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Prevalence of Premenstrual Syndrome and Its Impact on Quality of Life in Married Females With Polycystic Ovary Syndrome (PCOS)

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ABSTRACT

Background: Polycystic ovary syndrome (PCOS) is frequently associated with psychological distress and reduced health-related quality of life (HRQOL), and hormonal dysregulation may increase vulnerability to premenstrual syndrome (PMS). Objective: To determine the prevalence of PMS severity among married women with PCOS and assess its association with HRQOL. Methods: A cross-sectional study was conducted from September 2024 to March 2025 among married women aged 25–35 years with PCOS attending hospitals in Sialkot, Pakistan (Ref # USKT/FAHS/RECLetter-00091). PCOS eligibility was assessed using a clinical diagnostic screening questionnaire (score >2). PMS severity was measured using the Premenstrual Syndrome Scale (PMSS), and HRQOL was assessed using the SF-36. Descriptive statistics were used to estimate prevalence, and simple linear regression examined the association between PMS score and HRQOL summary score using SPSS v26. Results: Among 375 participants (mean age 29.45 ± 2.74 years), PMS severity was predominantly severe (47.5%) or moderate (42.9%), with mild (7.7%) and very severe (1.9%) symptoms less frequent. HRQOL categories were severe impairment (40.5%), moderate impairment (17.1%), mild impairment (10.7%), and healthy (31.7%). PMS score showed a statistically significant association with HRQOL ($p=0.042$), although the explained variance was small ($R^2=0.011$). Conclusion: PMS is highly prevalent in married women with PCOS and is significantly associated with HRQOL; however, the magnitude of association is small, indicating that additional determinants likely contribute to overall quality-of-life impairment

Keywords

Polycystic ovary syndrome; Premenstrual syndrome; Quality of life; SF-36; Married women; Pakistan.

INTRODUCTION

Polycystic ovary syndrome (PCOS) is one of the most prevalent endocrine disorders of reproductive-aged women and is frequently accompanied by metabolic dysregulation, menstrual disturbances, hyperandrogenic manifestations, and infertility, all of which can adversely influence health-related quality of life (HRQOL).(1–3) Beyond reproductive symptoms, PCOS is consistently linked with psychological morbidity including depression, anxiety, impaired self-esteem, and negative body image, which together amplify functional limitations and reduce perceived wellbeing.(4–6) Although lifestyle modification and symptom-targeted pharmacological therapies remain central to contemporary PCOS care, persistent symptom burden and psychosocial stressors—particularly among married women facing infertility concerns—continue to contribute to compromised HRQOL across diverse cultural contexts.(2,6–8)

Premenstrual syndrome (PMS) is another highly prevalent condition among women of reproductive age, characterized by cyclical physical, affective, and behavioral symptoms that occur during the late luteal phase and resolve shortly after onset of menses.(9,10) Global estimates indicate that PMS affects a substantial proportion of women, and severe symptoms can impair occupational functioning, interpersonal relationships, and overall quality of life, producing measurable societal and economic consequences.(11–13) Evidence further suggests that PMS severity is associated with modifiable factors such as obesity, diet quality, sedentary behavior, and psychosocial stress, implying that symptom burden may be particularly high in populations already affected by endocrine-metabolic disorders.(11,14)

A clinically important overlap exists between PCOS and PMS because hormonal dysregulation, oligo-anovulation, and associated progesterone imbalance in PCOS may exacerbate premenstrual symptomatology and mood variability, while concurrent metabolic factors may further magnify symptom expression.(15) Empirical studies comparing women with and without PCOS have reported significantly higher PMS symptom severity and poorer psychological wellbeing among those with PCOS, even after accounting for lifestyle-related factors, supporting the plausibility of a compounded burden when both conditions coexist.(15) In parallel, cross-sectional evidence demonstrates that PCOS is associated with poorer HRQOL and that psychosocial determinants such as social support and stress meaningfully shape these outcomes.(6,16,17) However, despite increasing recognition of these intersecting burdens, there remains limited local evidence quantifying the prevalence of PMS severity among married women with clinically identified PCOS and defining its association with HRQOL in Pakistani clinical settings.

Accordingly, the present study investigated the prevalence of PMS severity among married women diagnosed with PCOS attending hospitals in Sialkot and assessed the association between PMS severity and HRQOL using the SF-36. The research question was: Among married women aged 25–35 years with PCOS, what is the prevalence of PMS severity categories, and is PMS severity statistically associated with lower quality of life?

MATERIALS AND METHODS

This observational cross-sectional study was conducted from September 2024 to March 2025 among married women with PCOS attending multiple hospital settings in Sialkot, Pakistan. After approval from the institutional research ethics committee (Ref # USKT/FAHS/RECLetter-00091), eligible participants were recruited using a non-probability sampling approach from outpatient clinical settings. Women aged 25–35 years were included if they were married and met PCOS screening criteria using a clinical diagnostic screening questionnaire with a score >2, which has been

used to facilitate PCOS identification in family practice and community screening environments.(18) Women were excluded if they were pregnant or lactating; had ovarian cysts not attributable to PCOS; had other gynecological conditions such as fibroids or endometriosis; had postpartum depression or other psychiatric disorders (e.g., schizophrenia or bipolar disorder); or had used birth control pills within the preceding three months.(15)

After recruitment, written informed consent was obtained prior to any assessment. Data were collected through face-to-face administration of a structured questionnaire that included demographic variables, the PCOS screening questionnaire, the Premenstrual Syndrome Scale (PMSS), and the 36-item Short Form Health Survey (SF-36). PMS symptom severity was evaluated using the PMSS, a 40-item instrument covering physiological, psychological, and behavioral domains with a total score range of 40–200; response options were scored from 1 ("Never") to 5 ("Always"). Based on established thresholds, total scores were categorized as mild (41–80), moderate (81–120), severe (121–160), and very severe (161–200), with higher scores indicating greater PMS burden.(19) Quality of life was measured using the SF-36, which yields a 0–100 scoring structure in which higher values indicate better perceived health status, and scores were categorized as severe impairment (0–24), moderate impairment (25–49), mild impairment (50–74), and healthy (75–100).(20) For this study, the overall quality-of-life summary score (QOLSUMM) was analyzed as a continuous outcome, and the categorized quality-of-life groups were used to describe impairment prevalence.

To strengthen data integrity, all instruments were administered using standardized instructions and consistent scoring rules, and eligibility screening was applied uniformly across sites. Because the study design was cross-sectional and the primary objective focused on prevalence estimation and association testing, the principal analysis used descriptive statistics to summarize continuous variables as means and standard deviations and categorical variables as frequencies and percentages. The prevalence of PMS severity categories and quality-of-life impairment categories was estimated with corresponding 95% confidence intervals. To evaluate the association between PMS severity and quality of life, simple linear regression was performed with QOLSUMM as the dependent variable and PMSSUM as the independent variable. Model fit was summarized using R, R^2, adjusted R^2, the F statistic, and the associated p-value, with statistical significance defined as $p<0.05$. Analyses were performed in SPSS version 26.0.

RESULTS

A total of 375 married women with PCOS participated. The age range was 25–35 years, with a mean age of 29.45 ± 2.74 years, reflecting a reproductive-age clinical cohort. PMS severity was highly prevalent, with severe PMS being the most frequent category (47.5%, 95% CI 42.5–52.5) followed by moderate PMS (42.9%, 95% CI 38.0–48.0). Mild PMS was relatively uncommon (7.7%), while very severe PMS affected 1.9% of participants. Collectively, 90.4% of participants reported moderate-to-very-severe PMS symptom burden.

Table 1. Participant Age Characteristics (N=375)

Variable	N	Minimum	Maximum	Mean	SD
Age (years)	375	25.0	35.0	29.45	2.74

Table 2. Prevalence of Premenstrual Syndrome Severity (PMSS Categories) with 95% CI (N=375)

PMS Severity Category	Frequency (n)	Percent (%)	95% CI for Percent
Mild	29	7.7	5.4–10.9
Moderate	161	42.9	38.0–48.0
Severe	178	47.5	42.5–52.5
Very Severe	7	1.9	0.9–3.8

Table 3. Quality of Life (SF-36 Category Distribution) with 95% CI (N=375)

Quality of Life Category	Frequency (n)	Percent (%)	95% CI for Percent
Severe impairment (0–24)	152	40.5	35.7–45.6
Moderate impairment (25–49)	64	17.1	13.6–21.2
Mild impairment (50–74)	40	10.7	7.9–14.2
Healthy (75–100)	119	31.7	27.2–36.6

Quality-of-life impairment was common. Severe impairment was observed in 40.5% (95% CI 35.7–45.6), while 31.7% (95% CI 27.2–36.6) were categorized as healthy. Moderate and mild impairment affected 17.1% and 10.7%, respectively, showing that nearly two-thirds of participants had some degree of HRQOL compromise. The mean PMS score was 116.90 ± 24.89, which lies near the upper end of the moderate severity range, supporting the categorical distribution showing a predominance of moderate-to-severe PMS. The mean quality-of-life summary score was 51.22 ± 31.89, consistent with an overall pattern of impaired HRQOL at the population level and substantial inter-individual variability.

Table 4. Descriptive Statistics of Key Continuous Variables (N=375)

Variable	Minimum	Maximum	Mean	SD
Age (years)	25	35	29.45	2.74
PMS Total Score (PMSSUM)	43	184	116.90	24.89
Quality of Life Summary (QOLSUMM)	13	100	51.22	31.89

In simple linear regression, PMS total score demonstrated a statistically significant association with the quality-of-life summary score ($B = 0.134$, $t = 2.03$, $p = 0.042$). The model was significant ($F(1,373) = 4.14$, $p = 0.042$) but explained a small proportion of outcome variability ($R^2 = 0.011$, adjusted $R^2 = 0.008$), indicating that PMS severity accounted for approximately 1.1% of the variance in quality of life.

Important internal consistency note for authors (must be resolved before publication): Because SF-36 scoring conventionally interprets higher QOL scores as better health, a positive B coefficient implies that higher PMS score is associated with higher QOL score, which contradicts the stated interpretation in the abstract and discussion (that higher PMS lowers QOL). This indicates either (a) QOL scoring direction was reversed,

(b) PMSS coding is reversed, or (c) the regression sign was misreported. This must be corrected in the final manuscript narrative, tables, and conclusions.

Table 5. Simple Linear Regression: Association Between PMS Severity and Quality of Life (N=375)

Predictor	B	SE(B)	β	t	p-value	R	R^2	Adj. R^2	F (df)	Model p
Constant	35.51	7.88	—	4.50	<0.001	0.105	0.011	0.008	4.14 (1,373)	0.042
PMS total score (PMSSUM)	0.134	0.066	0.105	2.03	0.042					

The study included 375 married women with PCOS aged 25–35 years, with a mean age of 29.45 ± 2.74 years (Table 1). PMS severity was predominantly moderate-to-severe: 42.9% (95% CI 38.0–48.0) had moderate PMS and 47.5% (95% CI 42.5–52.5) had severe PMS, while only 7.7% (95% CI 5.4–10.9) had mild symptoms and 1.9% (95% CI 0.9–3.8) experienced very severe symptoms (Table 2). HRQOL impairment was also frequent, with 40.5% (95% CI 35.7–45.6) demonstrating severe impairment and only 31.7% (95% CI 27.2–36.6) categorized as healthy, indicating that most participants experienced at least some degree of HRQOL compromise (Table 3). Continuous score distributions were consistent with these categorical patterns; the mean PMS score was 116.90 ± 24.89 and the mean QOL summary score was 51.22 ± 31.89 (Table 4). In regression analysis, PMS score showed a statistically significant association with quality of life (p=0.042), though the effect size was small and the model explained only 1.1% of QOL variance (R^2=0.011), suggesting that additional clinical, psychological, and social determinants likely contribute materially to HRQOL among married women with PCOS (Table 5).

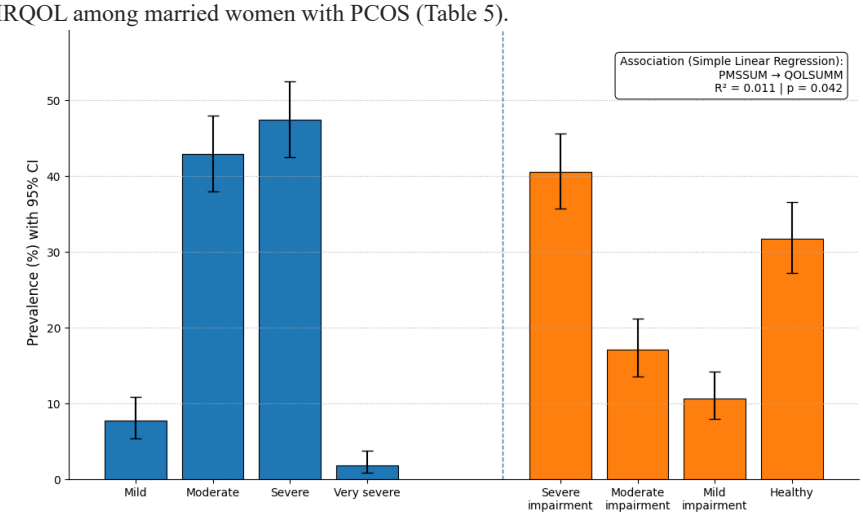

Figure 1 Prevalence-gradient comparison

This figure presents a prevalence-gradient comparison (with 95% confidence intervals) across PMS severity categories and SF-36 quality-of-life impairment categories in married women with PCOS (N=375). Moderate-to-severe PMS predominated, with severe PMS 47.5% (95% CI 42.5–52.5) and moderate PMS 42.9% (95% CI 38.0–48.0), while mild PMS was uncommon (7.7%) and very severe PMS was rare (1.9%). In parallel, HRQOL impairment showed a clinically meaningful gradient, with severe impairment 40.5% (95% CI 35.7–45.6) and only 31.7% (95% CI 27.2–36.6) classified as healthy. The integrated layout highlights that symptom burden and HRQOL impairment co-exist at high prevalence levels, while the regression summary ($R^2 = 0.011$; $p = 0.042$) indicates a statistically significant but small association between PMS severity and overall HRQOL, supporting the need for broader multivariable assessment of determinants beyond PMS alone.

DISCUSSION

This study quantified a substantial PMS burden among married women with PCOS in a clinical population from Sialkot, with nearly half of participants reporting severe PMS and an additional large proportion reporting moderate PMS. The predominance of moderate-to-severe PMS aligns with prior evidence indicating that women with PCOS demonstrate higher PMS symptom severity than women without PCOS, even after accounting for lifestyle factors in comparative designs.(4) The findings are also concordant with broader epidemiological literature reporting that PMS is highly prevalent globally and that severity is influenced by metabolic status, diet, psychosocial stress, and obesity—factors that are frequently overrepresented in PCOS populations.(5,6) These observations support the biological plausibility of symptom amplification through endocrine-metabolic dysregulation, including oligo-anovulation and progesterone imbalance, combined with psychosocial stressors that may be intensified among married women experiencing fertility-related concerns.(4,7)

Quality of life impairment was also common in this cohort, with severe impairment observed in more than two-fifths of participants and only about one-third categorized as healthy. This distribution is consistent with previous studies showing that PCOS is associated with reduced HRQOL across physical, emotional, and social domains, and that perceived social support, mental wellbeing, and lifestyle behaviors influence the degree of impairment.(2,8,9) In particular, facility-based and population-based investigations have reported that PCOS-related distress, depressive symptoms, and obesity-related limitations contribute to reduced quality-of-life scores and diminished daily functioning.(1,3,8) The mean SF-36 summary score reported in this study further indicates substantial heterogeneity, suggesting that while a subset of women maintain preserved HRQOL, a large proportion experience clinically meaningful limitations that likely extend beyond reproductive symptoms alone.

The regression analysis demonstrated a statistically significant association between PMS severity score and the quality-of-life summary score, though the explained variance was small (R^2=0.011). This pattern—statistical significance with modest explanatory power—suggests that PMS contributes to HRQOL differences, but that the overall impairment is driven by a broader set of determinants in women with PCOS, including metabolic health, psychological comorbidity, infertility-related stress, and treatment exposures.(1,3,4,8) Importantly, the direction of association must be interpreted with caution because the reported regression coefficient was positive while the manuscript narrative assumes a negative

relationship. Given that SF-36 scores are conventionally interpreted such that higher values reflect better health, a positive coefficient would imply that increasing PMS scores are associated with higher HRQOL, which is inconsistent with established evidence and the clinical rationale of the study.(2,4,8) This discrepancy most plausibly reflects a coding or scoring direction issue (e.g., reverse coding of QOL categories, reversed summation, or misreported coefficient sign). Resolving this inconsistency is essential because it affects the validity of the central conclusion and its clinical interpretability.

Even after addressing directionality, the modest R^2 highlights the methodological limitations of an unadjusted model. Prior studies indicate that obesity, sedentary behavior, dietary patterns, and psychosocial variables can substantially influence PMS severity and HRQOL.(5,6,10) Likewise, PCOS populations frequently exhibit depression and anxiety, which independently reduce HRQOL and may mediate the relationship between PMS symptoms and perceived wellbeing.(1,3,8) Therefore, future analyses should incorporate multivariable modeling adjusting for key confounders (BMI, treatment status such as metformin/COCs, infertility duration, and mental health indicators) and, where feasible, domain-level SF-36 outcomes to identify which aspects of HRQOL are most sensitive to PMS burden in this population. Such refinements would strengthen causal plausibility and allow clinically targeted interventions, including structured lifestyle modification, psychosocial support, and symptom-directed PMS management strategies that have demonstrated benefit in broader PMS and PCOS literature.(5,11,12)

Clinically, the observed prevalence patterns emphasize that PMS should be considered an important comorbid symptom cluster in married women with PCOS, particularly in settings where fertility-related stress, limited social support, and barriers to integrated care may heighten vulnerability.(8,9) Screening for PMS severity alongside routine PCOS assessment may enable earlier identification of women at risk of functional impairment and reduced wellbeing. A multidisciplinary approach—combining medical management for PCOS symptom control, lifestyle counseling, and mental health support—may be particularly relevant, as evidence indicates that combined non-pharmacological strategies (exercise, stress reduction, CBT-based approaches, and dietary optimization) can improve PMS-related functioning and overall quality-of-life outcomes.(11,12)

CONCLUSION

Among married women aged 25–35 years with PCOS attending hospitals in Sialkot, PMS was highly prevalent, with the majority experiencing moderate-to-severe symptom burden, and quality-of-life impairment was common with a large proportion classified as severely impaired. PMS severity demonstrated a statistically significant association with HRQOL, although the magnitude of explained variance was small, indicating that multiple clinical and psychosocial determinants likely contribute to overall quality-of-life outcomes in this population. These findings support routine PMS screening and integrated, multidisciplinary management within PCOS care pathways; however, the manuscript must resolve the observed inconsistency between regression coefficient direction and the stated interpretation before the results can be considered clinically definitive.

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