Original Article

Study of Psychiatric Co-morbidities in Women with Polycystic Ovarian Syndrome

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Abstract

Background: Polycystic Ovary Syndrome (PCOS) is one of the most common endocrine disorders affecting women of reproductive age. In addition to reproductive and metabolic abnormalities, PCOS is increasingly associated with various psychiatric conditions such as depression, anxiety, and reduced quality of life. Hormonal imbalance, infertility, obesity, and cosmetic manifestations like hirsutism and acne may contribute to psychological distress in affected women. Early identification of psychiatric co-morbidities is important for comprehensive management of PCOS. An outline of the prevalence and trend of psychiatric comorbidities amongst women with diagnosed PCOS, and to demonstrate the relationship between a clinical manifestation of PCOS and psychiatric disorders. **Material and Methods:** This cross-sectional study was conducted at a single hospital and included 100 women diagnosed with PCOS who attended the gynaecology outpatient department. The diagnosis of PCOS was carried out using the Rotterdam criteria. Clinical assessment, including age, body mass index (BMI), menstrual history, and manifestations of hyperandrogenism, was described. The psychiatric evaluation was conducted via standardised screening techniques such as the Beck Depression Inventory (BDI) and the Generalised Anxiety Disorder scale (GAD-7). The SPSS software was used to analyse the data, and the p-value was set at 0.05 or lower. **Results:** In 100 women being examined, 79 percent ended up demonstrating at least a single co-morbidity of psychiatry. The most prevalent psychiatric disorder was depression, which was witnessed in 34 per cent of patients, and the second one was anxiety disorders, at 29 per cent; the remaining 16 per cent of patients exhibited mixed anxiety-depression symptoms. Clinical manifestation of PCOS like obesity, infertility, hirsutism, and menstrual irregularities had a significant association with psychiatric disorders ($p < 0.05$). Women who were infertile and obese had a greater prevalence of depressive and anxiety symptoms than their counterparts. **Conclusion:** The article illustrates that psychiatric co-morbidities in women with PCOS are high, especially depression and anxiety disorders. Such clinical manifestations of infertility, obesity, and cosmetic considerations can be taken to be causes of great psychological distress. Mental health screening should also be incorporated into PCOS management, and it should be supported by a multidisciplinary intervention team comprising gynaecologists and mental health care providers to enhance overall patient outcomes.

Keywords: Polycystic ovary syndrome, Psychiatric co-morbidity, Depression, Anxiety, Women's mental health, Reproductive endocrine disorders.

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Introduction

One of the often seen endocrine and metabolic ailments in women of reproductive age is Polycystic Ovary Syndrome (PCOS). It displays persistent uterine non-ovulation, hyperandrogenism, and polycystic ovarian phenotype. It is also accompanied by an array of metabolic and psychological postulations that have a notably deleterious effect on the quality of life of women affected by PCOS.[1]

Besides related reproductive and metabolic disorders like insulin resistance, obesity, and dyslipidemia, women with PCOS often develop mental distress after the chronic disease and its apparent signs, which include hirsutism, acne, and increased weight.[2]

Over the last few years, a growing consensus has been formed as to the connection that exists between PCOS and psychiatric co-morbidities, especially depression, anxiety disorders, and low quality of life. Research has shown that women with PCOS are characterised by a high prevalence of psychological disorders as opposed to women without the disease, which could be due to hormonal imbalances, especially increased androgen, insulin resistance, and hypothalamic-pituitary-ovarian axis derangements.[3]

It has been reported in numerous clinical studies that depression develops in around 30-40% of women having PCOS and anxiety disorders are reported to take place in nearly 20-35% of the patients and worsens psychological pain further as they are accompanied by physical signs including infertility, obesity, acne and hirsutism. These psychological considerations may

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adversely affect compliance with treatment and the general management of the disease.[4]

Moreover, it has been proposed that the problem of infertility related to PCOS is a significant factor that leads to emotional stress and psychiatric diseases. Infertile women can also acquire feelings of incompetency, frustrations, and depression especially where childbearing is intricately linked to societal and cultural demands. Moreover, mood disorders have also been linked to metabolic complications like obesity and insulin resistance which may further escalate the psychological weight of PCOS.[5]

Despite the growing evidence of psychiatric co-morbidities in PCOS, mental health issues in these patients are often under-recognised and under-diagnosed in routine clinical practice. Most treatment strategies for PCOS focus primarily on reproductive and metabolic aspects, while the psychological impact of the disorder is frequently overlooked. Early identification of psychiatric disorders in women with PCOS is essential for improving treatment outcomes and enhancing quality of life.[6]

Therefore, the present study was conducted to evaluate the prevalence and pattern of psychiatric co-morbidities among women diagnosed with PCOS and to assess the relationship between clinical manifestations of PCOS and psychological disturbances. Understanding the psychological impact of PCOS may help in developing a multidisciplinary approach involving gynaecologists, endocrinologists, and mental health professionals for comprehensive patient management.

Materials and Methods

Study Design: The present study was conducted as a hospital-based cross-sectional observational study to evaluate the prevalence of psychiatric co-morbidities among women diagnosed with PCOS.

Study Setting: The study was conducted in the Department of Obstetrics and Gynaecology, in collaboration with the Department of Psychiatry, at a tertiary care teaching hospital over 12 months.

Study Population: A total of 100 women diagnosed with PCOS attending the gynaecology outpatient department were included in the study.

Inclusion Criteria

The women who satisfied the following criteria were enrolled:

1. Women aged 18–40 years.
2. The patients who were diagnosed with PCOS based on the Rotterdam criteria.
3. Patients who are willing to collaborate and make an informed consent.

Exclusion Criteria

Exclusion criteria of the study were the following patients:

1. Women who have had a psychiatric illness diagnosis before being diagnosed with PCOS.
2. Women who suffer from other endocrine diseases like thyroid disease, Cushing syndrome, or hyperprolactinemia.
3. Individuals under psychotropic drugs.
4. Pregnant women.
5. Patients unwilling to participate in the study.

Diagnostic Evaluation

All participants underwent a detailed clinical evaluation, including:

- Detailed medical and menstrual history
- Assessment of clinical features of hyperandrogenism, such as hirsutism and acne
- Measurement of body mass index (BMI)
- Ultrasonography of the pelvis to confirm polycystic ovarian morphology
- Laboratory investigations, including a hormonal profile

Psychiatric Assessment

Psychiatric evaluation was performed by a trained psychiatrist using standardised screening tools:

- Beck Depression Inventory (BDI) for assessment of depressive symptoms
- Generalised Anxiety Disorder Scale (GAD-7) for evaluation of anxiety symptoms

Based on the scores obtained, patients were categorised into normal, mild, moderate, or severe psychiatric symptoms.

Parameters Studied

The following parameters were evaluated in the study:

1. Age distribution of patients
2. Body mass index (BMI)
3. Menstrual irregularities
4. Presence of hirsutism or acne
5. Prevalence of depression and anxiety disorders
6. Association between clinical features of PCOS and psychiatric symptoms

Data Collection: All the information was captured in a predetermined proforma. The laboratory, psychiatric, and clinical data were gathered and kept in confidence.

Statistical Analysis: The collected data were entered and analysed using Statistical Package for Social Sciences (SPSS) version 22.0.

- Quantitative variables were expressed as mean ± standard deviation
- Categorical variables were expressed as frequency and percentage.
- The Chi-square test was used to determine the association between categorical variables.
- A p-value < 0.05 was considered statistically significant.

Results

The present study entailed 100 women diagnosed with Polycystic Ovary Syndrome (PCOS). Every participant had been subjected to a psychiatric assessment using standardised screening instruments. The depression, anxiety, and other psychiatric symptoms prevalence were analysed as well as demographic and clinical characteristics.

Table 1: Demographic, Clinical Characteristics and Mean Scores Among Women with PCOS (n = 100)

Parameter	Number (n=100)	Percentage (%)	Mean ± Standard Deviation
Age 18–25 years	38	38%	
Age 26–30 years	34	34%	

Age 31–35 years	18	18%	
Age >35 years	10	10%	
Mean Age (years)	–	–	26.48 ± 4.72
Obesity (BMI ≥25 kg/m²)	42	42%	
Mean Body Mass Index (kg/m²)	–	–	27.96 ± 3.84
Hirsutism	36	36%	
Ferriman–Gallwey Hirsutism Score	–	–	11.62 ± 3.95
Infertility	28	28%	
Menstrual Irregularities	74	74%	
Duration of Symptoms (years)	–	–	3.21 ± 1.86
Beck Depression Inventory (BDI) Score	–	–	18.42 ± 7.36
Generalised Anxiety Disorder (GAD-7) Score	–	–	9.84 ± 4.91
Waist Circumference (cm)	–	–	88.56 ± 8.74

Most of the women in the current analyses were 1830 years old (72%), and the mean age of all women was 26.48 ± 4.72, indicating that PCOS is most common in women at an early age of reproductive life. The most frequent clinical manifestation was menstrual irregularities (74%), followed by obesity (42%), hirsutism (36%), and 28% of the women stated that they were infertile.

The average BMI of 27.96 + 3.84 kg/m 2 indicates that an excellent number of participants were overweight and obese.

The overall Ferriman-Gallwey score was 11.62 ± 3.95, indicating moderate hirsutism in women with it. Psychiatric evaluation implicated a high mean BDI (18.42 ± 7.36) and GAD-7 (9.84 ± 4.91) score range, implying that most of the participants have mild to moderate symptoms of depression and anxiety. These results indicate the outcome of the strong correlation between clinical presentation of PCOS and psychological distress, which demands combined gynaecological and mental health treatment.

Table 2: Prevalence of Psychiatric Co-morbidities in Women with PCOS

Psychiatric Disorder	Number (n=100)	Percentage (%)
Depression	34	34%
Anxiety disorders	29	29%
Mixed anxiety-depression	16	16%
No psychiatric disorder	21	21%

The table shows the distribution of psychiatric disorders among women with polycystic ovarian syndrome (PCOS) (n = 100). The most common psychiatric disorder was depression, which was seen in 34% of the participants, and the second was anxiety disorders, with 29% of women. Also, 16% of the participants experienced mixed anxiety-depression, which implied that these two disorders coexist.

In general, there was 79 percent psychiatric morbidity among women with no psychiatric disorder in 21 percent. The results indicate that mental disorders are common among PCOS women, and there is a necessity to screen them psychologically and provide mental health care when managing PCOS patients.

Table 3: Association of Clinical Features of PCOS with Psychiatric Disorders

Clinical Feature	Psychiatric Disorder Present	Psychiatric Disorder Absent	p value
Obesity	34 (81%)	8 (19%)	0.02
Hirsutism	28 (78%)	8 (22%)	0.04
Infertility	23 (82%)	5 (18%)	0.01
Menstrual irregularities	59 (80%)	15 (20%)	0.03

Psychiatric disorders were significantly associated with several clinical features of PCOS.

Among obese patients, 81% exhibited psychiatric symptoms, compared to 19% without psychiatric illness, indicating a significant relationship between obesity and mental health disorders (p = 0.02).

Similarly, 78% of women with hirsutism experienced psychiatric symptoms, suggesting that cosmetic manifestations of PCOS contribute to psychological distress (p = 0.04).

The association between infertility and psychiatric morbidity was particularly strong, with 82% of infertile women experiencing psychiatric disorders (p = 0.01).

Menstrual irregularities were also significantly associated with psychological symptoms, affecting 80% of women with psychiatric co-morbidities (p = 0.03).

Discussion

The present study evaluated the prevalence of psychiatric co-morbidities among 100 women with PCOS. The findings demonstrated that 79% of patients experienced at least one psychiatric disorder, highlighting the strong relationship between PCOS and mental health problems.

In the present study, depression was observed in 34% of patients, which is consistent with previous studies reporting a high prevalence of depressive symptoms among women with PCOS. A meta-analysis evaluating psychiatric disorders in PCOS reported a pooled prevalence of depression of approximately 42%, confirming that depressive symptoms are significantly more common in women with PCOS compared with the general population.[7,8]

Similarly, anxiety disorders were present in 29% of patients in

our study. Previous research has shown that women with PCOS have nearly three times higher odds of developing anxiety disorders compared to women without PCOS, suggesting a strong association between hormonal disturbances and psychological symptoms.[9]

Another cross-sectional study reported that anxiety affected approximately 38.6% of women with PCOS, while depression occurred in 25.7% of patients, findings comparable to those observed in the present study.[10]

Several mechanisms have been proposed to explain the increased prevalence of psychiatric disorders in PCOS. Hormonal imbalance, particularly elevated androgen levels and insulin resistance, may affect neurotransmitter systems involved in mood regulation. In addition, cosmetic concerns such as hirsutism, acne, and obesity often lead to poor body image and low self-esteem, further increasing the risk of psychological distress.

In the present study, obesity was present in 42% of patients and was significantly associated with psychiatric disorders ($p = 0.02$). Previous research has also demonstrated that higher body mass index is correlated with increased anxiety and depression scores in women with PCOS.[11,12]

Infertility was another crucial factor associated with psychiatric morbidity in this study, affecting 28% of patients, with 82% of these women experiencing psychiatric symptoms. Emotional stress related to infertility has been widely recognised as an important contributor to depression and anxiety among women with PCOS.

Population-based studies have also demonstrated that women with PCOS have a higher prevalence of multiple psychiatric conditions, including depression, anxiety, bipolar disorder, and obsessive-compulsive disorder, emphasising the need for integrated psychological care in the management of PCOS.[13-15]

Overall, the findings of the present study are consistent with existing literature, indicating that PCOS is not only a reproductive and metabolic disorder but also a condition with significant psychological implications. Psychiatric symptoms should therefore be identified and addressed at an early stage to be fundamental parts of holistic PCOS management.

Conclusion

The current paper reveals that psychiatric co-morbidities are quite common among women with Polycystic Ovary Syndrome, with depression and anxiety disorders being the most prevalent disorders. Obesity, hirsutism, infertility, and menstrual abnormalities were the clinical problems that were largely related to psychological distress.

The results indicate the significance of regular psychiatric assessment and multidisciplinary care of PCOS patients. The early detection and treatment of mental health disorders can increase the quality of life and the efficacy of medical management of such patients.

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Conflicts of interest

There are no conflicts of interest.

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