Descriptive Investigation of Depression and Anxiety: Emphasis on Women with Polycystic Ovary Syndrome

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Abstract

The focus of this study is to observe and analyze the intensity of depression and anxiety among women in special cases. As, amenorrhea, hirsutism, acne, obesity, subfertility, and androgenic alopecia are all signs of polycystic ovary syndrome, a frequently encountered endocrine havoc of women who can bear children characterized by a hyperandrogenic state. Women with PCOS experience issues of individuality, psychological well-being, and quality of life (QOL) (Chaudhari et al., 2018). This study's goal is to determine how PCOS affects mental health. Women with PCOS diagnosed between the ages of 18 and 45 (n=60) answered questions about common symptoms of PCOS and how they affect mental health, particularly anxiety and depression. In our group, the rates of anxiety and depression were 35% and 18.3%, respectively. Obesity and subfertility (in married people) were linked to depression, while acne and hirsutism were linked to anxiety. The quality of life of women with PCOS must be assessed, together with the factors that govern it, in order to determine the appropriate countermeasures and treatments needed to ensure total psychiatric and social well-being.

Keywords: Polycystic Ovary Syndrome, Despair, Anxiety

Introduction

Women's mental health is greatly impacted by PCOS-related hypertrichosis, acne, and obesity (Cai, 2023). Male pattern baldness, hirsutism-induced loss of femininity, infertility, and body image issues all may have a negative impact on mental health and quality of life. PCOS prevalence among women of reproductive age varies over the world, from 8.7 to 17.8%. There is evidence that the physical manifestations of PCOS can vary considerably; it is often seen among post-pubertal women (Andrade et al., 2016). The development of hyperandrogenemia, the disease's signature biochemical symptom, results from interactions between environmental factors and a person's unique characteristics. A combination of hereditary and environmental factors brings on PCOS. The following factors have a strong connection to PCOS: Reactive oxygen species (ROSs), concurrent immunological and endocrine problems, increased embryonic androgen exposure, and multiple genes or oligomers appear to be the causes of PCOs (Ding et al., 2021). A good familial background seems most likely an instructive danger element for the development of PCOS in the absence of molecular diagnostic markers (Azziz & Kashar, 2000). Body mass index, exercise, family background, dietary approach, and stress-related elements are considered. The strongest link was found to be with family history. It appears that the kind of diet affects the illness in some way. Maintaining a normal BMI is eventually aided by a healthy diet and regular exercise.

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Compared to those from metropolitan areas, prevalence is lower in rural areas. However, there may be less knowledge of the condition and less encounter with unhealthy food, pollution, and other hormone disruptors in remote areas, which might account for the lower prevalence of PCOS there (Bharathi et al., 2017). Increased androgen levels result in subcellular abnormalities in theca cells of ovaries. Despite the lack of physiological stimuli, these theca cells consequently activate steroid formation, which results in a high level of androgen released. It additionally impacts granulosa cells, which results in higher serum anti-mullerian hormone levels in PCOS patients in comparison with healthy women. Numerous investigations have also documented increased small antral and pre-antral follicle counts due to a malfunctioning apoptotic mechanism in maturing follicles (Khan et al., 2019). About 43–47% of PCOS patients have metabolic syndrome, which is two times more common in these patients than in the general population. The most common elements of the metabolic syndrome in PCOS are low levels of HDL cholesterol and an elevated body mass index. Insulin resistance is probably the pathologic connection between metabolic syndrome and PCOS. Consequently, compared to PCOS without metabolic syndrome, the existence of the metabolic syndrome in PCOS indicates an elevated risk of insulin resistance. Common metabolic abnormalities found in PCOS include diabetes, hypertension, dyslipidemia, central obesity, and vascular disorders (Essa & Nestler, 2006). Type-2 Diabetes mellitus and hyperinsulinemia are both highly linked to PCOS in the future (Akram & Rohi, 2015). According to research, hormonal changes, which are a common clinical manifestation of PCOS, might make women more vulnerable to mental health issues (Hung et al., 2014). PCOS is associated with decreased levels of some chemical messengers, including acetylcholine (Ach), dopamine (DA), gamma-aminobutyric acid (GABA), and serotonin (5-HT) and elevated glutamate levels, later being the principal stimulants of GnRH and LH. These chemical messenger changes may contribute to the pathophysiology of depression in PCOS (Xing et al., 2022). According to published research, depression is associated with elevated inflammatory biomarker levels. Even so, PCOS is also thought to be an inflammatory illness due to raised pro-inflammatory biomarker levels. Therefore, there is a chance that depression and PCOS have a triggering link. Additionally, there's a chance that the inflammation-related substances could penetrate the blood-brain barrier (BBB) and cause depression (Kolhe et al. 2022). The unfavorable response from society to the patient's physical appearance, central obesity, acne, and male pattern body hair are potential explanations for these findings. These reactions may eventually lead to feelings of dread, social anxiety, and isolation. Stress and mental health problems such as anxiety, despair, and a state of helplessness may triggered by PCOS-related infertility. Furthermore, divorce, low social status, low self-esteem, and unhappiness with one's career are frequently linked to infertility (Almeshari et al., 2021). It appears to have been shown that societal, cultural, and beliefs all influence how infertility influences women. The pioneer in offering a more thorough depiction of polycystic ovarian syndrome (PCOS) was Stein and Leventhal in 1935 (Deswal et al., 2020). Three attempts to homogenize the diagnosis of polycystic ovarian syndrome (PCOS) have been made over the past three decades. When the National Institutes of Health (NIH) met in 1990, a subset of criteria was proposed (Zawadzki & Dunaif, 1992), and it stipulated that the diagnosis had to incorporate both chronic anovulation and clinical/biochemical elevated testosterone levels. Lack of ovulation or infrequent ovulation, clinical and biochemical elevated levels of testosterone (Bozdag et al., 2016) and polycystic ovarian picture, as seen on ultrasound, are all necessary for the diagnosis of PCOS, which was expanded by the European Society of Human Reproduction and Embryology/American Society for Reproductive Medicine Rotterdam consensus (Muhammad & Seghinsara, 2017a). Other disorders characterized by excess androgen should also be ruled out,

including hyperprolactinemia thyroid conditions, Cushing's syndrome, androgen-secreting tumours, and drug-induced androgen excess, as well as other causes of oligomenorrhea or anovulation (Muhammad & Seghinsara, 2017b). A lack of fulfilment negatively impacts cultural viewpoints regarding body image and mental health. Several variables drive a reciprocal link between anxiety, depression, and inadequate psychological wellness. These variables may include the hormonal imbalance as well as the physical manifestations of PCOS, such as hirsutism, breakouts, and subfertility. Hirsutism is a widely accepted clinical manifestation of PCOS-affected women. It adversely influences the mental health of these women and has been linked to social avoidance, low self-esteem, and an unfavorable self-image. Furthermore, depression results from hyperandrogenism's alteration of the monoamine balance. The likelihood of unattractive self-image views, which can cause higher distress and psychological symptoms, increases with a greater level of hirsutism. As a result, women who have more severe hirsutism over a considerable duration of time may be more susceptible to depression due to a sense of helplessness (Keeratibharat et al., 2013). In many forms of polycystic ovarian syndrome mentioned above, mental health and quality of life are hardly ever addressed. The purpose of this study is to highlight whether it has an influence on mental health and quality of life and what significant elements have been connected to the results above.

Literature Review

This study's main goal was to ascertain how PCOS affects mental health, particularly anxiety and depression. In our sample women aged 18-45 years and diagnosed by Rotterdam criteria were included, any patient having a history of mental illness was excluded. Using the Hospital Anxiety and Depression Scale (Stern, 2014). The prevalence of anxiety and depression was determined. In our study sample, 35% appeared to be suffering from anxiety, and 18% of participants appeared to be suffering from depression. 8% of participants appeared with both anxiety and depression, while 39% were neither found to be suffering from anxiety nor depression. This study found that fertility issues in married women were associated with depressive disorder while difficulty in maintaining weight and body perception was a significant contributor to depression in the majority of women. In our study sample, varying degrees of hirsutism were significantly associated with anxiety; a lot of participants reflected it as a stigma. Studies by Kerchner et al. (2009) and Benson et al. (2009) have confirmed that anxiety and depression are common psychiatric morbidities. However, the prevalence of anxiety and depression in these studies were 40% and 11.6% respectively in Kerchner et al. (2009), 18.8% and 5.1% respectively in Benson et al. (2009) this is not consistent with our study. This could come as the outcome of several classification systems, population variations, cultural differences, and variations in screening and evaluating techniques and tools. A meta-analysis by Nasiri-Amiri et al (2023) suggests that in comparison with women without PCOS, adults and young women with PCOS display noticeably higher symptoms of anxiety or despair. Study by Khomami et al.(2015) have reported increased mutualism of anxiety in women with PCOS due to hirsutism in Iran while another study by Karsten MD et al.(2021) indicated depressive disorders and a lower degree of mental health among PCOS-positive women due to difficulty in conceiving. Hence, both research findings support our search. A longitudinal study by Tay C. T. et al. (2023) revealed an interesting dilemma involving PCOS-afflicted women in Australia. In comparison to women without PCOS, a larger percentage of PCOS-affected women have already given birth, despite having fewer wealthy backgrounds and a higher frequency of endocrine disruptors comprising obesity, smoking, infertility, and other medical disorders. It is yet unknown if the increased percentage of pregnancies among these women is due

to ineffective contraceptives due to perceived subfertility, or perhaps it is the product of intentional efforts driven by an understanding of their propensity for infertility. A further study by Gill H et al. (2012) found that in their labeled likely cases of PCOS in north India, 87.5% of the subjects experienced monthly irregularities; this finding corresponded with the prevalence of menstrual irregularity in our study group, which was 85%.Based on a meta-analysis by Dybciak et al. (2023) of 13 studies involving 2903 individuals, the prevalence of depression with a score of at least 8 points on the HADS was shown to vary between 16% and 55.6%, with a mean of 31% ($I2 = 93\%$, $p < 0.001$). In addition, it was found that Pakistani women had the highest frequency of depression, whereas Indian women had the lowest. The evaluation of the likelihood of depression in PCOS patients in comparison to the control group revealed that, based on mean scores, the overall likelihood of depression in PCOS patients is over 2.5 times greater than in healthy women. In a study by Mushtaq et al. (2022) in Southern Punjab Pakistan compared to those with fertile PCOS, infertile patients had higher levels of anxiety and depression. For PCOS-afflicted Pakistani women in Southern Punjab infertility, especially primary infertility is an important potential factor for psychological effects. It was discovered that married women were more likely to experience psychological disturbance than single women. Similar results were found in a study conducted on Chinese women by He et al. (2023). Depression is strongly linked with the span of infertility; that is, PCOS women are more susceptible to experiencing depression the longer they are infertile. Consequently, the impacted individuals might look into inducing ovulation treatments. An element endangering their psychological well-being is infertility. The stress of having no children in the future, particularly in terms of conventional Chinese society, where having children is highly valued as a means of continuing the family line, and having no children is typically viewed as the most unworthy act. Studies showed that PCOS patients who were unable to become pregnant had the highest rate of psychological morbidity. This conclusion aligns with our findings. Another study's finding was consistent with our search by Bazarganipour et al. (2013) in Iran; menstrual issues were the main worry expressed by the PCOS women in this study. Because these women struggle with menstrual irregularities, it is obvious that they also consider their infertility to be a bigger problem. In Iran, there is significant social pressure to have children promptly following marriage similar to Pakistan menstrual irregularities, or having an irregular cycle and occasionally even no menstrual bleeding without the use of medication, are strongly related to infertility. Social, psychological, and mental variables could play a role in the potential mechanisms behind these correlations. Because of the major physical changes driven on by their health condition, such as excessive unwanted hair growth, irregular menstruation, overweight, acne, and reduced hair density, clinically significant anxiety symptoms and dissatisfaction may be present in women with PCOs; however, there are certain limitations. To better identify the degree of reduced QOL caused by PCOS, comparison studies with healthy ovulatory women are also recommended. Gu Y et al. (2022) conducted a systematic search of 10 randomized control studies and summarized that patients of PCOS would benefit from improved ovulation function and regular menstrual cycles as an outcome of lifestyle changes. Additionally, lifestyle changes may help, especially in PCOS patients who are obese females, by reducing anxiety and boosting quality of life. Nevertheless, this component was absent from our study. To establish precise and unique guidance, additional prospective research on the effects of lifestyle changes on PCOS is required.

Materials and Methods

It was a descriptive study from April 2023 to September 2023 at the Department of Gynecology in a government hospital in Islamabad, Pakistan. With a 95% confidence level, a 10% error margin,

and a population proportion of 17.6% (Javed et al. 2020) that was approximated to be 18%. The sample size was computed. The desired sample size was 57, which was rounded up to 60. Women between the ages of 18 and 45 were surveyed. Every participant in the study gave their informed consent. At the gynecology outpatient department, all patients with diagnoses made under the Rotterdam criteria underwent evaluation for symptoms and the impact they have on mental health, notably anxiety and depression.

Individuals with a history of mental illness were not recruited. The hospital anxiety and depression scale (HADS), the Hamilton anxiety rating scale (HAM-A) (Maier, 1998) and the Hamilton depression rating scale (HDRS) (Zimmerman et al., 2021) have been employed to gauge the findings of a questionnaire. One of the earliest rating scales to be created to gauge the intensity of anxiety symptoms was the HAM-A, which is still extensively utilized in research and clinical contexts. The 14-item scale assesses both somatic anxiety (physical shortcomings tied to anxiety) and psychic anxiety (mental and psychological suffering). A set of symptoms defines each item on the scale. With an overall assessment range of 0–56, each item is rated on a scale from 0 (not present) to 4 (severe), with <17 reflecting mild severity, 18–24 reflecting mild to moderate severity, and 25–30 reflecting moderate to severe. The leading depression assessment gauge used by healthcare professionals is the Hamilton Depression Rating Measure (HDRS, commonly called the Ham-D).

The primary version holds 17 items (HDRS17) related to depressive symptoms that have occurred in recent weeks. A core score of 0–7 is typically seen as being in a clinically stable state or within the normal range, whereas a score of 20 or more reflects at least alarming severity.

Results

In our survey, out of 60 women, 37 were married (61.66%) and 23 were single (38.33%). Out of 37 married women, 21(56.75%) have children. Nine women conceived spontaneously within the first year of marriage, while 12 conceived after treatment.

Table 1: Description of data

Age, mean	27.73 years
Single % (n)	38.33% (23)
Married % (n)	61.66% (37)
Have no children % (n)	43.24% (16)
Have children % (n)	56.75% (21)
Spontaneous conceived % (n)	42.85% (9)
Conceived after medical treatment % (n)	57.14% (12)

Menstrual irregularity was the most common complaint present in 51 women (85%). Number of overweight PCOS study participants was 71.6 %(n=43). Hirsutism was also noticed in 53.3 %(n=32), alopecia in 6.6% (n=4), and acne in 20% (n=12).

Figure 1 below depicts that out of 60 participants, 21 appeared to be suffering from anxiety and 11 participants appeared to be suffering from depression. 5 participants appeared with both anxiety and depression while 23 were neither found to be suffering from anxiety nor depression

Figure 1: Prevalence of clinical manifestations in PCOs

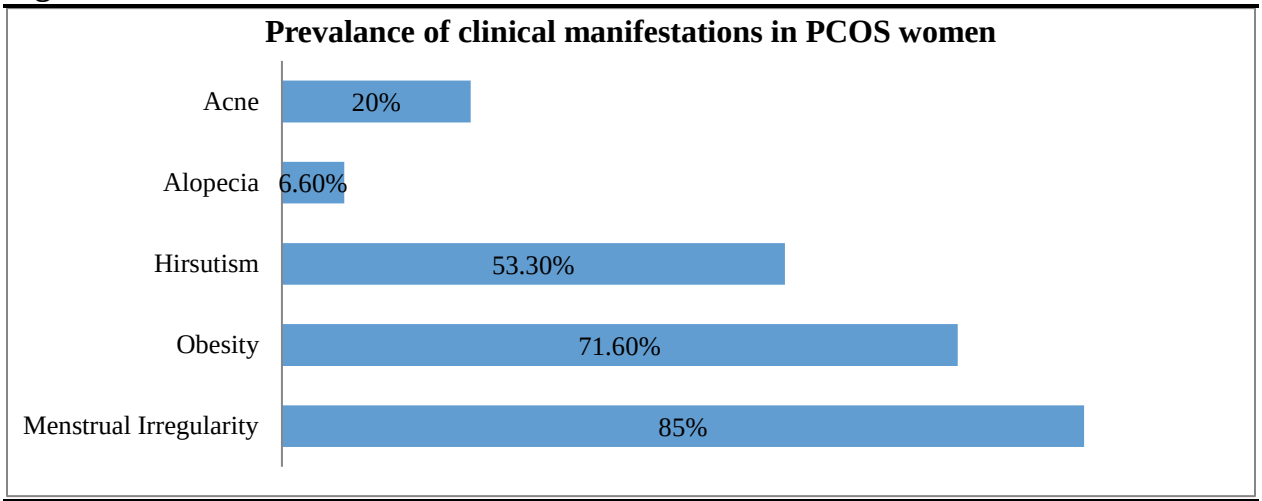
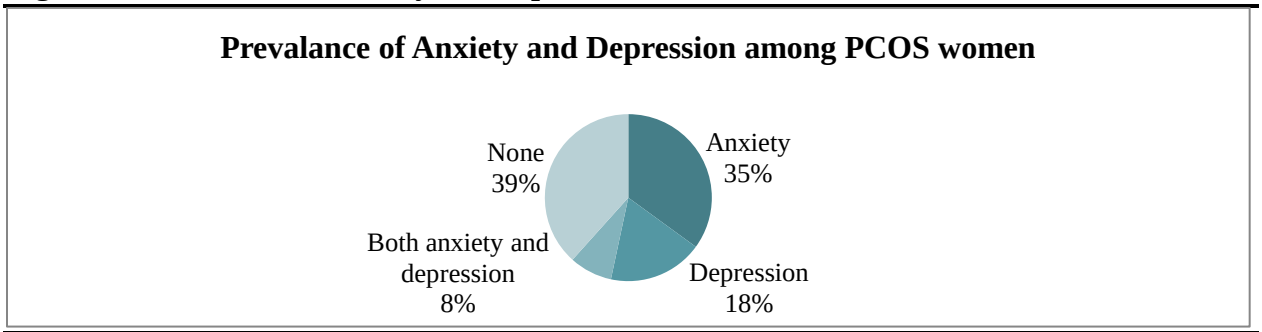


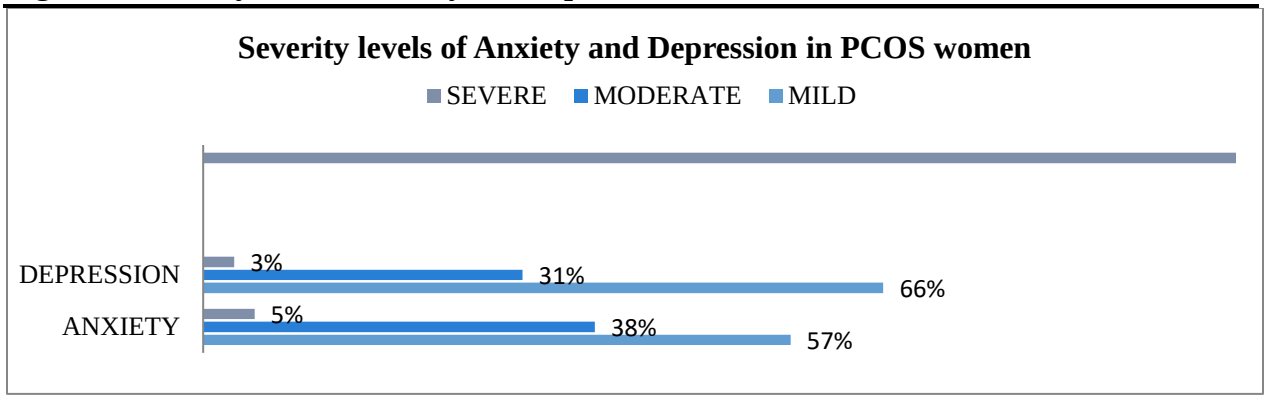
Figure 2 shows Hamilton rating scales for anxiety and depression have been employed to figure out the severity level of each of the conditions. The overall rate of minor, medium, and major anxiety was found to be 57%, 38%, and 5% respectively.

Figure 2: Prevalence of anxiety and depression



The figure 3 shows for the incidence of light, moderate, and severe depression was 66%, 31%, and 3% respectively.

Figure 3: Severity level of anxiety and depression



Conclusion

Undoubtedly, PCOS is an inexplicable topic and has an unfavorable influence on mental health. Patients with PCOS frequently struggle with anxiety and despair. Results of this study emphasize screening of patients for psychiatric morbidity. Treatment is usually limited to management of patient's symptoms. This aspect of the disease is often unaddressed. Further research is needed to spot the connection between these two. Subsequent investigations in this domain ought to concentrate on evaluating the feasibility of implementing therapeutic interventions for anxiety and depression, as well as augmenting the personality's capacity for adaptable management of the distress associated with a prolonged medical condition.

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