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Original Article

PREVALENCE OF DEPRESSION AND ANXIETY IN POLYCYSTIC OVARIAN SYNDROME WOMEN

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ABSTRACT

Objective: The objective of the study was to determine the prevalence of depression and anxiety ranges in women having Polycystic Ovarian Syndrome (PCOS).

Methods: An epidemiological observational study on 80 PCOS patients confirmed through ultrasound scanning over a study period of 6 mo at Government General Hospital, RIMS, KADAPA. HAM-D and HAM-A assessment scales were used to analyze the severity of depression and anxiety in PCOS women.

Results: Among 80 patients, the prevalence of depression is 86.25% (n=69) and anxiety is 93.75% (n=75). Among 69 depressed patients 38 mild, 28 moderate, and 3 severe ranges were noted. Among 75 patients with anxiety, 52 mild, 18 moderate, and 5 severe ranges were noted. The age of the patient does not show a major difference in the development of depression and anxiety. PCOS women who married and have children (n=45) were mostly affected with depression (n=39) and anxiety (n=43). Menstrual irregularity in PCOS patients with depression and anxiety is majorly seen among those who have last menstrual between 30–60 d. Middle-income patients were affected by depression and anxiety greatly, according to this study.

Conclusion: We conclude that the prevalence rate of depression and anxiety is greater in PCOS patients.

Keywords: Polycystic ovarian syndrome, Polycystic ovarian disorder, Depression, Anxiety, HAM-A, HAM D, Endocrine disorder

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INTRODUCTION

Polycystic Ovarian Syndrome (PCOS) is an endocrine disorder in women of reproductive age that leads to the formation of cysts in the ovaries [1]. It is also referred to as Stein-Leventhal syndrome [2]. It is a multifactorial endocrine disorder which demonstrates menstrual disturbance, infertility, anovulation, hirsutism, and hyperandrogenemia/hyperandrogenism [3]. The development of PCOS is due to insulin resistance and hyperinsulinemia, which commonly lead to hyperandrogenism [4]. PCOS indications and symptoms include amenorrhea, hirsutism, infertility, obesity, and acne vulgaris [5]. Women with PCOS are reported to experience depressive episodes at a higher rate than healthy individuals [6].

Depression is a complex mental disease resulting from sociopsychological and physiological factors combined. Its manifestations include disorders of emotions, cognition behavior, cognition behavior, sleep, and appetite [7].

Generalized anxiety disorder is characterized by feelings of threat, restlessness, irritability, sleep disturbance, tension, and symptoms such as palpitations, dry mouth, and sweating. Anxiety is a disorder that is twice as common in women than it is in men [8]. Common mental health problems in women will make it hard to manage daily tasks resulting in strain and suffering. It is associated with a substantial degree of impairment to an individual's mental and physical health [8]. Patients with anxiety disorder have shown heightened amygdala response to anxiety cues [9]. Education about how PCOS affects long-term health should be provided to women with this disorder to feel physical and psychological benefits [10].

The higher prevalence of psychiatric disorders in patients with PCOS, especially depression and anxiety disorders due to hyperandrogenism and resulting somatic symptoms [4]. PCOS have higher levels of anxiety and depression. These symptoms may lower the quality of life in PCOS women [11]. Depression and anxiety are due to the patient's self-awareness, drug-induced, or by the disease itself is an unanswered question. Long-term depression and anxiety can seriously affect a patient's confidence in disease control.

Psychological interventions can help to relieve depression and anxiety. Psychosocial support is needed to help the mental, social, and spiritual needs of the patient, either through family care or physician care in the hospital [12]. The study aimed to find the prevalence of depression and anxiety in women with polycystic ovarian syndrome. The objectives of the study are to identify the severity of depression and anxiety in PCOS women.

MATERIALS AND METHODS

An epidemiological observational study was conducted on the prevalence of depression and anxiety in PCOS, including women 18 to 48 y in departments of psychiatry and gynecology at Government General Hospital, Rajiv Gandhi Institute of Medical Science, KADAPA from October 2022 to March 2023. This study consent form was prepared according to the objective requirements and got signatures from every patient who was willing to participate in our research study. The study was performed after getting accepted by RIMS ethical committee KADAPA with approval number RIMS/IEC/2022/10/16.

A total of 80 women were diagnosed with PCOS through ultrasound. Study inclusion criteria involve patients with PCOS identified through ultrasound scanning reports and patients under the age group of 18 to 50 y. Clinical details of participants were taken to obtain exclusion criteria for the patients who suffered from hypertension, thyroid disorder, which causes secondary depression, and also other endocrine disorders such as Grave's disease, Hashimoto's disease, acromegaly, Cushing's syndrome along with pregnant and breast-feeding women.

Detailed history and examination of participants, including age, marital status, income status, and menstrual irregularity, were noted. After clinical evaluation of patients for PCOS and obtaining details of history, the patient was assessed using validated scales for

finding the severity of depression and anxiety through Hamilton Depressed Rating Scale (HDRS/HAM-D) and Hamilton Anxiety Rating Scale (HARS/HAM-A).

HAM-D scale contains 17 questionnaires about depression symptoms consists 0-49 scores. The severity of depression was measured through 0-7 normal, 8-17 mild, 18-25 moderate, 26-49 severe range. HAM-A scale contains 14 questionnaires regarding the symptoms of anxiety with a score of 0-56. The severity of anxiety is known to score 0 as normal, 1-17 as mild, 18-24 as moderate, and 25-56 as severe anxiety range.

For the analysis of collected data, we use Microsoft Excel 2019 software version to build graphs and tables of collected data, and the prevalence of depression and anxiety is also performed in this software.

RESULTS

A total of 80 women were included in this research. All details were noted through the interview of all 80 patients.

Depression and anxiety are the major complications of polycystic ovarian syndrome. Mild depression is seen in many patients, followed by moderate range and mild anxiety is seen majorly in patients followed by moderate range. Table 1 shows patients suffering from the severity ranges of depression and anxiety.

Table 1: Number of patients in each range of depression and anxiety with percentage

S. No.	Ranges	Number of patients	Percentage
	Depression		
1	Normal (0-7)	11	12.75%
2	Mild (8-17)	38	47.5%
3	Moderate (18-25)	28	35%
4	Severe (25-49)	3	3.75%
	Anxiety		
1	Normal (0)	5	6.25%
2	Mild (1-17)	52	65%
3	Moderate (18-24)	18	24.5%
4	Severe (25-56)	5	6.25%

Among all the depression symptoms from the HAM-D Scale, Psychiatric anxiety is the major symptom raised in many patients followed by depression, genital symptoms, GI somatic symptoms, initial insomnia, general somatic symptoms, somatic anxiety, work and interests, delayed insomnia, agitation, insomnia during the night, retardation, weight loss, the feeling of guilt, insight, hypochondriasis, suicide. Table 2 shows Hamilton depression scale symptoms with each number of patients suffering from PCOS.

Table 2: Number of patients suffering with each symptom of depression and percentage.

S. No.	Name of the symptoms	Number of patients	Percentage
1	Depressed mood	73	91.25 %
2	Feeling of guilt	29	36.25 %
3	Suicide	19	23.75 %
4	Initial insomnia	66	82.50 %
5	Insomnia during night	52	65 %
6	Delayed insomnia	54	67.50 %
7	Works and interest	61	76.25 %
8	Retardation	38	47.50 %
9	Agitation	53	66.25 %
10	Psychiatry anxiety	76	95 %
11	Somatic anxiety	64	80 %
12	GI somatic symptoms	71	88.75 %
13	General somatic symptoms	65	81.25 %
14	Genital symptoms	72	90 %
15	Hypochondriasis	23	28.75 %
16	Weight loss	37	46.25 %
17	Insight	24	30 %

Table 3: Number of patients with each symptom of anxiety and percentage

S. No.	Name of symptom	Number of patients	Percentage
1	Anxious mood	71	88.75%
2	Tension	59	73.75%
3	Fears	20	25%
4	Insomnia	70	87.5%
5	Intellectual	30	37.5%
6	Depressed mood	64	80%
7	Somatic muscular	65	81.25%
8	Somatic sensory	45	56.25%
9	CV symptoms	66	82.5%
10	Respiratory symptoms	50	62.5%
11	GI symptoms	70	87.5%
12	Genitourinary symptoms	64	80%
13	Autoimmune symptoms	69	86.25%
14	Behaviour at interview	37	46.25%

Among all the symptoms of anxiety on the HAM-A scale, the anxious mood is majorly experienced, followed by insomnia, GI symptoms, Autoimmune symptoms, cardiovascular symptoms, somatic muscular, depressed mood, genitourinary symptoms, tension, respiratory symptoms, somatic sensory, behavior at interview, intellectual, fears. Table 3 shows the Hamilton anxiety scale symptoms each patient suffers from during PCOS.

There is no significant difference in age group regarding polycystic ovarian syndrome causing depression and anxiety. Married women who have children were experiencing depression and anxiety majorly than unmarried or married and have no children women. 30–60 d last menstrual period women were majorly experiencing depression and anxiety. Polycystic ovarian syndrome women who are under middle-income status are experiencing depression and anxiety mostly. Table 4 shows the characteristics and details collected through the interview.

Table 4: Age, marital status, menstrual irregularity, and Income status of PCOS patients with depression and anxiety

S. No.	Patient conditions	Number of PCOS patients	Number of depression patients	Number of anxiety patients
Age interval				
1	18–27 y	26	24	24
2	28–37 y	29	26	29
3	38–47 y	25	19	22
Marital status				
1	Single/unmarried	17	14	14
2	Married and no children	18	16	18
3	Married and have children	45	39	43
Last menstrual period end				
1	1-30 ds	23	20	22
2	30-60 d	31	25	28
3	>60 d	26	24	25
Income status				
1	Low income (<1,00,000 PA)	33	27	31
2	Middle income (1lakh to 10 lakhs PA)	47	42	44
3	High income (>10 lakhs PA)	0	0	0

Out of 80 patients who were interviewed prevalence of depression and anxiety was more than 50% in polycystic ovarian syndrome patients. Table 5 shows the prevalence of depression and anxiety in this study.

Table 5: Prevalence of depression and anxiety of PCOS patients

S. No.	No. of PCOS patients	Prevalence of depression patients	Prevalence of anxiety patients
1	80	69 (86.25%)	75 (93.75%)

DISCUSSION

Depression and Anxiety are the major mental illnesses that are seen in patients suffering from chronic or severe types of diseases such as Diabetes mellitus, Hypertension, thyroid disorder, PCOS, and tuberculosis. PCOS is an inflammatory process; when inflammation develops in the body, cortisol levels will go high, which in turn increases stress and depression. High cortisol also increases the risk of insulin resistance.

In our study, mild range is the majority of all cases in both conditions, followed by moderate range and then severe range. The results suggest depression and anxiety are more common in PCOS patients, which was stated earlier by Moynul Hasan *et al.*, in their research work in 2022; depression and anxiety are the highest Prevalence among all psychiatric disorders in PCOS women [13].

In this questionnaire-based survey of young and middle-aged women for the prevalence of depression and anxiety in PCOS, the Hamilton rating scales for depression and anxiety were used to rate the severity of the depression and anxiety conditions. Among those, it was found that mild, moderate, and severe depression is present in 47.5%, 35%, and 3.75%, respectively. On the other hand, 65% had mild, 24.5% had moderate, and 6.25% had severe anxiety symptoms. For these patients, a recommendation to the psychiatry ward is necessary to not impact on their quality of life.

The study was done among 80 patients who were evaluated with PCOS. From the Hamilton Depressed Rating scale, we find majority of patients constitute psychiatry anxiety (n=70), which can occur because of progesterone deficiency followed by depressed mood (n=69), which is caused due to increased cortisol levels in the brain and other symptoms of depression acquired because of PCOS related signs and symptoms which are seen on the body and acts on the brain. To treat these conditions, requirements be Antidepressant categories such as tricyclic Antidepressants, which are Amoxapine, clomipramine, desipramine, doxepin, nortriptyline, and Selective Serotonin Reuptake inhibitors (SSRI) such as Citalopram, Escitalopram, Fluoxetine, Sertraline, Paroxetine. Serotonin and Norepinephrine reuptake inhibitors (SNRI) such as Duloxetine, Venlafaxine, and Desvenlafaxine.

From the Hamilton Anxiety Rating scale, we find the majority of patients are dealing with issues of anxiety symptoms such as anxious mood (n=71) followed by insomnia (n=70) which will develop due to insulin resistance and gastrointestinal symptoms (n=70) and includes abdominal pain, burning sensation, abdominal fullness, loss of weight develops due to more stress which affects the brain and other functions in body. Anxiety can be treated with medications of categories Selective Serotonin Reuptake inhibitors (SSRI) and Serotonin and Norepinephrine Receptor inhibitors (SNRI) and anti-anxiety medication buspirone is used.

According to Deepa Switha *et al.* in her research Insomnia, low self-esteem, getting depressed easily, and being embarrassed about excess weight and facial hair growth are at a higher proportion in females with PCOS [14]. All of these further add to the burden of depression in the PCOS group.

The formation of cysts in ovaries is due to hormonal imbalance and genetics which does not depend on age. In our study, there were a similar number of patients in every age group interval from 18 to 48 y and most of them were experiencing anxiety 93.5%(n=75) and feeling depression 88.75%(n=69). Similar to this study Han Lin *et al.*, through their research, explained prevalence of anxiety and depression aged 20-40 y rose to 26.1% and 52% respectively [15]. Similar to our study, according to Amera Tariq, Depression and Anxiety are common at young ages among graduate ladies and women [16].

According to Moynul Hasan's analysis, from the perspective of the socio-demographic profile, concluded that marital status, education,

financial background, area of residence, smoking habit, and family history of PCOS might be responsible for developing mental health issues among our participants [13]. Therefore, our study suggests that lifestyle change can be an option for the effective management of depression and anxiety in PCOS.

Menstrual irregularity is a major symptom that develops when multiple cysts are formed in the ovaries. The average menstrual cycle has irregular frequency among 80 PCOS patients, 31 women had their last menstrual period between 30 to 60 d, 26 women had their last menstrual period more than 60 d and 23 women had their last menstrual in less than 30 d. Our study shows that women with irregular menstrual cycles due to hormonal imbalance which causes abnormality in the brain, suffer PCOS patients with Depression and Anxiety.

As the PCOS condition is not related to age and marital status, 45 women who were married and have children are feeling depressed and anxious. PCOS patients who are married and have no children show that 22.25% (18/80) of women are infertile. 17 PCOS women were unmarried and were not assessed regarding infertility. Depression and anxiety are seen as common in patients with PCOS not depending on their marital status.

PCOS is a hormone deficiency-related disease that is caused either by genetics, lifestyle habits, endocrine gland malfunction, or tumors. PCOS was observed in middle-class women (47/80) majorly than in low-income class women (33/80). This proves that middle-class women were affected by hormonal deficiency and developed depression and anxiety larger than low-income and high-class women.

In our study, the prevalence of depression is 88.75% and anxiety is 93.5% in women who are suffering from polycystic ovarian syndrome. In an Indian study done by Aditi Chaudhary, *et al.* in 2018 on seventy patients, the prevalence of anxiety was 38.6%, and depression was 25.7%, the overall prevalence of psychiatric disorders was 50%, which was lesser than the current study [16]. In the study done by Sayyah *et al.* in Iran, the prevalence of anxiety was 35.7% and depression was 18.9% [17].

Physicians of Government General Hospital, RIMS, KADAPA district prescribe medications for Polycystic ovarian patients tablet Normoz to treat irregular menstrual, tablet Mala-N, which is an OCP to correct the hormonal imbalance (abnormal levels of pituitary hormone, luteinizing hormone, follicle-stimulating hormone and high levels of androgens) and tablet tranexamic acid to treat menstrual bleedings, a symptomatic medicine. Long-term usage of these medications will develop depression and anxiety as rare side effects. Anxiety is a serious side-effect in patients using the oral tranexamic tablet for the long term. In our study, the patients have not undergone long-term treatment with these medications.

CONCLUSION

In our study, we find a high prevalence of depression (88.75%) and anxiety (93.5%) among women with PCOS. Age is not related to the development of depression and anxiety but marital status (who are married and have children), menstrual irregularity (30-60 d), and middle-income status of women have been the predictors of anxiety and depression in this study. Physicians should be aware of these conditions and recommend to the psychiatry ward for psychological counseling and psychosocial support which may include along with the PCOS treatment plan to improve quality of life in patients.

LIMITATIONS

The total number of patients is minimal because of the shorter period (6 mo) and also only a few have consented to communicate through interviews. We also didn't go for treatment to PCOS patients in this study, who suffer from depression and anxiety but the psychiatry physician suggests treatment should continue for depression and anxiety condition with PCOS women.

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AUTHORS CONTRIBUTIONS

Objectives were prepared by Samuel; an informed consent form was prepared by Haritha; the patient interview was conducted by Amal Bajima, referencing research articles done by Nandivardhan, and an analysis of the patient's depression and anxiety severity was done by Manohar, Dr. Lakshmi Prasunna guided us regarding the depression and anxiety scaling techniques HAM-D and HAM-A.

CONFLICT OF INTERESTS

Declared none

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