

## RESEARCH ARTICLE

## Sexual Dysfunction in Patients with Polycystic Ovary Syndrome in Malaysia

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### Abstract

**Background:** Polycystic ovary syndrome (PCOS) is a combination of chronic anovulation, obesity, and hyperandrogenism and can affect sexual function in women of reproductive age. It is also associated with endometrial cancer. Our aim was to evaluate the frequency and predisposing factors of sexual dysfunction in PCOS patients. **Materials and Methods:** In this cross-sectional study, 16 married women with a definite diagnosis of PCOS were recruited. Sexual function was assessed in the domains of desire, arousal, lubrication, orgasm, satisfaction and pain using the female sexual function index (FSFI) questionnaire. Patients were also assessed for mental health using the depression, anxiety and stress (DASS-21) questionnaire. Presence of hirsutism was assessed using the Ferriman-Gallwey (FG) scoring system. Demographic data were obtained from patients during in-person interview. **Results:** Sexual dysfunction was present in 62.5% of patients with the domains of arousal and lubrication particularly affected (93.8% and 87.5%, respectively). Patients with symptoms of depression and anxiety were significantly more likely to suffer sexual dysfunction than those without these symptoms ( $p=0.04$  and  $p=0.03$  respectively). Patients with stress symptoms reported higher orgasm dysfunction than those without ( $p=0.02$ ). No significant difference in any of the FSFI score domains was observed between patients with and without hirsutism. **Conclusions:** PCOS patients markedly suffer from sexual dysfunction and therefore it seems appropriate to be screened for intervention. Poor mental health conditions that may be the result of infertility or other complications of PCOS should also be considered as curable causes of sexual dysfunction in these patients.

**Keywords:** Polycystic ovary syndrome - sexual dysfunction - infertility - libido - arousal

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### Introduction

Polycystic ovary syndrome (PCOS) is the most common endocrine disorder in women of reproductive age with the prevalence estimation to be between 5% and 24% in different populations (Jones et al., 2008; De Niet et al., 2010). PCOS is characterized by enlarged ovaries, menstrual irregularities and clinical and biochemical hyperandrogenism. PCOS is associated with obesity, insulin resistance, lipid disorders, an ovulatory infertility as well as endometrial cancer (De Niet et al., 2010; Hemati et al., 2011). Previous studies assessed the impact of symptoms and treatment of PCOS patients on their quality of life (Ching et al., 2007; De Niet et al., 2010; Mansson et al., 2011; Sundararaman et al., 2008). Hirsutism, acne, alopecia and infertility can lead to diminished "feminine identity" and stress in PCOS patients (Elsenbruch et al.,

2003; Himelein and Thatcher, 2006; Benson et al., 2009; De Niet et al., 2010). Women with PCOS are at an increased risk for depression and anxiety disorders (Himelein and Thatcher, 2006; Benson et al., 2009; De Niet et al., 2010). Previous studies found that the quality of life (QOL) is low in PCOS patients. Women with PCOS and their partners are found to be less satisfied with their sex life (Elsenbruch et al., 2003; Barnard et al., 2007; Battaglia et al., 2008; Mansson et al., 2011). Alterations in the physical and aesthetic feminine features (hirsutism, obesity, acne, and alopecia) and sexual hormones imbalance can lead to a loss of QOL and sexuality of the patients (Elsenbruch et al., 2003; Battaglia et al., 2008; Manlove et al., 2008). Greater prevalence of mood disorders, such as major depression and bipolar disorder, in PCOS patients along with their medicinal treatments can affect sexual function. The focus of the previous studies was to the evaluate sexuality in

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patients with PCOS, referred to as psychosexuality or to sexual orientation (Elsenbruch et al., 2003; Battaglia et al., 2008; Manlove et al., 2008).

“A sexual problem, or sexual dysfunction, refers to a problem during any phase of the sexual response cycle that prevents the individual or couple from experiencing satisfaction from the sexual activity and resulting from physical, social, and psychological factors” (Burri and Spector, 2011). “Epidemiological studies in the United States have estimated that Female sexual dysfunction (FSD) affected 43% of women in the general population over the past 12 months” (Laumann et al., 1999). In the United Kingdom recent sexual dysfunction was reported in 5.8% of women and 15.5% reported lifelong sexual dysfunction” (Burri and Spector, 2011). The rate of female sexual dysfunction (FSD) for middle aged women in Latin America was observed in 58% (Blümel et al., 2009).

The sexual function index (SFI) questionnaire measures the sexual function in women by assessing specific domains of sexual functioning including desire, sexual arousal, lubrication, orgasm, satisfaction and pain (Rosen et al., 2000). Regarding the fact that multiple factors can impair sexual function of PCOS patients, it is essential to evaluate the importance of this problem and the main factors related to it.

Knowing that changes in physical appearance associated with PCOS may lead to decreased sexual satisfaction (Stovall et al., 2012), the aim of this study was to evaluate the associations between Body Mass Index (BMI), and hirsutism on sexual functioning in this population of PCOS infertile women.

## Materials and Methods

This cross-sectional study was conducted at the University Putra Malaysia. Staff were screened for PCOS according to Rotterdam criteria, were recruited after obtaining a written consent. A total of 16 married women with definite diagnosis of PCOS participated in this study. Participants were included in the study if they were Malaysian citizens, were staff of the university. Participants were excluded if they were having diabetes mellitus, degenerative illnesses, other endocrinopathies, those with illnesses that could cause menstrual disorders as well as history of using hormones up to 60 days before the selection process and diagnosis of primary amenorrhea.

Sexual dysfunction was assessed using the previously validated Malay version of FSFI questionnaire (Atis et al., 2011; Lombardi et al., 2011; Sidi et al., 2007). The scale is a 19-item multidimensional self-report questionnaire for the assessment of the key dimensions of sexual functioning in women in last month. The items of the scale are divided into six domains which include desire (2 questions), subjective arousal (4 questions), lubrication (4 questions), orgasm (3 questions), and satisfaction (3 questions) and pain (3 questions). “The total FSFI score is the sum of all scores obtained in each five domain. The higher score, is the better in the sexuality. The score of 26.55 was considered as the cut-off value for diagnosis of female sexual dysfunction” (Wiegel et al., 2005). Cronbach’s alpha coefficient was calculated to evaluate

reliability of questionnaire and it was 0.816.

The degree of hirsutism was assessed using the Ferriman-Gallwey (FG) scoring system, each individual body area (body areas including the lip, chin, chest, upper abdomen, lower abdomen, upper arm, forearm, thigh) is visually scored by patients on a scale of 0-4, where 0 indicates no terminal hair growth and 4 indicates full male-pattern terminal hair growth. A score  $\geq 6-8$  generally defines hirsutism (Wild et al., 2005). The definitions for the various BMI categories were normal ( $<25$ ), and obese ( $>25$ ).

The primary outcome measure in this study was to assess sexual function in PCOS patients. Additional outcomes of interest were to investigate sexual function of PCOS patients in relation to their age, BMI, menstrual pattern, degree of hirsutism (according to FG Scoring system) and past obstetric history. In all patients with PCOS and idiopathic hirsutism physical examinations and tests were done by gynecologist and other causes including hyper-androgenic, congenital adrenal hyperplasia, cushing

**Table 1. Demographic Characteristics and Frequency of PCO Symptoms**

		Frequency (%)
Race	Malay	13 (81.3%)
	Indian	1 (6.3%)
	Other	1 (6.3%)
Education	Under graduate	6 (37.5%)
	Masters	5 (31.3%)
	PhD	5 (31.3%)
Education	Undergraduate	6 (37.5%)
	Post graduate	10 (62.5%)
Household income	> RM3000	11 (68.8%)
	< RM 2999	5 (31.2%)
Depression		5 (31.3%)
Anxiety		5 (31.3%)
Stress		8 (50.0%)
Hirsutism		10 (62.5%)

**Table 2. Domains of Sexual Dysfunction in Infertile PCOS Patients According to Female Sexual Function Index (FSFI)**

	Mean $\pm$ SD	Frequency (%) of dysfunction
Desire	3.86 $\pm$ 1.35	8 (50.0%)
Arousal	2.96 $\pm$ 0.92	15 (93.8%)
Lubrication	4.56 $\pm$ 0.98	14 (87.5%)
Orgasm	5.52 $\pm$ 0.90	3 (18.8%)
Satisfaction	4.42 $\pm$ 0.83	12 (75.0%)
Pain score	4.65 $\pm$ 1.58	12 (75.0%)
Total FSFI score	25.51 $\pm$ 2.77	10 (62.5%)

SD= Standard deviation; FSFI= Female sexual function index

**Table 3. Relationship between FSFI Domains and Age and BMI**

	Age		BMI	
	$\beta$	p	$\beta$	p
Desire	0.02	0.83	0.09	0.48
Arousal	-0.04	0.44	-0.05	0.53
Lubrication	-0.05	0.37	0.01	0.9
Orgasm	-0.02	0.68	0.02	0.84
Satisfaction	0.05	0.41	0.04	0.07
Pain	0.01	0.9	-0.01	0.93

**Table 4. Comparison of FSFI Score and its Domains between Categorical Variables**

	Education		Depression symptoms		Anxiety symptoms		Stress symptoms		Hirsutism	
	Under graduate	Post graduate	No	Yes	No	Yes	No	Yes	No	Yes
Desire	3.70±1.44	3.9±1.36	3.93±1.18	3.72±1.82	3.75±1.31	3.97±1.47	3.75±1.31	3.97±1.47	4.14±1.04	3.40±1.77
Arousal	3.15±2.85	2.85±0.86	2.89±0.94	3.12±0.94	2.89±3.04	3.04±0.76	2.89±1.10	3.04±0.76	2.70±0.68	3.40±1.15
Lubrication	4.85±1.25	4.38±0.80	4.58±1.01	4.50±1.02	4.61±1.20	4.50±0.79	4.61±1.20	4.50±0.79	4.26±0.66	5.05±1.28
Orgasm	6.00±0.62	5.24±0.95	5.89±0.48	4.72±1.14	6.00±0.52	5.05±0.98 <sup>c</sup>	6.00±0.52	5.05±0.98 <sup>c</sup>	5.24±0.95	6.00±0.62
Satisfaction	4.20±0.87	4.56±0.83	4.62±0.81	4.00±0.80	4.45±0.89	4.40±0.83	4.45±0.89	4.40±0.83	4.52±0.75	4.27±1.00
Pain	5.40±1.28	4.20±1.62	5.27±0.96	3.28±1.91	5.50±1.02	3.80±1.63d	5.50±1.02	3.80±1.63	4.28±1.74	5.27±1.14
Total FSFI score	27.30±1.97	25.19±2.96 <sup>a</sup>	27.18±1.58	23.34±3.12 <sup>b</sup>	27.20±1.76	24.76±3.14	27.20±1.76	24.76±3.14	25.14±2.94	27.38±1.90

<sup>a</sup> Significant difference p=0.04; <sup>b</sup> Significant difference p=0.04; <sup>c</sup> Significant difference p=0.03; <sup>d</sup> Significant difference p=0.02; <sup>e</sup> Significant difference p=0.03

syndrome, hyper prolactinemia and hypo thyroidism or tumors secreting androgens were excluded.

The study was approved by the University Putra Malaysia Ethical Committee. All patients signed a written informed consent prior to participation in this study.

#### Statistical analysis

Data were analyzed using the Statistical Package for Social Sciences (SPSS) software version 20 (SPSS Inc. Chicago, IL, USA).  $P \leq 0.05$  was considered significant. Data were expressed as mean±SD and percentages. Average and SD were used to evaluate descriptive data.  $\chi^2$  test was used to compare categorical variables, and Student t- test and analysis of variance were used to compare the continuous variables (FSFI variable). Bivariate correlations were investigated by Pearson product-moment correlation coefficient.

#### Results

Women in ambulatory accompaniment for PCOS (n=16) were sequentially evaluated. Mean age of patients was 33.44±5.88 years ranging from 28 to 48. Mean BMI was 28.04±3.34 kg/m<sup>2</sup> ranging from 25.02 to 37.68 kg/m<sup>2</sup>. Demographic characteristics of study subjects are shown in Table 1.

The mean Ferriman-Gallway Score (FGS) was 8.00±3.27 ranging from 3 to 21. The frequency of different psychological symptoms in patients is given in Table 1.

In our study, mean FSFI score was 25.98±2.77 (CI 95%: 24.51-27.45, range: 19.5-31.1). If the score of 26.55 was considered as the cut-off value for diagnosis of female sexual dysfunction, the prevalence of sexual dysfunction in PCOS patients was 62.5%, n=10. FSFI scoring (mean & median level) in different domains is reported in Table 2. Relationship between age and BMI with FSFI domains were presented in Table 3. There was not any relationship between age and BMI with total FSFI score (p=0.86 and p=0.73 respectively).

Patients who were postgraduate had higher sexual dysfunction than those who were undergraduate (p=0.04). Patients with symptoms of depression and anxiety were significantly having more sexual dysfunction than those without symptoms of depression (p=0.04 and p=0.03 respectively) while patients with stress symptoms reported higher orgasm dysfunction than those without stress symptoms (p=0.02). No significant difference in any of the FSFI score domains was observed between patients with

hirsutism and those without hirsutism (Table 4).

#### Discussion

We evaluated sexual function of PCOS women with FSFI questionnaire. FSFI had been previously used to assess sexual functioning in several diseases (Giugliano et al., 2010; Kim et al., 2011; Navaneethan et al., 2010; Zelená et al., 2011). According to our results there is a high prevalence of sexual dysfunction among PCOS patients associated with lower education levels, and hirsutism. BMI levels higher than normal had decreased desire and satisfaction. Sexual dysfunction has been reported to range between 5.5% and 11.2% in Malaysian population (Dina Muhayidin et al., 2013; Grewal et al., 2014). Furthermore, sexual dysfunction was reported more prevalent in PCOS patients compared with normal population and the prevalence ranges between 28% and 64% in different studies in different countries (Anger et al., 2007; Drosdzol et al., 2007; Veras et al., 2011). In general the difference in the observation of sexual dysfunction in these studies might be due to the different assessment tools and demographic characteristics of the subjects, including age and BMI. According to our results PCOS patients reveal one of the highest rates (62.5%).

The frequency of sexual dysfunction in the domain of arousal was the highest (98.3%) followed by lubrication (87.5%), satisfaction and pain (75% each) while the orgasm dysfunction domain showed the lowest frequency (18.8%). Previous studies have reported satisfaction to be lower in PCOS patients than normal women (Elsenbruch et al., 2006, 2003). In a previous study showed that androgen level did not affect desire for sex for an emotional attachment in 85 PCOS patients (Rellini et al., 2013). In normal Indian women, FSFI domain scores suggested difficulties with arousal in 91.3%, lubrication in 96.6%, orgasm in 86.6%, satisfaction in 81.2%, desire in 77.2% and pain in 64.4% (Song et al., 2008). Also In normal Korean women, FSD was detected as a desire problem in 44.0% of women, an arousal problem in 49.0%, a lubrication problem in 37.0%, an orgasm problem in 32.0%, a satisfaction problem in 37.0%, and a pain problem in 34.6% (Singh et al., 2009). Infertility is one of the most stressing factors in women's life and it may influence their satisfaction and quality of life (Greil, 1997; Schmid et al., 2004). The majority of our patients had hirsutism which reveals their hormonal disturbances. Such abnormalities are highly associated with sexual

dysfunction (Veras et al., 2011).

Demographic factors such as age, job and education are found to have effect on sexual function in different studies (Burri and Spector, 2011; Lianjun et al., 2011; Najafabady et al., 2011; Gafarzadeh Esfehiani, et al., 2016). In our study, the range of patients' age was limited (28-48 years) and we could not find any relationship between age and sexual dysfunction. However, higher education levels was found to be associated with higher sexual dysfunction in total FSFI score only.

In our study stress was found in 50% of the patients and depression and anxiety were reported equally in 31.3% of the patients. In a systematic review and meta-analysis, the prevalence of depression in PCOS patients was reported to range from 5 to 73%, while anxiety was reported in 10-46% of PCOS patients (Barry et al., 2011). Major depressive disorder is characterized by loss of interest, reduction in energy, lowered self-esteem, inability to experience pleasure, this constellation of symptoms may be expected to produce difficulty in sexual relationship and depressed patients have shown sexual dysfunction 2-3 times more than non-depressed individuals (Baldwin, 1996). Furthermore, in a previous study the prevalence of stress was reported to be 50.6% among PCOS patients which was in line with the findings of our study (Zangeneh et al., 2012).

Other factors such as high BMI, and hirsutism can affect one's perception of sexual attractiveness (Elsenbruch et al., 2003). In this study, BMI did not have any significant effect on the total sexual function score. However, increasing BMI levels resulted in diminished score on desire and satisfaction domains. Ferraresi showed that the PCOS obese women were at a higher risk for sexual dysfunction and lower FSFI scores, and women with borderline FSFI values, regardless of their obesity status (Ferraresi et al., 2013). Stovall study showed that increasing BMI was associated with a significant reduction in the orgasm subdomain (Stovall et al., 2012).

In Stovall study no significant associations were found in regard to hirsutism but the negative impact of hirsutism on sexual function and quality of life in PCOS patients has been widely assessed in different studies (Jones et al., 2008; Stovall et al., 2012). We observed very same outcomes in our study. The high frequency of dysfunction in arousal domain could be due to hyper androgenism (hirsutism) and high BMI since they are considered to affect women's body image. Women may also experience emotional states such as depression, anxiety, and lowered self-esteem that are known causative factors of sexual dysfunction. Marital distress may arise following the diagnosis of infertility, and women who have had multiple, unsuccessful treatment attempts are known to be at a greater risk of psychological distress (Boivin et al., 1995; Kaneshiro and Kessel, 2009; Koselak et al., 2012). These studies suggest that psychological factors and partner relationships are important factors formative of sexual function. Thus, a two group study to demonstrate the relationship between sexual dysfunction to social and psychological factors, are necessary.

One limitation of this study is the recruitment population. Since we included patients from university

staff and students, they might not represent the total Malaysian population.

In general, sexual dysfunction could be considered as comorbidity in PCOS patients. Prospective clinical studies are suggested to evaluate possible targeted treatments in order to regain normal sexual function in PCOS patients.

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