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Original Research Article

Mental Health Patterns in Women Diagnosed with Polycystic Ovarian Syndrome: Examining Co-Occurring Conditions

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Abstract:

Background: Polycystic ovarian syndrome (PCOS) is a hormonal disorder that often affects women of reproductive age. Women with PCOS may experience depression and anxiety due to hormonal imbalances, concerns about their physical appearance, and societal pressures related to infertility. This study investigates the prevalence of depression and anxiety symptoms in PCOS patients and their relationship with various socioeconomic factors

Methods: The research conducted at Atal Bihari Government Medical College and Hospital in Vidisha, MP, over a period of six months from November 2022 to April 2023, focused on examining the socio-demographic and medical characteristics of seventy subjects diagnosed with PCOS. Participants, aged between 18 and 35 years, were selected based on Rotterdam's criteria. A semi-structured questionnaire was utilized to collect data on socio-demographic factors, PCOS details, menstrual patterns, anthropometric measurements, medical and treatment history, and relevant scales. Exclusion criteria included incomplete PCOS diagnosis, ongoing psychiatric treatment, pregnancy, menopause, and hirsutism due to associated disorders

Result: In our study of 70 PCOS patients, findings revealed that 38.57% exhibited borderline clinical depression, 12.87% moderate depression, and 4.285% severe depression based on BDI scores. Additionally, 50% had mild depression, 20% moderate, and 2.85% severe according to HAM-D. Anxiety levels were also notable, with 47.14% experiencing mild anxiety, 17.14% moderate, 10% severe, and 25.71% extreme anxiety on the Hamilton Anxiety Rating Scale. Body image disturbances affected 31.42% of patients, while 21.42% had low self-esteem, 75.71% scored moderately, and only 2.85% exhibited high self-esteem.

Conclusion: This study highlights a greater prevalence of depression and anxiety compared to body image concerns and low self-esteem among individuals with PCOS. Early identification of these mental health issues and appropriate referrals to psychiatrists may aid patients in better managing their condition and ultimately lead to better outcomes.

Introduction

Polycystic ovarian syndrome (PCOS) ranks as the primary endocrine disorder in women of childbearing age, impacting around 5%–10% of women in Western countries.[1] In India, the Indian Fertility Society documented a prevalence ranging from 3.7%–22.5%. [2]

The exact mechanisms underlying this intricate condition are not fully understood, but it is believed that a combination of genetic, metabolic, and environmental factors contributes to its development. PCOS is marked by elevated androgen levels, irregular ovulation, and the presence of multiple cysts on the ovaries. It is associated with various health issues such as irregular menstrual cycles, difficulties with fertility, as well as metabolic disorders like insulin resistance, diabetes, heightened risk of heart disease, and mental health concerns. [3] In adults diagnosed with PCOS, hirsutism, acne, menstrual irregularities, and infertility are reported as the most troubling symptoms [4]. Conversely, among adolescents and young women with PCOS, weight gain has been highlighted as the most distressing symptom. [5-7] The Rotterdam criterion, established in 2004 by the PCOS Consensus Workshop Group (Rotterdam ESHRE/ASRM-Sponsored PCOS Consensus Workshop Group), is widely accepted for diagnosing PCOS. According to this criterion, a PCOS diagnosis requires the presence of at least two of the following three features: (1) oligo/amenorrhea, (2) clinical or biochemical hyperandrogenism, and (3) polycystic ovaries

(PCO) detected through ultrasonography. Additionally, other conditions that could imitate PCOS, such as Cushing's syndrome, late onset adrenal hyperplasia, or androgen-producing neoplasm, must be ruled out [8] . Numerous studies have demonstrated a connection between PCOS and depression , anxiety and increased body image concerns. Studies conducted on women with PCOS have indicated a higher likelihood of experiencing depression and related emotional challenges. Prevalence rates for depression were found to range from 35% (N=35) to 40% (N=60), compared to a control group estimate of 10% [9] . Another study utilizing the Beck Depression Inventory (BDI) [10] r

evealed that 23.9% and 25.2% of women with PCOS scored within the mild-to-moderate and clinically relevant ranges of sadness, respectively. The average BDI score for this group was 12.7, significantly higher than the normative sample results. [11].

Despite evidence linking PCOS to elevated rates of anxiety and depression, there is a limited focus on investigating the prevalence of additional mood and psychiatric disorders. Depression and anxiety may coexist with various other mood disorders, including obsessive-compulsive disorder, somatization, social phobia, and panic disorder in many patients [12]. The potential concurrent presence of these psychiatric disorders could contribute to an increased healthcare burden in these individuals. Furthermore, research indicates a positive association between psychological quality of life and subjective evaluations of health-related information in general. This suggests that enhanced psychiatric screening, diagnosis, and access to treatment could potentially enhance the quality of life for women with PCOS [13]

Women with PCOS also have greater body dissatisfaction than healthy control women with regular cycles, even after adjustment for body mass index (BMI) [14]. Experiencing high self-esteem may serve as a protective factor in coping with new and chronic illnesses, whereas low self-esteem is associated with anxiety, depression and increased reports of Numerous studies have connected certain features of PCOS, including infertility, hirsutism, and acne, with a decline in mental well-being [15-17]. Research indicates that women with PCOS experience a significant decrease in quality of life (QOL), compromised emotional well-being, and diminished sexual satisfaction [5, 18,19] While numerous studies from outside India have explored various aspects, there is a limited number of studies conducted within the country that specifically analyze psychiatric illness and quality of life (QOL) in patients with PCOD.

Given the mounting evidence linking polycystic ovary syndrome (PCOS) with emotional well-being disorders, it is crucial to establish effective screening methods. Our research assessed the effectiveness of employing questionnaires to screen for emotional and psychosexual well-being within various models of care for PCOS.

Inclusion Criteria:

1. **Individuals diagnosed with PCOS based on Rotterdam criteria, characterized by:**

- Oligoovulation and/or anovulation
- Hyperandrogenism
- Polycystic ovaries

1. Female patients in the reproductive age range (18–45 years)

2. Patients who are willing to provide informed consent.

Exclusion Criteria:

1. Patients who have sought consultation with a psychiatrist or have previously been diagnosed with a mental illness based on self-reporting or review of medical records.
2. Patients with a concurrent, significant medical condition.

Materials and Methods

Study Design and Participant: The research was a cross-sectional, observational investigation carried out within the gynecology outpatient department of Atal Bihari Government medical college and Hospital Vidisha MP, spanning six month from november2022 to april 2023 subsequent to receiving approval from the institutional ethics committee.

seventy subjects diagnosed with PCOS were chosen according to Rotterdam's criteria and aged between 18 and 35 years. A semi-structured questionnaire was created to gather socio-demographic information, PCOS details, menstrual cycle patterns, anthropometric measurements (including height and weight), medical history, treatment history, and scales relevant to the study objectives and had no prior record of any psychiatric disorder..

Individuals with an incomplete diagnosis of PCOS, those currently undergoing treatment for any psychiatric condition, and women who were pregnant, menopausal, or experiencing hirsutism due to associated disorders such as congenital adrenal hyperplasia, Cushing's syndrome, and androgen-secreting tumors were not included in the study. A preformed questionarre was given to patient who conscented for the study

Becks Depression Inventory (BDI): The Beck Depression Inventory (BDI) is a widely used self-report inventory for measuring the severity of depression in individuals. The BDI is designed to assess various symptoms of depression, including sadness, pessimism, guilt, fatigue, and loss of interest in activities.The BDI consists of 21 items, each representing a specific symptom of depression. Individuals are asked to rate the severity of each symptom on a scale ranging from 0 to 3, with 0 indicating the absence of the symptom and 3 indicating severe intensity. The scores for each item are then summed to obtain a total score, with higher scores indicating more severe depression.

Hamilton Rating Scale for Depression (HAM-D OR HRSD)

Body Image Concern Inventory (BICI): The Body Image Concern Inventory (BICI) is a psychological assessment tool designed to measure various aspects of body image concerns in individuals. It was developed by David M. Garner and his colleagues in 1982. The BICI is commonly used in clinical and research settings to assess body image disturbances, which can be associated with a range of psychological and physical health issues, including eating disorders, body dysmorphic disorder, and low self-esteem .The BICI consists of 19 items that assess different dimensions of body image concerns, including dissatisfaction with specific body parts, preoccupation with appearance, fear of weight gain, and avoidance behaviors related to body image. Respondents rate the extent to which they experience each concern on a scale ranging from 1 (never) to 5 (always).

The Hamilton Rating Scale for Depression (HAM-D), also known as the Hamilton Depression Rating Scale (HDRS) or HRSD (Hamilton Rating Scale for Depression), is a widely used clinician-administered instrument for assessing the severity of depression in individuals. The HAM-D is typically used by mental health professionals, such as psychiatrists and psychologists, to evaluate the presence and intensity of depressive symptoms in patients. The scale consists of 17 to 21 items, depending on the version used. These items cover a range of symptoms associated with depression, including mood, feelings of guilt, suicide risk, sleep disturbances, appetite changes, and more. Each item on the scale is rated on a scale from 0 to 2 or 0 to 4, with higher scores indicating greater severity. The total score is then calculated by summing the individual item scores. The interpretation of the total score can help clinicians assess the severity of depression and monitor changes in symptoms over time.

Rosenberg's Self-Esteem Scale (RSES): Rosenberg's Self-Esteem Scale (RSES) is a widely used self-report questionnaire designed to measure an individual's overall evaluation of their own worth or self-esteem. The RSES consists of ten statements related to feelings of self-worth and self-acceptance. Respondents rate their agreement or disagreement with each statement on a four-point scale, typically ranging from "strongly agree" to "strongly disagree." The scale includes both positively and negatively worded items to minimize response bias.The ten statements in the Rosenberg's Self-Esteem Scale cover various aspects of self-esteem, including feelings of self-worth, confidence, and acceptance. After completing the questionnaire, scores are tallied, with higher scores indicating higher levels of self-esteem. The total score can range from 0 to 30, with higher scores reflecting more positive self-esteem.

Hamilton Anxiety Rating Scale (HARS): The Hamilton Anxiety Rating Scale (HARS), also known as the Hamilton Anxiety Scale (HAS), is a clinician-administered assessment tool used to measure the severity of anxiety symptoms in individuals. The HARS consists of 14 items that cover various aspects of anxiety, including psychological, physical, and behavioral symptoms. These items assess symptoms such as tension, nervousness, fear, insomnia, gastrointestinal symptoms, and cognitive impairments related to anxiety. Each item on the HARS is scored based on the severity of the symptom, typically on a scale from 0 to 4 or 0 to 2, with higher scores indicating greater severity. The total score is calculated by summing the individual item scores, with the maximum total score typically ranging from 56 to 74, depending on the version of the scale us.

Result

A total of 70 women who have PCOS as per rotterdoms criteria were included in this study . women with PCOS were screened for Depressive-Anxiety States, Body Image Concerns and Low Self-Esteem . The average age of patients was 26 years with a standard deviation of 4.05 years, and their ages ranged from 18 to 35 years. Among the patients, 30 were unmarried, 40 were married,. In terms of religion, 53 were Hindus, 12 were Muslims, 3 were Christian and 2 patients belonged to other religions.

All participants in our study possessed literacy skills, with none being illiterate. Among the female participants, 29(41.42%)had successfully completed their graduation , 20 (28.57%) completed their plus 2 and 5 (7.14%). out of 70 studied till secondary . out of seventy 14(20%) were professional 17(24.28%) were working as skilled professional and but a significant number, 39(55.71%), identified as housewives. Regarding socioeconomic status , 10(14.28%) as upper class, 36(51.41%) as upper middle class, 12(17.14%) of

the patients were classified as lower middle class, 9(12.85%) patient were from upper lower class and, 3 (4.28%) as lower class. The average duration of Polycystic Ovary Syndrome (PCOS) among the participants was 4+-2years.

Table 1: Sociodemographic data

Sociodemographic parameters	Categories	n (%)
Age group (years)	15-20 21-25 26-30 31-35 >35	8 (11.42%) 21(30%) 27(38.57%) 11 (15.71%) 3 (4.28%)
Religion	Hindu Muslim Christian Others	53(75.71%) 12(17.14%) 3(4.28%) 2(2.85%)
Educational status	Secondary Plus two/diploma Graduate PG	5 (7.14%) 20 (28.57%) 29(41.42%) 16(22.85%)
Occupational status	Professional Skilled work Housewife	14(20%) 17(24.28%) 39(55.71%)
Marital status	Unmarried Married	30(42.85%) 40(57.14%)
Have children or not	Have children No children	18 (45%) 22(55%)
Socioeconomic status	Upper class Upper middle Lower middle Upper lower Lowe	10(14.28%) 36(51.41%) 12(17.14%) 9(12.85%) 3 (4.28%)
Duration of marriage (years)	1 year 2-5 years >5 years	12 (30%) 19 (47.5%) 9 (22.5%)
Number of children	1 2 3 4	6 (33.33%) 9 (50%) 3(16.66%) 0
Duration since diagnosis in months		4+-2years
Px taking PCOS treatment	Yes No	59 (84.28%)17.14 12 (17.14%)
PCOS treatment duration in months		18±3 months
Presence of conception delay Duration of conception delay in years	Yes No	7 11 3±1 years
The use of assisting techniques for conception	Yes No	2 5

Out of 70 patients most patients i.e. 42 (60%) patients presented with menstrual abnormality. 20(28.57%) were obese, 35 (50%) patients had complain of acne , 19 (27.14%) patient had hirsutism , 5 (7.14%) had alopecia and 7 (10%) had complains of acanthosis nigricans .

Table 2: The prevalence of the symptoms of polycystic ovarian syndrome in the study sample

Symptoms	N (%)
Menstrual Abnormality	42 (60%)
Obesity	20(28.57%)
Acne	35 (50%)
Hirsuitism	19 (27.14%)
Alopecia	5 (7.14%)
Acanthosis	7 (10%)

When all the patients underwent assessment using the BDI to determine the prevalence of depression . Upon evaluating the severity of depression using the BDI, 27 (38.57%) exhibited borderline clinical depression, 09 (12.87%) displayed moderate depression, and 03 (4.285%) were classified as having severe depression. One patient was classified to having extreme depression, and 21 (30%) patients experiencing mild mood disturbance were not categorized as depressed. According to the HAM-D assessment, 35 (50) exhibited mild depression, 14 (20%) had moderate depression, while 02 (2.85%) fell into the category of severe depression.

In our research, it was observed that a significant portion, specifically 33 (47.14%) experienced mild anxiety, **12 (17.14%) patient had moderate anxiety** while around **07 (10%)** of the participants exhibited severe anxiety , 18 (25.71%) posess extreme anxiety. Prevalence of anxiety was evaluated with the help of Hamilton anxiety rating scale

Table 3: Severity of Depression as per BDI and HAMD

Severity of Depression as per BDI Number of patients n=70 (%)		**Severity of Depression as per HAMD Number of patients n=70 (%)**	
Normal	09 (12.87%)	Normal	19 (27.14)
Mild mood disturbance	21 (30%)	Mild depression	35 (50)
Borderline clinical depression	27 (38.57%)	Moderate Depression	14 (20%)
Moderate depression	09 (12.87%)	Severe depression	02 (2.85%)
Severe depression	03 (4.285%)		
Extreme depression	01 (1.42%)		

Table 4: Severity of anxiety as per Hamilton anxiety rating scale

Severity of anxiety as per HARS	**Number of patients (n=70)(%)**
Mild anxiety	**33 (47.14%)**
Moderate anxiety	**12 (17.14%)**
Severe anxiety	**07 (10%)**
Extreme anxiet	**18 (25.71%)**

Table 5: Body image disturbances as per BICI

Body image disturbances as per BICI	**Number of patients (n=105) (%)**
Present	**22 (31.42%)**
Absent	**48 (68.57%)**

Table 6: Self-esteem as per RSES

Self-esteem as per RSES	**Number of patients (n=105) (%)**
Low	**15**
Moderate	**53**
High	**02**

Body image disturbances as per BICI was seen in 22 (31.42%) out of 70 patients . Upon evaluating self-esteem, it was found 15 (21.42%) had low self esteem, while 53 (75.71%) scored at a moderate level. Only 2 patients 02 (2.85%) demonstrated high self-esteem in our assessment.

Discussion:

In our study we found that out of 70 patients suffering with PCOS , In depression assessment, 38.57% showed borderline clinical depression, 12.87% moderate, and 4.285% severe on BDI. One had extreme depression, and 30% with mild mood disturbance were not deemed depressed. According to HAM-D, 50% had mild depression, 20% moderate, and 2.85% severe.

In our study, 47.14% had mild anxiety, 17.14% showed moderate anxiety, 10% exhibited severe anxiety, and 25.71% had extreme anxiety, assessed using the Hamilton Anxiety Rating Scale Body image disturbances, assessed by BICI, affected 31.42% of 70 patients. Regarding self-esteem, 21.42% had low self-esteem, 75.71% scored moderately, and only 2 patients (2.85%) demonstrated high self-esteem in our assessment.

Rashmi D. Joshi conducted a study over 105 patients suffering with PCOS. In this study 51.43% had depression on BDI, 11.43% experienced body image disturbances, and 21.90% had low self-esteem. Depression levels varied, with 20% having mild to moderate depression and 5% severe depression. Mild anxiety was prevalent in 50.48%, while 31% exhibited severe to extreme anxiety. Body image issues affected 11.43%, and 23 patients had low self-esteem. No significant correlation was found between depression, body image, or self-esteem. The study suggests a higher prevalence of depression and anxiety in PCOS patients compared to body image concerns and low self-esteem. Collaborative care between

gynecologists and psychiatrists could enhance patient prognosis.
The study, conducted at a tertiary care hospital's Obstetrics and Gynaecology department, by Verghese A et al. It was cross-sectional and observational. Patients diagnosed with PCOS underwent assessments using the Hospital Anxiety and Depression Scale, alongside gathering sociodemographic and clinical data via a semi-structured questionnaire. Results revealed a prevalence of 36% for anxiety and 16% for depression among the patients with PCOS.

Aparna Prathap, T et al conducted a study on patients with PCOD attending the Obstetrics and Gynaecology outpatient department at a medical college and hospital in Kerala from March 2016 to August 2016. This study aimed to explore the prevalence of anxiety and depression and assess the quality of life among women with polycystic ovary syndrome (PCOS). Results from 64 PCOS patients showed high rates of depression (93.5%) and anxiety (100%), alongside lower quality of life scores, particularly in the psychological domain. Depression, anxiety, and hirsutism severity were negatively associated with quality of life across all domains, with social relationships being most affected. The findings underscore the significant mental health challenges and reduced quality of life experienced by women with PCOS.

C. Brutocao et al's systematic review and meta-analysis adheres to predefined inclusion criteria and is reported following the guidelines outlined in the Preferred Reporting Items for Systematic Reviews and Meta-Analyses statement (PRISMA)., this study encompasses 57 studies involving 172,040 patients, predominantly explored depression and anxiety in women with PCOS. While the studies exhibited fair methodological quality, most estimates remained unadjusted. Their findings suggest that women with PCOS are more prone to clinical diagnoses of depression (OR 2.79; 95%

CI, 2.23–3.50), anxiety (OR 2.75; 95% CI, 2.10–3.60), bipolar disorder (OR 1.78; 95% CI, 1.43–2.23), and obsessive-compulsive disorder (OCD) (OR 1.37; 95% CI, 1.22–1.55), though not social phobia or panic disorder. Additionally, the severity of depression, anxiety, OCD, and somatization symptoms tends to be more pronounced among women with PCOS compared to those without. The study underscores the importance of early screening for these disorders to facilitate timely intervention in women with PCOS.

In a study conducted by A. P. Chaudhari et al Seventy reproductive-age females (18–45 years), diagnosed with PCOS based on Rotterdam criteria and lacking preexisting psychiatric conditions, underwent clinical interviews for anxiety and depressive disorders using Hamilton scales. Quality of life (QOL) was evaluated with the World Health Organization-QOL-BREF. Binary logistic regression explored symptom associations with psychiatric morbidity, and Mann–Whitney U-test compared QOL scores between patients with and without psychiatric issues. Results showed a 38.6% prevalence of anxiety and 25.7% for depression. Anxiety correlated with infertility and alopecia, while depression was associated with acne. Hirsutism linked to lower psychological QOL. Patients with psychiatric morbidity experienced significantly lower QOL compared to those without.

Conclusion

The findings of this study suggest a higher occurrence of depression and anxiety compared to concerns about body image and low self-esteem among PCOS patients. Early evaluation of depressive and anxious states, coupled with referrals to psychiatrists, could enhance patients' ability to cope with the condition and ultimately improve prognosis

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