Health and Social Survey[7].

It is more prevalent in women with chronic disease, genital atrophy, history of sexual abuse and those with psychosocial stressors such as subfertility and poor interpersonal relationships[8]. In particular, women with subfertility have been shown to have up to one and half times greater prevalence of sexual dysfunction than their fertile counterparts[9,10]. The infertile couple is more prone to depression, anxiety and stress[11-12].

The increased stress levels would adversely affect the marital satisfaction and adversely affect their sexual health. On the other hand, the medical procedures for investigation or treatment of infertility may incite a sense of anxiety and thus affect sexual function[12]. Whether sexual dysfunction is the cause or consequence of infertility is difficult to establish. For instance, sexual dysfunction might result in decreased coital frequency compounding the issue of infertility due to decreased exposure. On the other hand, the psychological stress to get pregnant stemming from sex on demand could result in a reduction in enjoyment of sex aggravating sexual dysfunction. Indeed, situational sexual dysfunction and loss of a couple's intimacy may occur as a consequence of timed intercourse where focus for coitus is no longer pleasure but conception[10].

Polycystic ovary syndrome (PCOS) is a complex endocrine disorder affecting 5–10 % of women in reproductive age. It generally manifests with oligo/

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anovulatory cycles, hairsutism and polycystic ovaries, together with a considerable prevalence of insulin resistance. Though the cause of the syndrome is not completely understood, PCOS is considered a multifactorial disorder with various genetic, endocrine and environmental abnormalities[13]. Several studies demonstrate that women with PCOS had an increased prevalence of higher depression and anxiety scores with higher odds of moderate and severe depressive and anxiety symptoms compared with controls[14].

Therefore, the relationship between PCOS and sexual function needs to be addressed for adequate management of either problem. Early diagnosis and treatment of sexual dysfunction among this group of patients might improve outcomes of PCOS infertility treatment.

PATIENTS AND METHODS

Our work is an observational cross-sectional study that included an Egyptian convenient sample of 186 females with primary infertility due to polycystic ovary syndrome within the period from January 1, 2022 to August 15, 2022.

The primary aim of our study was to determine the prevalence of sexual dysfunction among Egyptian women with primary infertility due to PCOS, undergoing fertility treatment and predisposing factors.

Patients aged 18-35 were recruited from Kasr Al-Ainy Gynecology Clinic (Infertility Clinic), Faculty of Medicine, Cairo University. They were diagnosed with infertility and polycystic ovary by Rotterdam criteria.

Patients with medical conditions (apart from PCOS complications like type II diabetes, obesity and metabolic syndrome) or receiving antidepressant therapy were excluded. Females with other causes of infertility associated with PCOS (e.g uterine factors, tubal factors) were not included. Patients with history of psychotic disorders or substance abuse were excluded. All patients approved to participate in the study and signed an informed consent to confirm this approval.

Intervention

A-Gynecological Assessment: Using Kasr Al Ainy infertility sheet that include clinical history taking of amenorrhea or oligomenorrhea. Assessment of age years and type of infertility, medical history, surgical history, weight, height, history of hirsutism, ultrasound finding, speculum examination and hormonal profile including (FSH, LH, E2, Prolactin, TSH and progesterone) also history of any surgical intervention and type of fertility treatment were obtained. Vaginal ultrasound and speculum examination were done to every patient. PCOS was diagnosed using Rotterdam criteria based on identifying at least two of the following three features: oligo/anovulation, hyperandrogenism: clinical (hirsutism or male pattern alopecia) or biochemical (raised free androgen index or free testosterone) and polycystic ovaries on ultrasound (a follicle number per ovary of > 10).

Other etiologies must be excluded such as congenital adrenal hyperplasia, androgen secreting tumours, Cushing syndrome, thyroid dysfunction and hyperprolactinaemia.

Laboratory work up including

1. LH/FSH ratio: Many women with PCOS have LH and FSH levels still within the 5-20 mIU/ml range, but their LH level is often two or three times that of the FSH level

2. Prolactin level: (1-20 ng/mL)

3. Estradiol level: (ranging from 20-400 pg/mL in healthy normal women)

4. TSH level: (normally 0.35- 5 µU/mL). TSH is checked to rule out other problems, such as an underactive or overactive thyroid, which often cause irregular or lack of periods and anovulation.

All blood samples (FSH-LH- E2 –PRL-TSH) were obtained at the second day of menstrual cycle in all women within the last six months before the interview

B- Data collection tool was a questionnaire completed through interviews in private meetings by the researcher. The questionnaire was composed of two parts: demographic characteristics and information about sexual relationship (such as frequency of sexual contacts per week, satisfaction with sexual and non-sexual relationships). Sexual dysfunction measurement were done by gynecologists/ sexologists in infertility center on the basis of a diagnostic interview according to the Female Sexual Functioning Index (FSFI) The FSFI is a reliable test for the assessment of sexual function in women. The Arabic version of this test, was used. The FSFI is comprised of six domains (desire, arousal, lubrication, orgasm, satisfaction, and pain) with score ranges of 0 (or 1) to 5. The total FSFI score ranges from 2.0 to 36. The translated version of the FSFI test was used in this study. All questions in the FSFI questionnaire were explained by the physician one by one, and they were filled in a suitable and silent environment where patients could comfortably share such intimate information.

Analysis of data will be done by using SPSS (statistical program for social science version 23). Quantitative data will be statistically represented in terms of mean ± standard deviation (± SD) while categorical data will be represented as frequency and percentage. Comparison of quantitative data will be done using (Mann Whitney U)

test for independent samples while categorical data will be compared using (Chi squared test) or (Fisher exact test) when appropriate.

Correlation coefficient test will be used to rank different variables against each other where a probability value (*p value*) > 0.05 will be considered statistically insignificant, a probability value (*p value*) < 0.05 will be considered statistically significant & a probability value (*p value*) < 0.001 will be considered statistically highly significant.

RESULTS

Patient characteristics

A total of 186 women were recruited by convenience sampling over the study duration (January 2022 to August 2022). The mean age of the participants was 24.67 (SD 4.6) with the biggest group (46.8%) being the 20-25 age group. Similarly, a great proportion of the partners were below 40 years (95.2%). Majority of the women were house wives (73.1%) and educated (81.7%). The average BMI of study participants was 30.12 (SD 6.2). (48.9%) of husbands were smokers . The Mean AMH was (5.04 ± 2.2). All study group received induction of ovulation with different drugs. Clomiphene citrate, Aromatase Inhibitors & gonadotrophins were used in 29%, 94.1%, 35.5% of patients respectively. IVF was resorted to in 15.1%. All patients were prescribed metformin. (21.5%) of wives had bad feeling towards their husbands & 53.2% were hairsute (Table 1).

Table 1: Female sexual dysfunction prevalence as per female sexual function index questionnaire (FSFI-Q)

General features	
Age	24.6 ± 4.6
BMI	30.1±6.2
Duration of infertility	2.7±1.2
Education	152(81.7%)
Occupation	136(73.1%)
Husband age	29.2±5.4
Husband education	165(88.7%)
Low Income	172(92.5%)
Coital frequency	2.2±1.074
Smoking	91(48.9%)
AMH	5.04±2.8
Infertility treatment	
- IO with TI	186(100%)
- number of cycles (mean ±SD)	2.42 ± 1.44
- Clomiphene citrate	54 (29 %|)
- Aromatase Inhibitors	175 (94.1%)
- Gonadotrophins	66 (35.5%)
- IO with IUI	25(13.4%)
- IVF	28(15.1%)
- LOD	17(9.1%)
- Bariatric surgery	11(5.9%)
- life style	71(38.2%)
- metformin	186(100%)
Feeling towards husband	40(21.5%)
Hairsutism	99(53.2%)

Using a cutoff score of 26.55 on the FSFI-Q, the prevalence of female sexual dysfunction (FSD) was 30.1 % among the study subjects. The most affected domains were orgasm (45.7%) and satisfaction (53.8%) while the least affected in both groups was the desire domain (30.1%) (Table 2).

Table 2: Analysis of factors associated with female sexual dysfunction

FSFI domain	Number (%)
Desire	56 (30.1%)
Arousal	57 (30.6%)
Lubrication	57 (30.6%)
Orgasm	85(45.7%)
Satisfaction	100 (53.8%)
Pain	77(41.4%)
Score < 26.55	56 (30.1%)

On evaluation of the association between the various socio-demographic variables and sexual dysfunction among the study group, age , BMI , infertility duration , husband age & coital frequency were statistically significant . Despite using different treatment modalities , those using Clomiphene citrate , gonadotrophin & IVF had more prevalence of sexual dysfunction. Females with bad feeling towards their husband & hairsute females had higher prevalence of female sexual dysfunction (P value < 0.005). (Table 3).

Table 3: Background characteristics of included women

	P Value (Chi-square)
Age	<0.005
BMI	<0.005
Duration of infertility	<0.005
Education	0.550
Occupation	0.568
Husband age	<0.005
Husband education	0.348
Income	0.582
Coital frequency	0.039
Smoking	0.513
AMH	0.464
Infertility treatment	
- number of IO cycles	<0.005
- Clomiphene citrate	<0.005
- Aromatase Inhibitors	0.303
- Gonadotrophin	<0.005
- IO with IUI	0.322
- IVF	<0.005
- LOD	0.187
- Bariatric surgery	0.073
- life style modification	0.482
Feeling towards husband	<0.005
Hairsutism	<0.005

DISCUSSION

Sexual dysfunction is a common issue that can negatively affect a woman's self-esteem & quality of life. However, its burden has not been sufficiently assessed especially in Egypt & other Arab countries. This study demonstrated that 30.1% of the study participants had sexual dysfunction. These findings are comparable to other studies showing a sexual dysfunction prevalence of 26–28% among reproductive age women[15].

The prevalence reported in the present study is slightly lower than that reported in other population based studies[16]. These studies included menopausal women. Our study population included only reproductive age women. Advancing age is associated with greater sexual dysfunction especially after menopause[17]. For instance, Safarinejad (2006) showed a prevalence rate of sexual dysfunction among Iranian women of 31.5%. The study participants however included menopausal women (range 20–60 years)[18].

In Egypt, Ibrahim *et al*. (2013) found a 52.8% prevalence of sexual dysfunction. However, majority (51.3%) were post-menopausal and 71% had undergone female genital mutilation (FGM) hence the higher prevalence as advanced age adversely affects sexual function and possibly female FGM especially if type II or III. Moreover, only 15.2% had college education[19].

The primary aim of our study was to determine the prevalence of sexual dysfunction among Egyptian women with primary infertility due to PCOS , undergoing fertility treatment. We found a prevalence of sexual dysfunction of 30.1% .

Regarding socio-demographic features of our study population , most of them had a BMI > 30 (48.4%) & BMI between 25-29.9 (25.3%), suggesting a bad dietary habits and lack of physical activity. The mean female age was 24.67 ± 4.6 SD while the mean husband age was higher (29.2 ±5.4 SD) .

Different treatment options were used. All patients used induction of ovulation with timed intercourse. Of them, Clomiphene citrate was only used in 29% while Aromatse inhibitors & gonadotrophins were used in 94.1% & 35.5% respectively. IVF was used in 15.1% .

Asking women about their feelings towards their husbands, 21.5% felt bad towards their husbands due to aggressive and non-emotional way of relationship. Women with hairsutism (53.2%) complained more from bad husband attitude.

Using FSFI-Q , the most common sexual problem was in the sexual satisfaction domain (53.8%) followed by orgasmic disorders (45.7%). The decreased satisfaction is possibly due to low self-esteem and poor body-image as a result of or as a cause of the subfertility. Moreover, the psycho-social pressures to conceive stemming from "sex-on-demand" might result in loss of couple intimacy. These finding are different from those by Mirblouk *et al*. (2016) that demonstrated a greater occurrence of desire, arousal and orgasmic dysfunctions[20]. Aggarwal *et al*. (2013) also found arousal dysfunction to be the most prevalent among the subfertile women (70%) while desire and orgasmic dysfunctions were the most prevalent in the fertility group each at 40%[21]. Khademi *et al*. (2008) demonstrated an 80% prevalence of arousal dysfunction and a 22% orgasmic dysfunction among subfertility women[22].

Sareh Dashti *et al* 2016, revealed that Sexual dysfunction was present in 62.5% of patients with the domains of arousal and lubrication particularly affected (93.8% and 87.5%, respectively). No significant difference in any of the FSFI score domains was observed between patients with and without hirsutism[23].They used a very low sample size (16 patients), included patients with depressive symptoms and secondary infertile couples.

Fatemeh Bazarganipour *et al*.2014, performed a cross-sectional study including 300 PCOS patients attending to the private practice centers in, Iran. The prevalence of female sexual dysfunction (FSD) was 16.6%. In particular patients indicated poorer sexual functioning for the desire (48.3%) and the arousal (44.7%) subscales. Patients with lower educational level and irregular menstrual status were more likely to report sexual dysfunction[26].

Mantzou D. *et al*. 2021, assessed Anthropometric characteristics, hormonal levels and sexual function based on the Female Sexual Function Index (FSFI) questionnaire, in 76 young women with PCOS and 133 matched controls. Women with PCOS demonstrated lower scores than controls in arousal, lubrication, orgasm, satisfaction , and total score of the FSFI, even after correction for BMI. When corrected for total testosterone, the domains of lubrication, satisfaction, and total score of FSFI remained significantly impaired in women with PCOS (P values 0.037, 0.024, & 0.044 respectively)[27].

Different factors contributed to sexual dysfunction in our study group. Higher female & male age, higher BMI, longer duration of infertility were highly correlated to sexual dysfunction (*P Value* < 0.005). Interestingly, we found a significantly lower frequency of coitus among the study group (64 %). This is unusual for infertile subjects who are expected to have more frequent intercourse in order to increase their fecundability. In the present study, the frequency of coitus was significantly associated with sexual dysfunction (*P Value* 0.039).

Different treatment modalities also revealed to have an impact on sexual function . The use of Clomiphene and

gonadotrophins for ovulation induction was associated with higher prevalence of sexual dysfunction, especially with more number of stimulation cycles (*P value* < 0.005). Patients undergoing IVF for PCOS were much more affected with sexual dysfunction (*P value* < 0.005).

A Deniz *et al* 2020 investigated the effects of infertility on sexual functions and depression levels in women with PCOS using a total of 150 participants who were either fertile patients with PCOS, infertile patients with PCOS, or fertile women without PCOS (control) (n = 50) were included for the study, Body mass index (BMI) was found to be significantly higher in the PCOS plus infertility group (27.9 ± 2.9, P = 0.01) than the other groups. The PCOS plus infertility group showed significantly lower FSFI scores than the PCOS group in terms of desire, lubrication, orgasm, satisfaction, and pain[24].

Basirat Z *et al* 2019 conducted a case-control study on 240 infertile females (120 with PCOS and 120 without PCOS) using the fertility problem inventory (FPI), the female sexual function index (FSFI), the Beck depression inventory-II (BDI-II), and the Toronto alexithymia scale (TAS-20). There was no significant difference between the two groups regarding the mean scores of depression symptoms and sexual function[25]. The different methodology of the study may explain the contradicting results with our study.

Some of the limitations of the our study include that it was conducted in Kasr Alainy hospital whose clientele are generally of a lower education level and socioeconomic status and therefore, the results may not be generalizable to the general population. In addition , given the sensitive nature of the problem, the study population might have been emotionally swayed in their responses to the questions. We also had much little information about the husbands which may have affected their sexual function.

CONCLUSIONS AND RECOMMENDATIONS

In conclusion, the present study demonstrated an association between the PCOS infertility and the prevalence female sexual dysfunction. This is one of the very first studies taking this issue in account among Egyptian PCOS infertile women .The scope of the problem is basically due to low self-esteem, the bad perception of body image of an obese hairsute female , the stress of delayed conception in addition to the superimposed bad relation with their husbands. Encouraging a healthy life style, weight loss, psychological support and couple counseling may be a key therapy for the problem.

Given the limitations of the present study, we recommend a large multi-centre study in our setting to further evaluate the association between PCOS and sexual dysfunction.

CONFLICT OF INTERESTS

There are no conflicts of interest.

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