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RESEARCH PAPER

Body Dysmorphism and Sleep Quality among PCOS Patients: Assessing the Predictive Role of Alyxthymia

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ABSTRACT

PCOS is linked with psychosomatic issues such as apprehension, alexithymia, poor body image, and sleep problems. The current study mainly aims to examine the predictive role of alexithymia in the relationship between body dysmorphism and sleep quality and to explore the demographic differences in the study variables. The study was carried out on purposefully selected (N=300)PCOS patients from different hospitals and clinics. Along with a demographic sheet, the patients completed three instruments: the Pittsburgh Sleep Quality Index, the Appearance Anxiety Inventory, and the Perth Alexithymia Questionnaire. Results suggested that alexithymia significantly predicted the association between quality of sleep and body dysmorphism traits and body dysmorphism is significantly positively associated with alexithymia whereas inversely associated with quality of sleep. Marital and fertility-based differences were also proved. Study results will be helpful for professionals in resolving PCOS-related psychological issues. Future research should be based on a larger sample and longitudinal study design.

Keywords: PCOS, Sleep Quality, Alexithymia, Body Dysmorphism, Fertility

Introduction

Depression affects about 40% of women with PCOS, particularly young girls, and the increased prevalence of PCOS is estimated to be between 5% and 10%. Depression and anxiety are common with PCOS, although these ailments are usually ignored and overlooked. It has been demonstrated statistically that women with PCOS more often suffer from mild to severe depression. Several researchers have found a link between hirsutism and depression. Research has indicated that women diagnosed with polycystic ovary syndrome (PCOS) may have physical hyperandrogenic symptoms such as overweightness, hirsuteness, cystic acne, seborrhea, and hair loss, which may impact their sense of self. Additionally, they may experience psychological distress, depression, and low self-esteem (McGlacken-Byrne et al., 2024).Infertility, menstrual disorder, hirsutism, and obesity—the main symptoms of PCOS—can co-occur, increasing the psychological stress that leads to psychiatric dysfunction. PCOS patients had considerably greater levels of anxiety, sadness, and neuroticism. Polycystic ovarian syndrome frequently has long-term repercussions that worsen the physical and mental health of healthy women(Karjula, 2021).

PCOS is an intricate disorder accompanied by environmental, behavioral, emotional, and physiological factors.PCOS is an endocrinopathy that affects many women during their reproductive years. Women with PCOS may experience several symptoms, including improper periods, substantial hair problems, reduced productiveness, and difficulty conceiving (Louwers & Laven, 2020). Adding to hyperandrogenism and unbalanced menses are significant symptoms of PCOS (Hong et al., 2020). Higher androgen levels, improper periods, and small polyps on ovaries are the identifying features of the intricate state known as polycystic ovary syndrome (PCOS) (Ndefo et al., 2013). Polycystic ovary syndrome is a

structural disorder, whereas hyperandrogenemia is generally a biochemical disorder. Ovulation, menstrual problems, and constrained follicular growth are all symptoms of PCOS's clinical characteristics (Ndefo et al., 2013).

Numerous ailments can be brought on by polycystic ovarian syndrome, an endocrine disorder. Although the indications and symptoms of PCOS might vary, the three most common reasons are cystic ovaries, elevated androgen levels, and irregular ovulation (Karkera et al., 2023). Females with PCOS encounter several predicting indicators, such as irregular periods, redundant hair, reduced productiveness, and pregnancy problems. In addition, psychosomatic issues like apprehension, melancholy, poor body image, alexithymia trait, sleep, and low self-confidence are salient features of PCOS (Bokaie et al., 2024). Preceding studies have revealed that sleep disturbances should be taken into account as a key symptom of PCOS in health assessments. It is also important to consider suggestions for treating and controlling PCOS, including how they may affect the patient's quality of life (Ibrahim et al., 2023). Alexithymic symptoms increase the likelihood of a variety of psychological and physical health issues, such as sadness, anxiety, obsessive behavior, and prospective physical symptoms (Kojima, 2012). Earlier research has revealed that infertile females exhibit higher levels of alexithymia than fertile women.

There is speculation that the degree of alexithymia in infertile women varies with their level of stress. As a result, women without PCOS and infertile women with PCOS may display differing degrees of alexithymia (Alturki et al., 2024). In addition to possible physical symptoms, there is a risk for several psychological and physical health conditions, including apprehension, sadness, obsessive behavior, and drug addiction. Earlier studies have indicated that infertile women experience higher levels of alexithymia than fertile ones (Gul et al., 2014).

Body image encompasses an individual's mental conception of their body, as well as their attitudes regarding their looks, health, regular functioning, and sexual desire. Body image is a multidimensional paradigm incorporating insight and perception about physical looks. Understanding the underlying problems with identification is critical. Women's self-esteem is often centered solely on beauty, which affects their interpersonal relationships and social interactions (Jin et al., 2024). Because of social effects on how the body is regarded and valued, women's views of the body differ from men's. Recent studies on women's self-esteem and body image in Western cultures have been conducted (Aggarwal et al., 2023).

According to the DSM 5, also known as body dysmorphic disorder, it is a psychological disease designated by an obsession with a perceived flaw or defects in one's look that is either hardly evident to others or not at all. Anxiety causes significant impairments in social, intellectual, occupational, or other functioning. To meet the diagnostic criteria, a person must at some point during the ailment be involved in monotonous behaviors such as disproportionate mirror-watching, casing up a defect with clothing or other accouterments, skin scratching, unnecessary combing, or prevalent acts like associating one's appearance to others (Rück et al., 2024). Self-perception can be obscure at times, and delusions can accompany opinions about appearance. Repeated consultations with dermatologists, surgeons, and other medical specialists are common for people with body dysmorphic disorders (Rymaszewska et al., 2022).

Literature Review

Women with PCOS who perceive their bodies negatively are more likely to be self-aware, feel unsatisfied with their appearance, have a weak sense of feminine identity and feelings, and be sensitive to sexual desire. (Mosalisa, 2023). Kulp (2025)Claim that one's body image significantly impacts thoughts, feelings, behavior, and interpersonal interactions. Positivity about one's appearance, happiness, confidence, and self-worth are

all connected with retaining a good body appearance. Negative body image is associated with both insufficient and poor social interactions as well as self-detrimental behaviors intended to fulfill the socially acceptable ideal of beauty (Cohen, 2024). Body dissatisfaction can be detrimental to psychological health even in a non-patient population, according to Stice et al. (2000). Long-term research indicates that teenage females who have a poor body image are more likely to experience depression in the future. If a contributing reason to depression is body dissatisfaction, diagnosed PCOS women may be highly susceptible to experiencing depression. Anxiety and body dissatisfaction in women with PCOS may also be related. It is well known that body dissatisfaction is a major causative factor in eating disorders and that there is a link between PCOS and eating disorders, especially bulimia. Several research studies have also supported this association (Hong et al., 2024).

Excessive daytime sleepiness, exhaustion, melancholy, anxiety, neurological dysfunction, dysglycemia, infections, cardiovascular problems, and atherosclerosis are all linked to inadequate sleep. Chronic circadian rhythm misalignment, excessive sleep, protracted sleep, and sleep deprivation all impact hormone balance and metabolism. Sleep problems in PCOS patients have been heavily discussed (Rosa-Bończak et al., 2025).

The increasing frequency of sleep apnea among PCOS patients is the main topic of the majority of the work to date (Bambhroliya et al., 2022).Women with PCOS are more prone to experience sleep problems, abnormal food intake patterns, and low self-esteem (Karjula, 2021).Sleep problems have been reported in PCOS patients. There is uncertainty in the link between these factors because sleep is essential for regulating many aspects of endocrine function. (Jafar et al., 2023). Patients with PCOS often have trouble sleeping. These problems include drowsiness during the day, difficulty falling asleep, and uneven breathing, which might interfere with these patients' ability to have a good night's sleep (Oberg et al., 2023a).

Alexithymia denotes an incapacity to understand and communicate emotions. The phrase "there are no words for emotions," or alexithymia, originally applied to four areas: a) it is difficult to identify and characterize psychological reactions, like others. Emotions include anger, flight, fear, happiness, the inability to distinguish between feelings and bodily sensations, emotional arousal, a lack of creative imagination, and external thinking. It is estimated that 10–13 percent of people worldwide suffer from alexithymia (Preece & Gross, 2023).

The absence of desires and the incapacity to identify or classify emotions are traits of alexithymia. Depression is one of the signs that behavioral scientists studying PCOS look at the most often. Studies have shown that women with PCOS may encounter higher depression symptoms (Almhmoud et al., 2024), profound hopelessness, and negative perception of their body is experienced by women with PCOS (Kolhe et al., 2022).

In a cross-sectional study, women with PCOS reported higher levels of rigorous anxiety, a negative body image, and social phobia. Lower levels were associated with depression. On the other hand, Almeshari et al. (2021) found no connection between depressive symptoms and PCOS in a different study. A woman's life may be affected by PCOS, particularly during the critical phases of courtship and marriage. Thus, alterations in the woman's physical attributes and emotional responses to her death may be especially harmful and cause stress (Stephens, 2023).

Theoretically, the degree of alexithymia in infertile women varies with their level of stress. Therefore, infertile women with PCOS may exhibit variable degrees of alexithymia in comparison to those without polycystic ovary syndrome. The alexithymia of women with and without PCOS was compared by Basirat et al. (2019). The results showed that compared to women without PCOS, infertile women with PCOS had greater alexithymia scores. Infertile women with PCOS experience difficulty recognizing and expressing their feelings

in contrast to those without PCOS. Although the current study does not entirely explain the difference in the prevalence of Alexithymia between PCOS-positive and PCOS-negative women, there are some plausible explanations (Basirat et al., 2019).

Material and Method

Research design

The descriptive, correlational, cross-sectional investigation was conducted between October 2022 and March 2023.

Sample

The study included outpatients with PCOS diagnoses from several hospitals in KPK, Pakistan. Patients were given a standardized questionnaire. The institutional ethics committee approved the trial, and all patients who were given the questionnaire explanation in the local language gave their written informed consent. The current study consisted of a sample of conveniently selected N=300 women with PCOS diagnoses from clinical settings in Abbottabad, Mansehra, and Haripur cities. The sample was further separated based on factors such as marital status and history of fertility. The sample was then divided I nto groups according to marital status, employment status, and history of fertility. Table 1 provides specific sample distribution information.

Table 1
Sample Distribution

Measures		*f*	*%*
Marital status			
	Married	166	55.3
	Unmarried	134	44.6
Fertility history			
	Infertile	227	75.7
	Fertile	73	24.3

Instruments

Pittsburgh Sleep Quality Index (PSQI) questionnaire

The self-rated Pittsburgh Sleep Quality Index (PSQI) questionnaire was given to patients to complete(Buysse et al., 1989). The on-duty health expert briefed those who could not grasp the questionnaire. Every patient was required to complete the form, and those who did not were not included. The PSQI assesses sleep disruption and quality over one month. Subjective sleep quality, sleep latency, length, habitual sleep efficiency, sleep disruptions, usage of sleep medicine, and daytime dysfunction are among the 19 questions that generate 7 individual scores. Every single score ranges from 0 to 3. The Global PSQI score, which separates excellent sleepers from deprived sleepers, is the maximum value of 21 obtained by adding together all these ratings. Subjects are classified as excellent sleepers if their global PSQI score is less than or equal to 5 and as poor sleepers if it is greater than 5.

Appearance Anxiety Inventory

A self-report measure called the AAI Appearance Anxiety Inventory was used to evaluate body dysmorphic disorder (BDD) symptoms (Veale et al., 2014). Comprised ten questions on a response category ranges from 0-4-point Likert scale. The response category has a 0–4 rating scale (0 being never; 1 being seldom; 2 being occasionally; 3 being frequently; and 4 being always). For AAI, the Cronbach's alpha reliability is 0.86

Perth Alexithymia Questionnair

A 24-item self-report test, the Perth Alexithymia Questionnaire (PAQ) intended to evaluate both good and negative emotions while examining every facet of alexithymia. Higher scores indicate higher degrees of alexithymia. The measure yields five subscale scores and six composite scores (Preece et al., 2018). The rating scale for the responses ranges from 1 to 7, with 1 denoting strongly disagree, 2 disagree, 3 slightly disagree, 4 neutral, 5 somewhat agree, 6 agree, and 7 strongly agree. Good internal consistency is indicated by a Cronbach's alpha coefficient between.70 and.95.

Procedure

Permission was acquired from various hospital and clinic administrative heads. Informed consent was obtained after diagnosing PCOS patients and explaining the study's goal to them. Potential study participants were informed about the nature and goals of the investigation and were reassured that their personal information would be kept private. They were handed a questionnaire and instructed to fill it out honestly after being provided clear instructions. Patients were disqualified if they were unable to communicate or follow instructions, if they had a diagnosed psychological issue, if they had any other serious physical illness, or if they had received any kind of psychological therapy.

Data Analysis

Data analysis was done with SPSS 20. The study employed the independent sample t-test to evaluate the means of normally distributed variables, namely, fertility and marital status among individuals diagnosed with PCOS. With alexithymia scores and sleep issues as the dependent variables and body dysmorphism scores as the independent variable, hierarchical regression was used to ascertain the independent association between body dysmorphism and sleep quality.

Ethical consideration

For the ethical considerations, the potential subjects of the study were briefed about the goals of the study. After obtaining informed consent, they were ensured of the confidentiality of the results.

Results and Discussion

Table 2
Hierarchical Multiple Regression Analysis Prediction alexithymia from Body dysmorphism and Sleep Quality (N = 300)

Variable	B	95% CI	for B	SE B	B	R^2	ΔR^2
		LL	UL				
Step 1						.08	.07***
Constant	29.47	31.85	33.00	.36			
Body Dysmorphism	1.76	1.21	1.90	.36	.24***		
Step 2						.13	.06***
Constant	34.37	38.05	34.00	.36			
Body Dysmorphism	1.68	.89	2.76	.36	.25		
Sleep Quality	.68	-.06	1.50	.36	.11***		
Step 3						.15	.03**
Constant	32.10	35.45	33.02	.36			
Body Dysmorphism	1.75	1.00	2.32	.36	.25***		
Sleep Quality	.78	.06	1.82	.39	.14***		
BDM* SQ	.55	-.25	1.14	.34	.09***		

Note. B = Unstandardized Beta; CI = Confidence Interval; LL = Lower Limit; UL = Upper Limit; B = Standardized Beta; R^2 = R Square; Δr^2 = R Square Change.
***p <.001.

Table 2's results displayed a statistically significant positive association between body dysmorphism and alexithymia {β = .24, t = 3.01} with the former causing about 7% of

the change in the latter {ΔR2 = .07, ΔF = 23.20 (1, 298)}. Sleep quality foretold Alexithymia in the second stage {β = .11, t = 1.89} and donated a supplementary 6% of its variance {ΔR^2 = .61, ΔF = 2.76 (1, 297)}. The third phase involved a significant positive prediction of alexithymia by the interaction term between body dysmorphism and sleep quality {β = .09, t = 1.33}, which also added 3% of variation to the analysis {ΔR^2 = .03, ΔF = 1.78 (1, 296)}. The above table also shows that body dysmorphism significantly positively moderates the association between alexithymia and sleep quality among patients with PCOS. Overall, there was a 15% change in alexithymia traits among patients with PCOS.

Table 3

Correlation among Appearance Anxiety Inventory (AAI), Pittsburgh Sleep Quality Index (PSQI), and Perth Alexithymia Questionnaire (PAQ)

Scale	N	*M*	*SD*	1	2	3
AAI	10	26.34	7.888	-	.238**	.129*
PSQI	10	21.20	4.281	-	-	.310**
PAQ	24	118.81	28.806	-	-	-

Note. N= 300 (AAI)=Appearance Anxiety Inventory, (PSQI)=Pittsburgh Sleep Quality Index, (PAQ)=Perth Alexithymia Questionnaire

*$p < .05$. **$p <$. 01.

Table 3 shows a significant positive relationship between appearance anxiety and alexithymic features and a substantial positive association with the sleep quality index. Similarly, on the other hand, Alexithymic characteristics and sleep quality are positively correlated.

Table 4

Mean, standard deviation, and t-value of fertility history on appearance anxiety inventory AAI, Pittsburgh Sleep Quality Index (PSQI), Perth Alexithymia Questionnaire (PAQ)

Variable	Infertile (n=227)		Fertile (n=73)				
	M	SD	M	SD	t (298)	P	Cohen's d
AAI	26.42	7.878	26.10	7.967	.308	.759	0.040
PSQI	21.71	4.236	19.62	4.054	3.71	.000	0.504
PAQ	124.03	26.318	102.58	30.309	5.83	.000	0.755

Note. N= 300, (AAI)=Appearance Anxiety Inventory, (PSQI)=Pittsburgh Sleep Quality Index, (PAQ)=Perth Alexithymia Questionnaire

P > .05. * p <.05. ***p <.001

Table 4 shows that while there are substantial differences in sleep quality and alexithymic characteristics, there is a non-significant difference in the level of appearance anxiety reported by PCOS women with their fertility history. Comparing the mean scores, it can be observed that infertile women exhibit higher levels of appearance anxiety, poor sleep quality, and high alexithymic characteristics in comparison to fertile women.

Discussion

The study's goal is to determine the predictive role of alexithymia in the association between body dysmorphism and sleep quality in women with PCOS, as well as the relationships between body dysmorphism, sleep quality, and alexithymia traits and demographic variables (fertility history and marital status).

Results suggested that Alexthymia significantly predicted the relationship between body dysmorphism and quality of sleep among women with PCOS diagnosis. According to the findings, women's views of having PCOS generate significant stress and suffering. 30.6%

of women strongly agreed that PCOS is the primary cause of weight gain and that modifying one's daily routine and adopting a more active lifestyle would be beneficial. It was discovered that this condition caused hormonal imbalances and irregular menstruation in women (Shahzad et al., 2022).

PCOS frequently results in changes to metabolism and physical appearance, which can affect a woman's psychological and emotional well-being (Malik et al., 2020). Women with PCOS are more emotionally rigid and prone to expressing their irritation (Kolhe et al., 2022). Studies show that individuals with PCOS also experience a range of mental health problems. Haq et al. (2017)found that out of 250 participants with PCOS, 52% reported having depression; compared to age-matched healthy women, a greater proportion of PCOS patients had high levels of severe anxiety, trait anger, and depression (Agrawal et al., 2023). Individuals with PCOS who suffer from dyslipidemia and hyperandrogenemia, conditions linked to depression and anxiety, have a low health-related quality of life (Basirat et al., 2019).

The results of this study displayed a significant positive correlation between appearance anxiety and both the sleep quality index and alexithymia traits. According to recent studies, young individuals with clinical insomnia performed worse in day-to-day activities and scored higher on self-reported measures of the severity of BDD symptoms, especially avoidance behavior. Additionally, their rates of comorbid depression were higher. Empirical research has associated hyperarousal-related sleep disturbances with alexithymia. Sleep quality and body dysmorphisms have a positive correlation (Davitadze et al., 2023). Alexithymia has been repeatedly associated with poor sleep quality (Oberg et al., 2023b), insomnia (Agrawal et al., 2023)and symptoms of sleep-related problems (Benham et al., 2023). The cortisol hypersecretion and poorer sleep quality are also linked to alexithymia, supporting the theory that a propensity to repress or suppress psychological conflicts may result in increased persistent tonic physiological arousal and other sleep disturbances (De Gennaro et al., 2004).

Research has also shown that the correlation between insomnia and alexithymia remains when depression or mood disorders are taken into account or treated. These results imply that the relationship between alexithymia and sleep disturbances cannot be entirely explained by other emotional issues, despite certain interactions (Huang et al., 2022). The results of this study indicate that compared to fertile PCOS women, infertile females with PCOS exhibited advanced levels of body dysmorphism, alexithymia traits, and poorer sleep quality.

Patients with PCOS are supplementary likely to suffer from migraines, eating disorders, low quality of life, infertility, and marital issues that can have psychological effects such as anxiety, depression, and sleep apnoea (Basirat et al., 2019; Kleanthi & Maria, 2021). Various psychological issues can influence how you feel about your body and yourself. In addition to worries about a less attractive body, fear of infertility leads to depression, anxiety, and a loss of femininity (Agrawal et al., 2023; Mushtaq et al., 2022). Poor quality of life in these patients is linked to body pain, weight gain, menstrual dysfunction, infertility, anxiety, depression, aggression, sexual dissatisfaction, even life dissatisfaction, and diminished interpersonal relationships (Barberis et al., 2022; Basirat et al., 2019).

Conclusion

The study's findings indicated a noteworthy positive correlation between appearance anxiety alexithymia and sleep quality. The present study's findings for AAI, PSQI, and PAQ demonstrate demographic variances in marital status, and history of infertility.

Recommendations

1. Future researchers are recommended to utilize longitudinal studies for better and more in-depth information.
2. Future research should cover other areas of KPK to Increase the generalizability of the study results.
3. Future researchers are suggested to investigate other demographic variables i.e., socioeconomic status, BMI, family system, etc.

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