



The current landscape of mental health challenges in women with PCOS: a narrative review

Faathimah Khan¹ · Nalini Govender¹ · Yasmeen Thandar¹

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Abstract

Polycystic ovary syndrome (PCOS) research is dominated by the clinical perspective, whilst the psychological experiences of women with PCOS remain less understood. This narrative review explores mental health challenges of women with PCOS, encompassing common psychiatric disorders, emotional challenges, and psychosocial challenges. An online search of published literature was conducted via PubMed and Google Scholar using the terms “polycystic ovary syndrome”, “mental health”, “psychological”, “emotional” and “psychosocial”. Only articles that were directly applicable to mental health, emotional and psychosocial challenges were reviewed. Women with PCOS face increased risks of anxiety, depression, and eating disorders, alongside emotional burdens such as stress and social isolation, which stem from the syndrome’s symptoms and societal stigma. Psychosocial challenges, including body image dissatisfaction and social functioning difficulties, further exacerbate these issues. These findings underscore the necessity for comprehensive PCOS management that includes regular mental health screenings and addresses the complex interplay of psychological factors, emphasizing the importance of further research to deepen understanding and improve care strategies.

Keywords Polycystic ovary syndrome · Mental health · Psychological · Emotions · Psychosocial

Introduction

Polycystic ovary syndrome (PCOS) is a complex reproductive endocrinopathy that affects 4–20% of women worldwide, which persists throughout the reproductive lifespan (Deswal et al., 2020). PCOS is characterized, according to the widely accepted Rotterdam criteria (ESHRE Rotterdam ASRM-Sponsored PCOS Consensus Workshop Group, 2004), by irregular menstruation, hyperandrogenism, and polycystic ovaries. The clinical manifestations of PCOS, including acne, hirsutism, weight gain, and long-term complications such as infertility, diabetes mellitus, and cardiovascular disease, can significantly impact the psychological well-being affected women. These symptoms often diminish their sense of femininity, physical satisfaction, and overall mental health (Yin et al., 2021). PCOS has been associated with several mental health problems, including anxiety,

depression, diminished sexual satisfaction, and lowered health-related quality of life (QoL) (Yin et al., 2021). Despite this, mental health conditions often go unnoticed by obstetrician-gynaecologists when identifying comorbidities linked with PCOS (Alur-Gupta et al., 2024). This oversight contributes to the dissatisfaction many women with PCOS express regarding the counselling they receive for psychological concerns (Alur-Gupta et al., 2024). Much of this dissatisfaction stems from physicians’ limited awareness of the mental health associations linked with PCOS (Alur-Gupta et al., 2024), highlighting the need for routine mental health screenings during PCOS consultations.

The mental health impact of PCOS is closely linked to its clinical manifestations, creating a complex and cyclical relationship that exacerbates the overall burden of the condition. The spectrum of clinical effects experienced by PCOS patients can be overwhelming and may result in the development of psychological complications such as depression and anxiety which subsequently results in a poorer QoL (Sayyah-Melli et al., 2015). For instance, a qualitative study by Farajzadegan and colleagues (2023) revealed that the distress caused by infertility, changes in physical appearance, and the risk of chronic diseases like diabetes, often leads to

✉ Faathimah Khan
Faathimah.nkhan@gmail.com

¹ Department of Basic Medical Sciences, Durban University of Technology, Durban, South Africa

women's psychological responses such as anxiety, depression, and low self-esteem, which in turn worsens the clinical and metabolic effects of PCOS. The mental health impact of PCOS can significantly affect patients' motivation and capacity to adopt effective lifestyle changes for PCOS management, thereby exacerbating its clinical effects (Teede et al., 2010; Ee et al., 2021; Farajzadegan et al., 2023). Additionally, illness perceptions may influence psychological distress and the development of mental health challenges (Light et al., 2021).

Given the enduring clinical implications of PCOS, it is paramount to gain insight into how women describe its effects on their mental health (Lau et al., 2022). Much of the literature has focused on the physical and fertility-related consequences of PCOS, while its mental health implications remain underexplored. Previous reviews have acknowledged this gap but have often lacked a detailed examination of the psychological challenges faced by women with PCOS and how these challenges impact their QoL (Teede et al., 2010; Dewani et al., 2023; Farajzadegan et al., 2023). This review aims to fill this gap by providing an in-depth analysis of the mental health challenges in PCOS, emphasizing the need for holistic and patient-centred care approaches. Light et al. (2021) further emphasize that tailored self-management interventions could be developed to modify maladaptive illness perceptions and alleviate psychological burdens in women with PCOS.

Furthermore, this review seeks to explore the role of sociodemographic factors in shaping the psychological experiences of women with PCOS, an area that remains inconclusive in current research (Bansal et al., 2023). By highlighting these aspects, this review aims to contribute to the development of more effective mental health screening and intervention strategies, ultimately improving the QoL for affected women.

This narrative review provides an overview of the mental health challenges experienced by women with PCOS, encompassing common psychiatric disorders, emotional challenges, and psychosocial challenges, thereby contributing new insights to the existing body of literature. This review focuses on the psychological dimensions of PCOS specifically in cisgender women, as they represent the primary population studied in existing literature.

Methods

In conducting this narrative review, a comprehensive literature search was conducted to identify relevant studies addressing various mental health aspects of PCOS. The search strategy involved querying electronic databases, such as PubMed, Google Scholar, Science Direct, and

Scopus using specific keywords including “polycystic ovary syndrome”, “mental health”, “psychological”, “emotional”, and “psychosocial.” Boolean operators (AND, OR) were employed to refine the search and capture the intersection of PCOS and its mental health impact. While a formal predetermined protocol was not established, efforts were made to include a diverse range of study designs, thus ensuring a comprehensive understanding of the mental health implications of PCOS and improving the overall analysis. The selection criteria encompassed qualitative studies, quantitative studies, mixed-methods research, as well as systematic reviews and meta-analyses. Qualitative studies (e.g., interviews, focus groups, phenomenological studies, case studies) were included to provide in-depth insights into the lived experiences of women with PCOS. Quantitative studies (e.g., cross-sectional surveys, cohort studies, clinical trials) were included to quantify the mental health impact of PCOS. Mixed-methods studies that combine qualitative and quantitative approaches were included to offer both numerical data and contextual insights. Systematic reviews and meta-analyses that synthesize existing research, were included to provide a broader perspective on the mental health implications of PCOS. Additionally, several key factors guided the selection of studies, including their relevance to the review's objectives, high citation scores and journal impact factors, and the recency of the research. Older studies were considered when they provided particularly valuable or rich data.

The initial search yielded a substantial number of articles, and the most relevant papers were selected, focusing on studies that directly address mental health implications, including psychiatric disorders and/or emotional challenges and/or psychosocial challenges associated with PCOS. Women included in the studies had to meet the diagnostic criteria for PCOS according to either the National Institutes of Health (NIH) or Rotterdam criteria, after excluding other endocrine and androgen excess disorders. Additionally, only papers published in English were included. Preference was given to the inclusion of more recent studies up to March 2024, although some older studies were included if they were highly cited and deemed relevant. Studies that solely focused on a single aspect or feature of PCOS (e.g., only mental health issues related to hirsutism) were excluded from the review.

In evaluating paper quality for inclusion in this narrative review, papers were selected based on their alignment with the review's focus and objectives, publication in reputable journals, and significant contributions to the field as indicated by citation count. These criteria ensured the inclusion of high-quality papers relevant to the review's objectives.

Unlike many review papers focusing solely on specific mental health aspects associated with PCOS, such as psychiatric disorders, this review encompasses a broader spectrum

of mental health comorbidities, including psychiatric disorders, emotional challenges, and psychosocial challenges associated with PCOS. Moreover, the review utilized the most up-to-date literature, incorporating studies published up to March 2024. Additionally, while many studies are limited to a specific type of study design, such as qualitative or cross-sectional studies, this review enhances comprehensiveness by incorporating a mix of study designs. This enriches the holistic understanding of PCOS-related mental

health implications, contributing to the originality of this review.

In total, nine seminal papers were selected (Table 1), which provided significant insights into the mental health implications of PCOS and guided the review of additional studies. This methodological approach aimed to capture a broad spectrum of evidence, ranging from individual studies elucidating specific aspects of mental well-being to systematic reviews and meta-analyses.

Table 1 Seminal papers in the Literature Review

Title	Author/s	Year	Type of study	Focus
<i>Management of polycystic ovary syndrome must include assessment and treatment of mental health symptoms</i>	Alur-Gupta, S., Dokras, A., & Cooney, L. G.	2024	Systematic literature review (mixed data)	This study examined the prevalence and treatment of mental health conditions in women with PCOS, including depression, anxiety, eating disorders, body image distress, and sexual dysfunction in PCOS compared to controls, as well as the effectiveness of PCOS-specific treatments. Findings showed a higher risk of these conditions in adult women with PCOS, with depression risk starting in adolescence and persisting beyond reproductive years
<i>Psychiatric disorders in women with polycystic ovary syndrome: a systematic review and meta-analysis.</i>	Brutocao et al.	2018	Systematic review and meta-analysis (qualitative data)	This study examined the prevalence of psychiatric disorders, including depression, anxiety, bipolar disorder, and obsessive-compulsive disorder, in women with PCOS. The focus was on determining the increased risk and severity of these mental health conditions in women with PCOS compared to those without it. The findings highlight the importance of early screening and intervention.
<i>Polycystic Ovarian Syndrome: Breaking the Silence on the Hidden Challenges for Women</i>	Biswal, S.	2023	Narrative review (qualitative data)	This study explores the interplay of physical, psychological, and emotional challenges in women with PCOS, emphasizing its impact on health, mental well-being, and fertility
<i>High prevalence of moderate and severe depressive and anxiety symptoms in polycystic ovary syndrome: a systematic review and meta-analysis</i>	Cooney, L. G., et al.	2017	Systematic Review and Meta-Analysis (quantitative)	This study incorporated 30 cross-sectional studies with a total of 3050 subjects with PCOS and 3858 controls from 10 different countries. The meta-analysis focused on depressive symptoms, involving 18 studies, and on anxiety symptoms, including 9 studies. A separate systematic review identified 15 studies for a meta-regression that examined the associations with PCOS-related symptoms or comorbidities.
<i>Psychological Experiences in Women with Polycystic Ovary Syndrome: A Qualitative Study</i>	Farajzadegan, Z., et al.	2023	Qualitative Study	This study explores the psychological experiences of women with PCOS, their spouses and healthcare providers. Findings revealed five main categories of psychological challenges, including reactions to infertility, issues related to menstrual disorders, fears of chronic diseases, psychological challenges linked to the disease itself, and problems associated with body appearance.
<i>New insights into the interaction between polycystic ovary syndrome and psychiatric disorders: A narrative review</i>	Hu, R., et al.	2024	Narrative Review (mixed data)	This systematic review examines the impact of PCOS on women's physical and mental health, exploring the prevalence of psychiatric disorders in patients and their children. It highlights the potential exacerbating effect, aiming to uncover mechanisms for breaking this cycle. However, due to limited research, further studies are needed to validate the findings.
<i>Psychiatric disorders in women with polycystic ovary syndrome</i>	Rodriguez-Paris, D., et al.	2019	Literature review (quantitative data)	This article offers a comprehensive review of existing literature on mental disorders linked with PCOS. These include depression, generalized anxiety disorder (GAD), personality disorders, and eating disorders. Additionally, it presents original research findings concerning depression and sexual dysfunction within this particular group.
<i>Psychosocial factors associated with polycystic ovary syndrome: A case control study</i>	Sayyah-Melli, M., et al.	2015	Case-Control Study (quantitative data)	This article investigates and contrasts psychosocial determinants in women with and without PCOS. The findings reveal a heightened likelihood of anxiety disorders, depression, personality disorders, and other psychological issues.
<i>The mental health of women with polycystic ovary syndrome: a systematic review and meta-analysis</i>	Yin et al.	2021	Systematic review and meta-analysis	This article presents 46 studies involving 30,989 participants to compare the mental health of women with and without PCOS. The findings reveal that women with PCOS experience significantly higher levels of depression and anxiety, and a lower QoL. The study also highlights the need for psychological health care interventions for women with PCOS.

To avoid redundancy, the studies included in the systematic reviews and meta-analyses were cross-referenced with the primary studies cited in this review. Any overlapping studies were acknowledged and discussed accordingly to ensure the findings are not unnecessarily repeated.

Recognizing the varied and sometimes ambiguous terminology in PCOS literature, this article adopts a nuanced approach to categorize mental health aspects. It consolidates the psychiatric, emotional, and psychosocial dimensions of PCOS under the umbrella term “mental health”, providing a comprehensive framework for exploring their complex interplay.

Mental health challenges and PCOS

The prevalence of mental health issues has become a significant concern for women with PCOS, despite a paucity of data on its true impact on mental well-being (Li et al., 2011; Rodriguez-Paris et al., 2019; Santoro, 2018). Typical PCOS characteristics such as hirsutism, acne, infertility, menstrual dysfunction, and obesity, as well as the risk of long-term complications, can be distressing to PCOS patients and reduce their QoL (Li et al., 2011; Nayar et al., 2019; Rodriguez-Paris et al., 2019). A recent systematic review examined the prevalence and treatment of various mental health conditions in women with PCOS. The study included research that investigated the prevalence of these conditions in women with PCOS compared to controls, as well as the effectiveness of PCOS-specific treatments. The findings indicated a higher risk of depressive and anxiety symptoms, eating disorders, body image distress, psychosexual dysfunction, and decreased QoL in women with PCOS. The risk of depression was observed to begin in adolescence and persist beyond the reproductive years. However, many studies relied on screening questionnaires rather than confirmed diagnoses, which highlights a limitation in the evidence (Alur-Gupta et al., 2024). In a recent QoL study conducted in 2024, involving 200 women with PCOS, findings revealed that women often feel a sense of lack of control over the disease, contend with depression, and struggle to accept their physical appearance (Ligocka et al., 2024). Furthermore, there is marked mental distress in infertile PCOS patients compared to fertile controls (Nayar et al., 2019). Farajzadegan et al. (2023) emphasize that mental health influences both individual and social functioning. PCOS can adversely affect mental health through its physical symptoms, leading to emotional disorders and diminished QoL, as well as social isolation due to changes in feminine identity. These mental health challenges may hinder patients from adopting a healthy lifestyle, which is the first line of treatment in PCOS. Therefore, providing

mental health services is crucial for enhancing productivity and effectiveness at both personal and societal levels. Despite the focus on managing the clinical manifestations of PCOS, the mental well-being of affected women is often overlooked (Farajzadegan et al., 2023). A recent systematic review and meta-analysis including 46 studies with 30,989 participants, revealed significantly higher levels of depression and anxiety in women with PCOS, leading to diminished QoL (Yin et al., 2021). Notably, sexual dysfunction was not identified as a significant factor in this analysis.

Psychiatric disorders and PCOS

Women with PCOS are at greater risk of various psychiatric disorders, including anxiety, depression, bipolar disorder, and eating disorders. The self-perpetuating cycle between PCOS and psychiatric disorders undermines the effectiveness of therapy and QoL (Hu et al., 2024). Therefore, there is a critical need for research to understand these interactions and to develop strategies to interrupt this cycle. A systematic review by Hu et al. (2024) found that PCOS-related hyperandrogenism, insulin resistance, obesity, gut dysbiosis, and other variables may increase the risk of psychiatric disorders in females. In turn, psychiatric disorders may exacerbate the pathological progression of PCOS and complicate treatment (Hu et al., 2024). The psychiatric conditions associated with PCOS have been outlined below:

Anxiety

Several studies have demonstrated a strong association between PCOS and anxiety (Dokras et al., 2012; Hart & Doherty, 2015; Hu et al., 2024; Cooney et al., 2017). The studies referenced discuss anxiety primarily in terms of symptoms, besides for the study by Hu et al. (2024) which discusses anxiety that has been formally diagnosed according to the DSM-IV. A meta-analysis by Dokras and colleagues (2012) found a significantly higher prevalence of anxiety symptoms in PCOS patients compared to controls. The most recent meta-analysis on the prevalence of moderate and severe depressive and anxiety symptoms in PCOS further reinforced these findings, indicating a six times higher prevalence of anxiety disorders (Cooney et al., 2017). A cross-sectional study on 126 female volunteers found body hair and menstrual problems to be the strongest predictor of anxiety in PCOS patients (McCook et al., 2015).

The link between PCOS and anxiety symptoms may stem from the syndrome's challenging symptoms, hormonal fluctuations, or a combination of both; and may also relate to how women with PCOS manage stress (Dybciak et al., 2022). This is supported by reports highlighting that women with PCOS display a greater physiological stress response

than their healthy counterparts and have a higher rate of hospitalization for stress-related and self-harm incidents (Benson et al., 2010; Papalou & Diamanti-Kandarakis, 2017). The study by Benson et al. (2010) has been included in two systematic reviews and meta-analyses, namely by Yin et al. (2021) and Brutocao et al. (2018). Increased stress levels in PCOS are linked to its clinical features, potentially leading to heightened anxiety symptoms (Dybciak et al., 2022).

Depression

Women with PCOS are at a higher risk of experiencing depressive symptoms, including severe forms (Hu et al., 2024; Rodriguez-Paris et al., 2019; Thannickal et al., 2020). These findings were reinforced by a meta-analysis on the prevalence of moderate and severe depressive symptoms in 3,050 PCOS patients and 3,858 controls from 10 countries. The analysis revealed that depressive symptoms were nearly four times more prevalent among women with PCOS (Cooney et al., 2017). Meta-analysis of 24 studies including 167,912 patients demonstrated that PCOS was associated with a statistically significant increase in having a clinical diagnosis of depression (Brutocao et al., 2018).

The burdensome symptoms of PCOS act as primary catalysts for the development of depressive symptoms, particularly as it affects feminine identity, mental state, and QoL (Kolhe et al., 2021). Interviews with PCOS patients revealed that “depression overshadowed other aspects of their lives”, which had worse consequences on their daily lives compared to other PCOS issues (Farajzadegan et al., 2023). Increased serum androgens, infertility and obesity have also been linked to increased depressive symptoms in PCOS, albeit inconclusively (Dokras, 2012). Furthermore, Kolhe et al. (2021) suggested a link between PCOS, depression, and elevated inflammatory markers, suggesting that PCOS-related inflammation may contribute to the development of depression.

Eating disorders

Women with PCOS exhibit a higher prevalence of eating disorders, often linked to weight gain, amenorrhea, and oligomenorrhea (Hu et al., 2024; Rodriguez-Paris et al., 2019). A systematic review and meta-analysis by Thannickal and colleagues (2020), which examined the relationship between PCOS and eating disorders across 36 studies involving 349,529 patients, found an increased prevalence of bulimia and binge eating disorders in women with PCOS. The findings indicated no significant association found between PCOS and anorexia nervosa (Thannickal et al., 2020).

Stefanaki et al. (2023) reported that women with PCOS are at a higher risk of depression and food cravings due to obesity and hormonal imbalances, potentially exacerbating their condition. Furthermore, eating disorders in PCOS can also be influenced by negative body image and hormonal derangements, emphasizing the relationship between PCOS symptoms and their psychological effects (Stefanaki et al., 2023). Anxiety also appears to be a contributing factor in the development of eating disorders, as patients with PCOS, regardless of their body mass, have a significantly elevated risk of abnormal eating disorder scores (Rodriguez-Paris et al., 2019).

Other psychiatric disorders

Mental disorders including obsessive-compulsive disorder, attention deficit hyperactivity disorder, bipolar disorder, and other psychotic disorders are more frequently reported in women with PCOS compared to the general population (Rodriguez-Paris et al., 2019). Despite these reported correlations, further investigations are needed to establish a more robust understanding of the prevalence and specific dynamics of these mental health conditions in the context of PCOS.

Emotional challenges and PCOS

PCOS significantly impacts a woman’s emotional well-being (Kolhe et al., 2021). The burdensome physical symptoms of PCOS (Ekramzadeh et al., 2020) can subsequently result in emotional symptoms such as stress, anger, frustration, guilt, and isolation (Zhaoyang et al., 2020). Emotional responses to persistent stressors influence the development of long-term mental health disorders (Zhaoyang et al., 2020). Practitioners should therefore provide PCOS patients with emotional coping strategies to help regulate their emotions and mitigate the risk of developing mental disorders (Morshedi et al., 2021).

The emotional symptoms of PCOS are summarized below with their potential triggers:

Stress

In women with PCOS, physical symptoms like irregular periods, acne, alopecia, and hirsutism are associated with increased stress (Biswal, 2023) and elevated cortisol levels (Benjamin et al., 2023; Marschalek et al., 2023). The emotional distress experienced by women with PCOS is often intensified by the challenges they face when trying to conceive and weight management (Benjamin et al., 2023).

Anger

Anger is commonly experienced in PCOS patients as a result of their physical appearance (Biswal, 2023). This is compounded by infertility-related anger, which is often connected to the disappointment of treatment failures, societal stigma, and a lack of external support (Subramani & Rathnasabapathy, 2023). The uncertainty and lack of privacy associated with assisted reproduction methods further exacerbate feelings of anger (Subramani & Rathnasabapathy, 2023). Archer (2006) highlights the potential influence of elevated testosterone on aggressive behavior, suggesting a need for more targeted studies in this population. While PCOS is strongly associated with hyperandrogenemia and elevated testosterone levels (Deswal et al., 2020), there is limited research specifically examining the impact of these hormonal imbalances on anger and aggressiveness in women with PCOS.

Frustration

Women with PCOS often feel frustrated due to menstrual dysfunction, difficulty conceiving, or maintaining a healthy weight (Biswal, 2023). In a qualitative study analysing 95 stories from a PCOS support website, women with PCOS also reported feelings of frustration due to delayed diagnosis and insufficient information on how to manage PCOS (Wright et al., 2020). These women often consulted with two or three physicians for about three years before obtaining an accurate diagnosis. Furthermore, they commonly expressed frustration with the medical support received, feeling their healthcare needs were not adequately addressed (Wright et al., 2020).

Guilt

Women affected by PCOS often experience guilt towards their partners over their challenges in conceiving or the effects of the condition on their personal relationships and life (ALSumri et al., 2023; Biswal, 2023). In a South Punjab study conducted on 204 women with PCOS, women reported experiencing feelings of guilt related to infertility (Mushtaq et al., 2022). Notably, these women also encountered considerable pressure within their married life, family, and society due to infertility, resulting in feelings of helplessness and guilt (Mushtaq et al., 2022).

Isolation

Women with PCOS often struggle with dissatisfaction regarding their appearance and heightened social anxiety, leading to increased isolation (Morshedi et al., 2021). The

physical and emotional effects associated with PCOS may also result in withdrawal and a sense of loneliness (Biswal, 2023).

Psychosocial challenges and PCOS

The relationship between PCOS and psychosocial challenges faced by women are recognised by the medical community (Barberis et al., 2023; Santoro, 2018; Zaikova, 2021). Given the variability in how women with PCOS respond to their symptoms and the impact on their psychosocial wellbeing, it is essential to understand their unique psychosocial perspectives.

Selected psychosocial concerns are briefly outlined below:

Body image dissatisfaction

Women with PCOS have an increased risk of weight gain and obesity, due to insulin resistance, which is a hallmark of PCOS (Chudzicka-Strugała et al., 2022). Psychological disorders occur more frequently in overweight women with PCOS compared to those without (Morshedi et al., 2021). Women who experience body image dissatisfaction, report feelings of discontent with their physical appearance, a diminished sense of femininity, and reduced self-perception of attractiveness (Barberis et al., 2023; Morshedi et al., 2021). This negative body image perception can significantly decrease their self-esteem and QoL (Farajzadegan et al., 2023).

Sexual and relational functioning

An underexplored area in PCOS research is its impact on interpersonal and intimate relationships (Zaikova, 2021). PCOS, with its implications on mood, fertility, appearance and relationships, can lead to negative outcomes such as higher divorce rates, reduced social status and lower self-esteem (Brady et al., 2009). A qualitative study by Hadji-constantinou and colleagues (2017) emphasized infertility as one of the main causes of psychological distress, which is consistent with Farajzadegan and colleagues (2023). Infertility can lead to internal distress for both partners and may intensify their subjective experiences as they navigate through its consequences (Zaikova, 2021). In another qualitative study involving 23 participants with PCOS, most women with PCOS experienced problems in their sexual performance as a result of changes in their appearance, although these findings are inconclusive (Amiri et al., 2014). Of note, there are not many differences in the sexual functioning of women with PCOS as compared to healthy

women, with the exception of orgasm and/or climax (Rodriguez-Paris et al., 2019).

Social functioning

According to Wang et al. (2023), women with PCOS often experience heightened social anxiety and social isolation, mainly attributed to their change in appearance and infertility (Wang et al., 2023). Notably, this study was also highlighted by Yin et al. (2021). Infertility can significantly impact their social functioning as they contend with external societal expectations and internalized pressures (Morschedi et al., 2021). In a 2020 qualitative study carried out on a prominent Reddit PCOS subforum, the social constraints experienced by many was attributed to pronounced embarrassment regarding their symptoms, apprehension of social stigma, and feelings of unattractiveness (Chopra et al., 2021). Women with PCOS consider themselves unfeminine, which further strains their interpersonal and social relationships (Farajzadegan et al., 2023). An earlier study reported that a negative body image, shame, and low self-esteem, can also reduce their family interactions (Amiri et al., 2014). Furthermore, chronic illnesses negatively impact the well-being of the affected individuals and their family and relationships (Zaikova, 2021). Therefore, understanding the relationship between social support, family interactions, and mental distress among women with PCOS is crucial for developing effective management strategies.

Sociodemographic variation among PCOS patients

There is still continuing debate on sociodemographic variation and mental health factors that influence PCOS (Sayyah-Melli et al., 2015; Bansal et al., 2023). Some of these factors have been outlined below:

Race and ethnicity

Limited data exist on racial differences in the mental well-being of individuals with PCOS (Alur-Gupta et al., 2021). It is important to examine how racial disparities may impact mental health, as emerging evidence indicates that experiences related to race can affect various aspects of mental health care, encompassing anxiety-related distress, access to care, and treatment (Alur-Gupta et al., 2021). Monitoring the use of mental health care services within distinct racial and ethnic subgroups is important in tracking progress toward eliminating disparities (Cook et al., 2007).

Alur-Gupta and colleagues (2021) conducted a cross-sectional case-control study to assess racial disparities

in anxiety and depression prevalence and scores among women with PCOS (Fig. 1) and their findings revealed that Black women with PCOS scored lower on the emotional and infertility domains of a QoL survey. Additionally, Black women experienced lower live birth rates in comparison to White women, and both Black and Hispanic women utilized infertility services less frequently than their White counterparts. These results underscore the significance of considering the impact of infertility on overall QoL, particularly within Black populations. In the general US population, the lifetime prevalence of GAD appeared to be higher in White women (8.6%) than in Black women (5.1%) (Breslau et al., 2006). Possible explanations for lower anxiety scores in Black women could include greater resilience to stress due to strong social support, and the potential contribution of preexisting substance abuse disorders, which are more common in White adults (Breslau et al., 2006).

Moreover, a 2023 systematic review by Sheikh et al. (2023) compared emotional and psychosexual well-being in women with PCOS from Non-White and White ethnic backgrounds, born in the UK and India respectively. Notably, women of White ethnicity exhibited higher levels of body image concerns and weight stigma compared to Non-White women. This difference may be attributed to Indian women's reduced likelihood of discussing and seeking professional assistance for reproductive health issues, with socio-economic factors and family traditions influencing their willingness to disclose. This disparity highlights the intricate connection between cultural factors, discussions around reproductive health, and the manifestation of body image concerns and weight stigma. Furthermore, the review revealed a significant association between ethnicity and birthplace concerning emotional and psychosexual well-being in the PCOS community (Sheikh et al., 2023).

Other sociodemographic factors

While current research suggests that sociodemographic factors like age, relationship status, educational level and profession remains inconclusive regarding their psychological influences in PCOS (Borghi et al., 2018; Cooney et al., 2017), it is still necessary for researchers to take these factors into account when addressing psychological disparities (Cook et al., 2007). A study by Borghi and colleagues (2018) revealed that a lower educational level was associated with a lower perceived QoL in the physical domain, as well as a reduced ability to manage outward expressions of anger. The limitations of this study included a small sample size and single-centre involvement, which may affect the generalizability of the findings. Notably, this study was included in a systematic review and meta-analysis by Yin et al. (2021). According to Bansal and colleagues (2023),

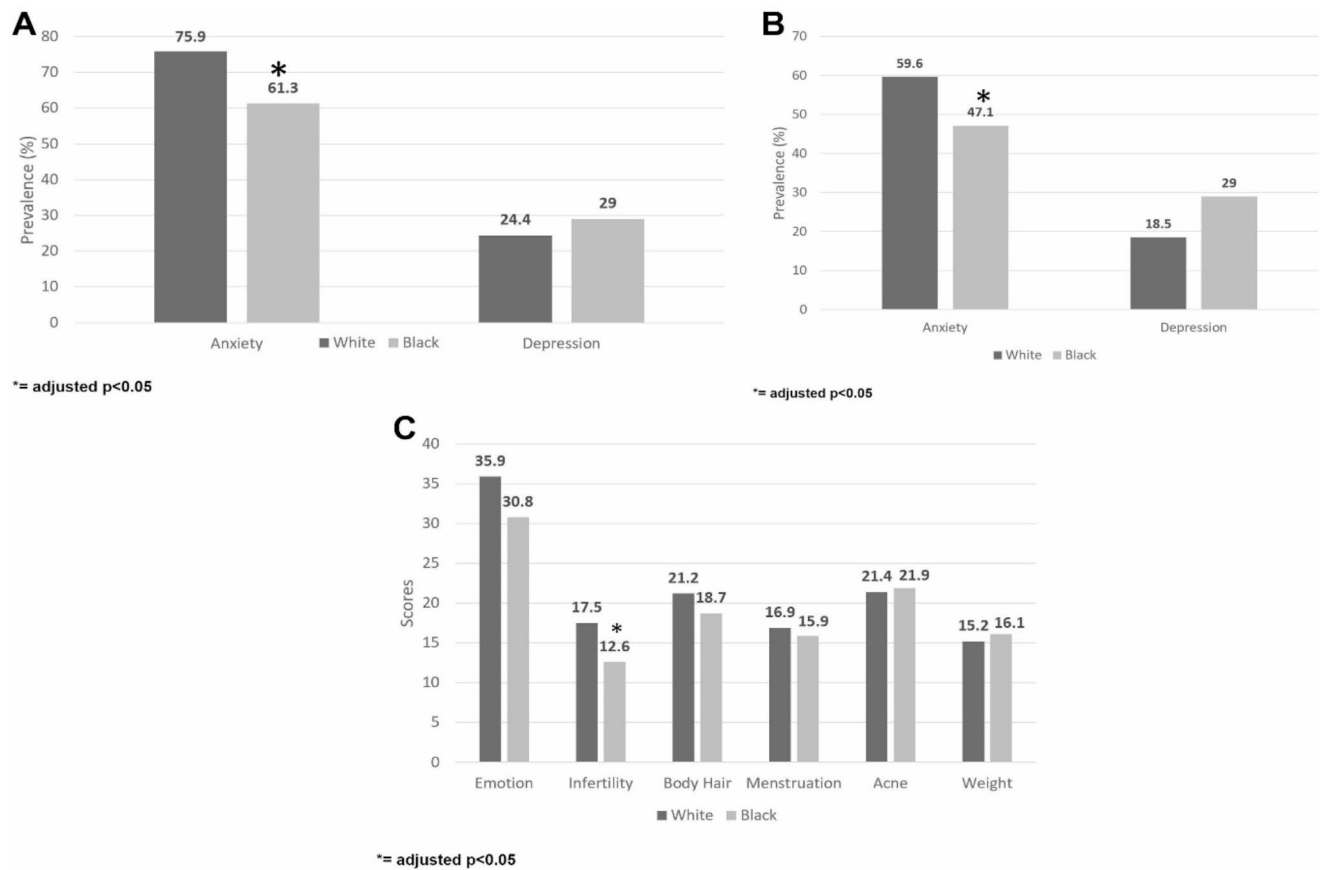


Fig. 1 Racial Disparities in Anxiety Scores among PCOS Patients. (A) Racial differences in the prevalence of anxiety and depression symptoms in women with PCOS. (B) Racial differences in the prevalence of anxiety and depression symptoms in controls. (C) Racial differences in

the quality-of-life domain scores in women with PCOS. This figure is reused under the terms of Creative Commons License 4.0. This license can be viewed at: <https://creativecommons.org/licenses/by-nc-nd/4.0/>. Alur-Gupta et al. (2021)

although socio-demographic factors like employment status and age are associated with depression, they did not play a significant role in elevating anxiety levels in PCOS patients. Future research with larger sample sizes and controls for socioeconomic characteristics should explore the potential role of sociodemographic factors, particularly educational levels, in this context (Borghi et al., 2018).

Management of PCOS

Comprehensive care in PCOS, including early diagnosis and tailored treatment, is vital for improving QoL outcomes and prevent long-term consequences in patients (Ligocka et al., 2024). Given the diverse presentation of PCOS, treatment should be personalized to address individual symptoms and patient preferences (Ligocka et al., 2024). Metformin is commonly prescribed to enhance insulin sensitivity and lipid profile, while oral contraceptives help regulate menstrual cycles and reduce hyperandrogenaemia. Additionally, adopting a healthy lifestyle with dietary adjustments

and regular exercise can effectively manage symptoms (Ligocka et al., 2024). There is a paucity of treatment strategies for addressing mental health issues specifically in PCOS patients, highlighting the need for further research. However, an evidence-based international guideline for assessing and managing PCOS was published in 2023. This guideline emphasizes the importance of healthcare providers being aware of the heightened mental health risks linked to PCOS. Additionally, it offers screening and treatment recommendations for these conditions in women diagnosed with PCOS (Teede et al., 2023).

The recommendations from the 2023 International Evidence-based Guideline include:

- 1) Psychological therapy as the first-line treatment for diagnosed depression, anxiety, and/or eating disorders.
- 2) Offering evidence-based treatments such as cognitive-behavioural therapy for disordered eating, body image distress, and psychosocial disorders.
- 3) Considering antidepressant medication based on general population guidelines.

- 4) Considering lifestyle interventions and PCOS-specific treatments (such as oral contraceptive pills, metformin, and laser hair removal).
- 5) Recognizing that untreated depression and anxiety may decrease patient compliance with other PCOS-specific treatments.

Conclusion

This narrative review provides a brief overview of the mental health challenges, including psychiatric disorders, emotional well-being, and psychosocial effects, experienced by women with PCOS. Within the spectrum of mental health, issues like anxiety, depression, and eating disorders are prevalent in women with PCOS. Despite the significant distress caused by PCOS symptoms and its associated long-term risks, the predominant focus of PCOS research and care often leans towards physical and fertility aspects, inadvertently overlooking mental well-being. Furthermore, emotional challenges in PCOS, including stress and isolation, arise from the stigma and physical changes associated with the condition, potentially leading to severe mental health challenges. A holistic approach that addresses these emotional aspects is vital for prevention of such challenges. On the psychosocial front, PCOS impacts body image, sexual and relationship functioning, and social interactions. These challenges further underscore the necessity for comprehensive psychological care approaches that consider the interconnectedness of mental, emotional, and psychosocial well-being.

Our findings from this review advocates for improved mental health screening and care of PCOS patients, positing that such interventions could bolster patient motivation to adopt and sustain healthier lifestyle changes, improve their negative perception of the condition, and ameliorate the biochemical and physical impairments associated with

PCOS. Moreover, we highlight the potential significance of integrating mental health care into PCOS management, as it holds the potential for a positive impact on health outcomes and overall QoL. Further recommendations from the 2023 International Evidence-Based Guideline for PCOS management include offering evidence-based treatments like cognitive-behavioural therapy and antidepressant medication, considering PCOS-specific lifestyle treatments, and acknowledging that untreated mental health issues may reduce patient compliance and worsen QoL (Teede et al., 2023).

Continued research endeavours are crucial to better understand and address the nuanced mental health dimensions of PCOS, ultimately advancing holistic and patient-centred care strategies.

Future research should also explore the unique experiences and healthcare needs of transgender men with PCOS. Limited evidence, such as studies by Baba et al. (2007) and Gezer et al. (2022), suggests that PCOS prevalence and its psychosocial impacts may differ in this population. Inclusive studies are needed to address clinical care gaps and better understand the intersection of gender identity and PCOS. Such research can inform the development of gender-sensitive care practices for people with PCOS.

Summary

Women with PCOS experience significant psychological challenges that impact mental health, increasing the risk of developing psychiatric disorders, affecting their emotional and psychosocial well-being, and reducing their overall QoL. Sociodemographic factors may also influence psychological outcomes in women with PCOS.

Table 2 below summarizes the key findings on mental health challenges associated with PCOS.

Table 2 Summary of Mental Health challenges of PCOS

Mental health challenges	Summary	References	Study Date and Methodology
<i>Psychiatric disorders</i>	<i>Anxiety</i> - PCOS correlates with a higher prevalence of GAD. - Physical symptoms, hormonal imbalances and a heightened stress response are strong predictors of anxiety in PCOS. - Anxiety and depression scores are significantly increased in infertile PCOS patients.	Hu et al., 2024 Dokras et al., 2012 Yin et al., 2021 Papalou & Diamanti-Kandarakis, 2017 Dybciak et al., 2022	2023, narrative review 2011, systematic review and meta-analysis 2017, literature review 2021, cross-sectional study
	<i>Depression</i> - PCOS correlates with an increased risk of mild or severe depression. - PCOS symptoms affecting identity, mental state, and QOL, are key factors. - Possible links exist between increased serum androgens, infertility, obesity, inflammation, and depressive symptoms.	Nayar et al., 2019 Hu et al., 2024 Yin et al., 2021 Thannickal et al., 2020	2018, cross-sectional study 2023, systematic review 1959–1985, cross-sectional study
	<i>Eating disorders</i> - Women with PCOS have a higher prevalence of eating disorders, particularly bulimia nervosa and binge eating. - Obesity, hormonal imbalances, anxiety, and a negative self-image are influential factors.	Cooney et al., 2017 Kolhe et al., 2021 Thannickal et al., 2020 Stefanaki et al., 2023	2016, systematic review and meta-analysis 2021, review paper 2018–2020, systematic review and meta-analysis
<i>Emotional challenges</i>	<i>Other psychiatric disorders</i> - Obsessive-compulsive disorder, ADHD, bipolar disorder, and other psychotic disorders more commonly reported in women with PCOS than in the general population. - Limited research supporting these associations.	Rasgon, 2004 Rodriguez-Paris et al., 2019	2023, case-control study 1966–2021, systematic review 2017, systematic review and meta-analysis
	<i>Stress</i> : Linked to PCOS symptoms like irregular periods, acne, and hirsutism; exacerbated by fertility and weight management challenges. <i>Anger</i> : Stemming from appearance concerns, infertility, treatment failures, societal stigma, and lack of support. <i>Frustration</i> : Due to menstrual irregularities, conception difficulties, and challenges in maintaining a healthy weight; heightened by delayed diagnosis and inadequate medical support. <i>Guilt</i> : Felt towards partners and in personal relationships, intensified by societal pressure and infertility-related challenges. <i>Social isolation</i> : Resulting from dissatisfaction with appearance and increased social anxiety, leading to withdrawal and loneliness.	Biswal, 2023 Benjamin et al., 2023 Marschalek et al., 2023 Subramani & Rathnasabapathy, 2023 Wright et al., 2020 ALSumri et al., 2023 Mushtaq et al., 2022 Morshedi et al., 2021	2023, narrative review 2019–2021, case-control study 2017, case-control study 2023, narrative review 2018, qualitative descriptive study 2023, phenomenological study 2022, case-control study 2019–2020, cross-sectional study
	<i>Body image dissatisfaction</i> : - Women with PCOS, particularly those with weight issues, often experience body image dissatisfaction, including diminished femininity and sexual attractiveness, and low self-esteem. <i>Sexual and Relational Functioning</i> : - PCOS impacts interpersonal relationships through alterations in appearance, mood, and fertility. - Relationship strain may result in increased divorce rates, lowered social status, and low self-esteem. - Infertility in PCOS causes psychological distress and affects both partners. <i>Social Functioning</i> : - Women with PCOS experience heightened social anxiety and isolation. - Social stigma and feelings of unattractiveness contribute to reduced social interactions. - Infertility can also lead to avoidance of societal discussions about children. - Loss of feminine identity due to PCOS physical symptoms can further impose social limitations.	Farajzadegan et al., 2023 Barberis et al., 2023 Morshedi et al., 2021 Zaikova, 2021 Hadjiconstantinou et al., 2017 Wang et al., 2023 Chopra et al., 2021 Amiri et al., 2014	2018–2019, qualitative interviews 2023, cross-sectional, observational study 2019–2020, cross-sectional study 2021, qualitative and phenomenological study 2017, qualitative and phenomenological study 2022, qualitative and phenomenological study 2019–2020, qualitative and phenomenological study 2011, qualitative and phenomenological study

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Data availability • This study is a narrative review based on secondary data from previously published research articles.

- The data supporting the results of this review are derived from publicly available sources.
- A key data set cited in this review, presented as bar graphs, is: Alur-Gupta, S., Boland, M. R., Barnhart, K. T., Sammel, M. D., & Dokras, A. (2021). Racial differences in anxiety, depression, and quality of life in women with polycystic ovary syndrome. *American Journal of Obstetrics and Gynecology*, 225(3), 272.e1–272.e10. <https://doi.org/10.1016/j.ajog.2021.03.003>.
- No new data were generated or analysed in this study. As this review relies entirely on secondary data from published literature, all relevant data are available within the referenced articles.
- For researchers interested in accessing the data reviewed, please refer to the original publications cited. If further information is needed, requests for additional details can be directed to the corresponding author of this review paper.

Declarations

The authors declare that the writing in this manuscript was not generated or authored by ChatGPT or any other large language model. The content and ideas presented in the manuscript are original and have been independently generated by the authors. ChatGPT was solely utilized as a tool to assist in improving grammar and readability, as well as to cross-check that the referencing and layout of the manuscript met the submission guidelines.

Ethical statement This study is a narrative review of previously published literature and did not involve the collection of new data from human participants, thus ethical approval and informed consent was not required. All data sources cited in this review were accessed in accordance with the ethical standards of the institutions that conducted the original studies, adhering to the principles of the Declaration of Helsinki.

Conflict of interest None.

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