

A Prospective Study on Quality of Life and Psychological Well Being in Polycystic Ovary Syndrome

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Abstract:

Introduction: Polycystic ovarian syndrome (PCOS) or Hyperandrogenic anovulation (HA) or Stein-Leventhal syndrome is the most prevalent disorder in women within the reproductive age that affecting endocrine system. PCOS can lead to serious consequences such as endometrial cancer, anxiety and mental disorders which may lead to suicidal tendencies. So, in this present study we tried to know the prevalence of anxiety, depression and quality of life among women with PCOS disease.

Materials and Methods: This is a prospective, cohort study conducted on 100 women diagnosed as polycystic ovarian syndrome. A Pre-structure questionnaire was prepared before taking the study participants into the research work. This questionnaire was divided into three parts including the first part contain sociodemographic variables, the second part contain Hospital Anxiety and Depression Scale (HADS) scale score and the third part of the questionnaire includes Polycystic Ovarian Syndrome Quality of life scale (PCOSQ).

Results: The Mean±SD of PCOSQ-Emotion, PCOSQ-Body Hair, PCOSQ-Weight, PCOSQ-Infertility problems, PCOSQ-Menstrual problems is 3.5±1.2, 3.3±1.6, 2.9±1.7, 3.4±1.8, and 3.8±1.4 respectively. HADS scale was measured the anxiety in the studied population was noted as 10.5±3.8 and the depression subscale was 8.1±4.5. The anxiety and depression score >8 was observed in 76% and 68% of population respectively in this study.

Conclusion: Women with high BMI, low socioeconomic status were most predominantly noted with PCOS. Anxiety and depression score was high as per HADS scale in more than half of the studied population. PCOS women should improve their quality of life by practicing brain relaxing exercises and regular body exercises, by maintaining the balance diet and should focus on healthy life style.

Keywords: Polycystic Ovary Syndrome, Anxiety, Depression, Quality Of Life, Hospital Anxiety and Depression Scale (HADS).

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Introduction

Polycystic ovarian syndrome (PCOS) or Hyperandrogenic anovulation (HA) or Stein-Leventhal syndrome is the most common endocrine disorder affecting women in reproductive age group [1]. It includes multiple hormonal and metabolic abnormalities, including insulin resistance, hyperandrogenism, and altered carbohydrate and lipid metabolism [2,3].

PCOS is characterized by various symptoms which includes acne, hirsutism, alopecia, and overweight), issues related to the endometrium (including oligo-/amenorrhea and endometrial carcinoma), metabolic disturbances (such as insulin resistance, metabolic syndrome, type-2 diabetes mellitus, and various cardiovascular risk factors), reproductive health challenges (including infertility and pregnancy

complications), and mental health issues (such as body image concerns, anxiety, stress, depression, eating disorders, and sleep disturbances) [1]. The psychological burden varies greatly with the change in geographical areas and with social perceptions [4].

Based on Rotterdam consensus criteria, the most commonly used for PCOS, it can be diagnosed if any woman shows at least two out of the following three symptoms: 1. Clinical and/or biochemical features suggest hyperandrogenism, 2. Ovulation dysfunction, 3. ovarian cysts in ultrasound examination. It is a heterogeneous disorder with a wide spectrum of clinical signs and symptoms affecting various systems of the body. Etiology of PCOS can also be genetic indicating the possibility

of a shared genetic makeup across diverse ethnicities. Nevertheless, genome studies [5] showed that only 10 % of all cases can be genetically explained (twin studies demonstrated an association of approximately 70 %), suggesting other epigenetic, socio-economic, and cultural, and/or environmental factors in development of PCOS.

In 2012, an estimated 116 million women (3.4%) were affected globally according to World Health Organization (WHO [6]. PCOS can occur at any age, starting from menarche, the majority of cases are diagnosed between the age group of 20 and 30 [7]. PCOS affects 1.55 million women within the reproductive age group worldwide, i.e., 0.43 million disability-adjusted life years (DALYs). The age-standardized incidence rate of PCOS in women in the reproductive age group was 82.44 per 100,000 in 2017, 1.45% higher than in 2007 [8].

PCOS is diagnosed by several criteria including National Institutes of Health (NIH) criteria, Androgen Excess Society (AES) criteria, and Rotterdam criteria. The most commonly used is Rotterdam criteria [1]. During the evaluation of PCOS the clinician should rule out other endocrine causes simultaneously [9]. To diagnose PCOS, a minimum of two of the three Rotterdam criteria must be present: 1. Ultrasound finding of polycystic ovaries (at least 20 Graaf follicles measuring 2–9 mm in diameter and/or ovarian volume >10 mL), 2. Absence of ovulation, and 3. Clinical and/or biochemical findings of hyperandrogenism [9]. PCOS can't be underestimated as it can lead to anxiety, depression, infertility, endometrial cancer and various mental disorders which may tend towards suicidal tendencies. Hence in this research we study the prevalence of anxiety, depression and quality of life among women with PCOS.

Aim & Objective:

1. To study the Quality of Life by PCOSQ among PCOS women.
2. To study the prevalence of anxiety and depression among PCOS by using Hospital Anxiety and Depression Scale.

Materials and Methods

Study Design & Settings: This is a prospective type, cohort study conducted in the Gynecology clinics in and around Kakinada, Andhra Pradesh. The study has been carried out in department of Physiology of Rangaraya Medical College, Kakinada, and Andhra Pradesh.

Ethical approval was taken from the Institutional review committee before conducting the study (IEC/RMC/2024/1350). A total of 100 women diagnosed as polycystic ovarian syndrome were included in this study. PCOS is diagnosed by the presence of at least two out of three of the following clinical features: 1) anovulation, 2)

hyperandrogenism, 3) Polycystic ovaries [10]. Data was collected after describing about the study in detail by both written and verbal form.

After explaining about the study, the informed consent was taken by each participant separately. Then they were requested to complete the questionnaires. Interviews by Face-to-face manner were conducted by the investigators to all recruited subjects who were meeting the inclusion criteria.

Study period: 6 months (November 2024 to April 2025).

Inclusion criteria:

1. Increased serum concentration of androgens (hyperandrogenemia) or the presence of clinical signs shows androgen excess (hyperandrogenism).
2. Oligo or anovulation.
3. Ultrasonographic-features characteristics of polycystic ovaries.
4. Female patients in the reproductive age group of 18–45 years.
5. Patients with written informed consent.

Exclusion criteria:

1. Patients who had psychiatrist consultation or who were already diagnosed of mental illness by self-report on history and of past medical records.
2. Patients having other significant medical illness at the same time.

Study Procedure:

A Pre-structure questionnaire was prepared before taking the study participants into the research work. This questionnaire was divided into three parts including the first part domain contain sociodemographic variables, the second part domain contain Hospital Anxiety and Depression Scale (HADS) scale score and the third part domain of questionnaire includes Polycystic Ovarian Syndrome Quality of life scale (PCOSQ).

1. Demographic Background: The socio-demographic data were collected by a semi-structured proforma. The present mental health status was assessed with a history and mental health examination. International classification of diseases-10 was used to diagnosis the psychiatric disorders.

2. Hospital Anxiety and Depression Scale: The level of anxiety and depression was assessed by Hospital Anxiety and Depression Scale (HADS). HADS scale [11] is a questionnaire of 14 questions, seven items for subscale HADS-A to assess the level of anxiety & seven items for subscale HADS-D to assess the level of depression. For each item, has a response of 0 to 3. 0 means “absence of symptoms” to 3 means “maximum symptomatology”.

The sum of the all 7 items for each subscale was evaluated as the total score of each subscale HADS-A or HADS-D. Each respondent can obtain a score of 0 to 21 points. In HADS-A, a score of 0–7 is no anxiety; 8–10 is mild anxiety, 11–14 is moderate anxiety, and 15–21 indicates severe anxiety.

In HADS-D, a score of 0–7 is no depression; 8–10 is mild depression, 11–14 is moderate depression, and 15–21 indicates severe depression [12,13].

3. Health related Quality of Life: PCOSQ is a disease-specific questionnaire to assess the effect of PCOS on quality of life. It has 26 items and uses psychometric scale like 7-point Likert-type scale. The PCOSQ has five domains: 1. Emotions (eight items), 2. Body Hair (five items), 3. Weight (five items), 4. Infertility problems (four items) and 5. Menstrual problems (four items) [14]. Each item has a seven-point scale (a score of 7 = no problem or difficulty and score of 1 = maximum HRQOL impairment). The mean score of all items within a domain provides a domain score, with lower scores indicating a greater negative impact [15].

Data collection: Data pertaining to menstrual frequency and regularity, presenting complaints, family history, BMI, medication use was collected

along with general demographic data. A study-specific questionnaire was used to collect data pertaining to current medical diagnoses, medication use, BMI, menstrual frequency and regularity.

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Statistical analysis: The data was entered into Microsoft excel sheet and calculated the results. The statistical analysis such as mean \pm standard deviation, frequency, and percentages done in Microsoft excel.

Results

A total of 100 women were participated in this study that was diagnosed as PCOS. Majority of the women were in the age group of 25-34 years. The mean of the study population is 30.4 ± 5.2 . The mean BMI of the population is 32.5 ± 7.3 . In this study most of the patients were lower middle, upper lower and lower socioeconomic status.

Table 1: Demographic characteristics of PCOS women

Demographic characteristics	Overall (n=100)	Percentage
Age (years) Mean \pm SD	30.4 \pm 5.2	-
BMI (kg/m ²) Mean \pm SD	32.5 \pm 7.3	-
Marital status		
Married	45	45%
widows	2	2%
Unmarried	41	41%
Informal relationship	12	12%
Job status		
working	43	43%
not working	35	35%
student	22	22%
Socio-economic status		
upper class	-	-
upper middle	-	-
lower middle	34	34%
upper lower	38	38%
lower	28	28%

Most of the patients PCOS was diagnosed in the last 1-3 years (44%), followed by 4-6 years (23%). Majority of the patients were feeling POCS is moderately bothersome problem, it was observed in

64% of patients. 75% of the population underwent various treatment modalities. Most of the PCOS population is not on medications for any metabolic disorders.

Table 2: Clinical manifestations and management factors in the studied population

Clinical manifestations & Management		
Diagnosis of PCOS		
1-3 year	44	44%
up to 1 year	18	18%
4-6 years	23	23%
Up to 10 years	12	12%
Above 10 years	3	3%
Severity of symptoms		
moderately bothersome	64	64%
very bothersome	23	23%
little bothersome	12	12%
non disruptive	1	1%
Treatment undertaken		
yes	75	75%
no	25	25%
Metabolic medication at present		
yes	32	32%
no	68	68%

PCOSQ-Emotion, PCOSQ-Body Hair, PCOSQ-Weight, PCOSQ-Infertility problems, PCOSQ-Menstrual problems were calculated in terms of Mean±SD. The Mean±SD of PCOSQ-Emotion,

PCOSQ-Body Hair, PCOSQ-Weight, PCOSQ-Infertility problems, PCOSQ-Menstrual problems is 3.5±1.2, 3.3±1.6, 2.9±1.7, 3.4±1.8, and 3.8±1.4 respectively.

Table 3: Assessment of Quality of life by PCOSQ

PCOSQ scale parameters	Mean±SD
Emotion	3.5±1.2
Body Hair	3.3±1.6
Weight	2.9±1.7
Infertility problems	3.4±1.8
Menstrual problems	3.8±1.4

HADS scale was measured the anxiety in the studied population was noted as 10.5±3.8 and the depression subscale was 8.1±4.5. The anxiety and depression score >8 was observed in 76% and 68% of population respectively.

Table 4: Anxiety and Depression measurement by HADS scale

HADS scale	Mean±SD
Anxiety-Subscale (Mean±SD)	10.5±3.8
Anxiety >8	76% (n=76)
Depression-Subscale (Mean±SD)	8.1±4.5
Depression >8	68% (n=68)

Discussion

PCOS can affect the Healthcare related Quality of life and their mental status as well [16]. PCOS is one of the causes for infertility in this generation; it is due to oligoovulation or anovulation and hyperandrogenism [17]. PCOS is presenting as a lifelong chronic health condition [18]. These women have a possibility of developing depression and anxiety due to various biochemical changes, concerns regarding physical appearance, and social pressure from infertility. It has been well documented in the literature [19].

The international and Indian guidelines suggest psychological factors be considered in all PCOS cases. Hence all women with PCOS must be screened and evaluated for anxiety and depression.

Majority of the women were in the age group of 25-34 years. The mean of the study population is 30.4±5.2. The mean BMI of the population is 32.5±7.3. In this study most of the patients were lower middle, upper lower and lower socioeconomic status. Pekhlivanov B et al [20] studied PCOS women quality of life on 443 participants; a comparative study done between PCOS and Normal women with in the same age group. Of the 443 women, 64% were obese, 18% overweight and 18% were normal weight. The socio-economic status, demographic parameters, and untreated biochemistry of the responders and total patient group were not significantly different. Body mass index (BMI) was negatively correlated with the QoL ($P < 0.01$). Few studies did risk factor analysis in relation to PCOS women. PCOS is higher and rural

women and no children compared to urban women had children [21,22]. A higher level of depression has been observed in PCOS women with high BMI [23,24].

Different assessment tools were used by many researchers in evaluation of the quality of life among polycystic ovarian syndrome women. In this study we chose to work up in polycystic ovarian syndrome quality of life (PCOSQ) scale. Dybciak P et al [25] used ego-resiliency scale, mini COPE questionnaire. Tabassum F et al [26] did a study on correlation between PCOS women quality of life and age, BMI, education and marriage. They analyzed by SF-36 score tool. Halder R et al [27] collected the data by using WHO QOL BREF.

The Mean±SD of PCOSQ-Emotion, PCOSQ-Body Hair, PCOSQ-Weight, PCOSQ-Infertility problems, PCOSQ-Menstrual problems is 3.5±1.2, 3.3±1.6, 2.9±1.7, 3.4±1.8, and 3.8±1.4 respectively. HADS scale was measured the anxiety in the studied population was noted as 10.5±3.8 and the depression subscale was 8.1±4.5. The anxiety and depression score >8 was observed in 76% and 68% of population respectively in this study. A study by Pekhivanov B et al [20] noted SF-36 scores were significantly lower than the age- and sex-matched Australian population ($P < 0.01$), including the overweight subset ($P < 0.01$). A positive association is observed between the subjective assessment of the quality of health-related information in general ($P < 0.001$), for hirsutism ($P < 0.01$) and for menstrual irregularities ($P < 0.05$) and the psychological domain of quality of life.

Dybciak P et al [25] on comparison of the healthy population and PCOS women who are not significantly differ in age, level of education, employment, marital status and number of children. PCOS women had higher BMI and lower socioeconomic status significantly ($p < 0.001$ and $p < 0.001$). Significantly lower percentage in PCOS women has no anxiety symptoms (25.7%) compared to the control group (60.8%, $p < 0.001$).

Depression symptoms were significantly more common in PCOS women (58.3% vs 83.9%, $p < 0.001$). The severity of anxiety and depression was also high in PCOS women than healthy women, which was significant statistically. Almeshwari WK et al [28] noted only 6% of PCOS women had severe anxiety disorder in their study and remaining studied population had moderate and mild anxiety. As per HADS scale the mean level of anxiety in women was 10.1 (59), 9.0 (33), and 8.8 (60).

Ching HL et al [29] study confirmed impaired QoL in PCOS when compared with population norms. The Body mass index (BMI) was negatively correlated with QoL ($P < 0.01$). The study confirms that there was a negative impact of PCOS on QOL. The prevalence of psychological morbidity was

more in PCOS when compared with normal population. The decrease includes all 5 domains of PCOSQ. There was a positive association between the psychological domain of QoL and the subjective assessment of the quality of health-related information in general ($P < 0.001$), for hirsutism ($P < 0.01$) and for menstrual irregularity ($P < 0.05$).

The strength of this study is we found the percentage of anxiety and depression level in PCOS women, evaluated the quality of life and factors responsible for PCOS. The limitations of the study we couldn't evaluate the risk factors influencing the quality of life and couldn't compare with healthy women. More studies on these will help in preventing these factors and ultimately reduction in psychological disorder.

PCOS negative impact is mostly underestimated and is reflected on women's quality of life and may lead to a risk for serious anxiety, psychological disorder [30,31] and higher risk for depression and even this may lead towards suicidal tendency [30,31].

Conclusion

PCOS women are experiencing a low quality of life. They are losing the fitness in physical appearance due to increase in BMI, hirsutism, also unable to concentrate on regular works due to menstrual irregularities; ultimately they lack the control over their disease. Women with high BMI, low socioeconomic status were most predominantly noted with PCOS. Anxiety and depression score was high as per HADS scale in more than half of the studied population.

PCOS women should improve their quality of life by practicing brain relaxing exercises and regular body exercises, by maintaining the balance diet and should focus on healthy life style. Advise by a gynecologist if any therapy is required and emotional support from a psychiatrist will help in few patients.

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