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Quality of Life Impairment in Women with Polycystic Ovary Syndrome in Bangladesh: A Cross-Sectional Study Using the PCOSQOL-47

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Abstract

Background

Polycystic ovary syndrome (PCOS) is one of the most prevalent endocrine disorders among women of reproductive age, with well-documented adverse effects on physical, emotional, and social functioning. Despite its growing burden in South Asia, data on health-related quality of life (HRQoL) among Bangladeshi women with PCOS remain scarce.

Methods

A descriptive cross-sectional study was conducted between April and September 2024 among women attending the outpatient Gynecology and Obstetrics departments of four tertiary care hospitals in Dhaka, Bangladesh. A total of 331 women with a confirmed diagnosis of PCOS were enrolled using purposive sampling. Sociodemographic and reproductive data were collected through semi-structured interviews, and HRQoL was assessed using the validated Polycystic Ovary Syndrome Quality of Life (PCOSQOL-47) questionnaire scored on a 5-point Likert scale. Associations between participant characteristics and QoL outcomes were examined using chi-square and Fisher's exact tests. Crude odds ratios (ORs) and prevalence ratios (PRs) with 95% confidence intervals (CIs) were computed to quantify the strength of association. Statistical significance was set at $P < 0.05$.

Results

The mean age of participants was 24.23 ± 5.08 years. The majority (80.4%) reported poor QoL, and 19.6% reported good QoL. BMI showed the strongest association with QoL ($\chi^2 = 59.25$; Cramér's V = 0.423, moderate effect). Age, educational attainment, occupational status, menstrual pattern, number of children, and pregnancy history were also significantly associated with QoL (all $P < 0.05$). Women aged > 30 years, those who were overweight or obese, homemakers, service workers, and those with regular menstrual cycles or who had been pregnant ≤ 2 times all demonstrated 100% prevalence of poor QoL. Marital status was not significantly associated with QoL ($P = 0.397$).

Conclusion

PCOS substantially impairs HRQoL among Bangladeshi women, particularly those who are older, have higher BMI, lower educational attainment, or experience reproductive difficulties. BMI represents the most modifiable and impactful determinant of QoL in this population. Targeted, multidisciplinary interventions addressing both clinical and psychosocial dimensions of PCOS are urgently needed.

1. BACKGROUND

Polycystic ovary syndrome (PCOS) is the most common endocrine disorder affecting women of reproductive age, with a global prevalence ranging from 4% to 12% depending on the diagnostic criteria applied (1). The syndrome is characterized by a triad of oligo- or anovulation, clinical or biochemical hyperandrogenism, and polycystic ovarian morphology on ultrasound (2). Beyond its reproductive consequences, including menstrual irregularity, infertility, and elevated risks of gestational diabetes and endometrial cancer, PCOS exerts a profound impact on psychological well-being, with rates of anxiety and depression reported in 28% to 64% of affected individuals (3, 4). Health-related quality of life (HRQoL) is a multidimensional construct encompassing an individual's subjective assessment of their physical health, mental functioning, social relationships, and ability to perform daily activities (5). In the context of PCOS, HRQoL is particularly relevant because the syndrome's clinical manifestations, hirsutism, acne, weight gain, menstrual disturbance, and fertility concerns, directly threaten aspects of life that women value most. International guidelines now explicitly recommend the systematic evaluation of psychological well-being and HRQoL in the clinical management of PCOS (6). In Bangladesh, PCOS represents a growing public health concern. Hospital-based studies have documented high rates of oligomenorrhea, central obesity, and metabolic comorbidities among Bangladeshi women with PCOS, yet its impact on quality of life remains virtually unstudied (7). The sociocultural landscape of Bangladesh, where significant social pressure exists around marriage, fertility, and physical appearance, may amplify the psychosocial burden associated with PCOS symptoms beyond what is observed in Western populations. Mental health remains stigmatized in many communities, and access to specialist gynecological and psychological care is limited, particularly in rural settings (8). These contextual factors create a unique and compounding burden for affected women. The PCOSQOL-47 is a validated, disease-specific instrument developed to capture quality of life dimensions most relevant to women with PCOS, including menstrual symptoms, androgenic features, emotional well-being, infertility-related concerns, and weight (9, 10). Unlike generic HRQoL measures such as the SF-36, which miss important PCOS-specific domains, the PCOSQOL-47 has demonstrated excellent internal consistency, test-retest reliability, and construct validity (9, 10). The present study aimed to characterize the HRQoL of women with PCOS attending four tertiary care hospital in Dhaka and to identify sociodemographic, anthropometric, and reproductive factors associated with poorer quality of life. Findings from this work will inform the design of context-appropriate interventions and contribute to the nascent evidence base on PCOS burden in South Asia.

2. MATERIALS AND METHODS

2.1 Study Design and Setting

A descriptive cross-sectional study was conducted from April to September 2024 among women attending the outpatient Gynecology and Obstetrics departments of four tertiary care hospitals in Dhaka, Bangladesh. This study is reported in accordance with the STROBE (STrengthening the Reporting of OBservational studies in Epidemiology) statement for cross-sectional studies.

2.2 Study Population and Sampling

The study population comprised women diagnosed with PCOS who attended the participating hospitals during the study period. Eligible participants were females aged 15–49 years (from menarche to premenopausal age) with a confirmed clinical diagnosis of PCOS (per the Androgen Excess Society [AES] criteria) who provided voluntary written informed consent. Women with cognitive or developmental disabilities, significant comorbid conditions likely to independently affect HRQoL, confirmed malignancies, major physical deformities, or those who were currently breastfeeding were excluded.

The required sample size was calculated using the single population proportion formula ($n = Z^2pq/d^2$), assuming a 95% confidence level (Z = 1.96), an estimated prevalence of poor QoL among women with PCOS of 31.26% (based on a previous study), a complementary proportion of q = 0.6874, and a margin of error of 5% (d = 0.05). The minimum required sample size was 331 participants. Accordingly, 331 eligible women were recruited using purposive sampling.

2.3 Data Collection and Instruments

Data was collected in two parts. Part A comprised a semi-structured, pre-validated questionnaire capturing sociodemographic characteristics (age, BMI, education, marital status, occupation) and reproductive/menstrual history (age at menarche, menstrual cycle pattern, parity, and pregnancy history). Part B utilized the PCOSQOL-47, a self-administered, disease-specific HRQoL instrument comprising 47 items across domains reflecting the lived experience of PCOS. The questionnaire was not developed for the present study; it was adopted from a previously published instrument, the PCOSQoL-47, which was originally developed in Arabic and evaluated for reliability and validity in women with PCOS (10). For use in this study, the authors translated the questionnaire into Bengali. The Bengali version was pilot-tested among 20 women with PCOS to assess clarity and internal consistency, yielding a Cronbach's alpha of 0.73. The pilot participants were not included in the final sample. In the final sample (n = 331), Cronbach's alpha was 0.75, indicating acceptable internal consistency. The questionnaire was not developed for the present study; it was adopted from a previously published instrument, the PCOSQoL-47, which was originally developed in Arabic and evaluated for reliability and validity in women with PCOS (22). For use in this study, the authors translated the questionnaire into Bengali. The Bengali version was pilot-tested among 20 women with PCOS to assess clarity and internal consistency, yielding a Cronbach's alpha of 0.73. The pilot participants were not included in the final sample. The original questionnaire is published under an open-access license permitting reuse and adaptation with attribution (10). Items were rated on a 5-point Likert scale ranging from 1 (always - maximum impact) to 5 (never - no impact), with lower cumulative scores indicating greater disease burden. Total scores were categorized as poor QoL (score 47–188) and good QoL (189–235). Ethics approval was granted by the DIU Faculty of Allied Health Science Research Ethics Committee (Approval No. DIUAHS-2024-132). Before data collection, written informed consent was obtained from all participants.

2.4 Statistical Analysis

Data were entered and analyzed using SPSS version 26.0. Continuous variables were reported as mean ± standard deviation (SD); categorical variables as frequencies and percentages. The chi-square test and

Fisher's exact test were applied to evaluate associations between participant characteristics and QoL category (poor vs. good). Effect sizes for each association were quantified using Cramér's V, calculated as $V = \sqrt{(\chi^2/[n \times \min(r - 1, c - 1)])}$, where r and c are the number of rows and columns, respectively. Effect size benchmarks followed Cohen (1988): V < 0.10 = negligible; 0.10–0.29 = small; 0.30–0.49 = moderate; ≥ 0.50 = large.

Crude odds ratios (ORs) and crude prevalence ratios (PRs) with 95% confidence intervals (CIs) were computed from 2×2 contingency tables to quantify the strength of association between each predictor and poor QoL. Because the prevalence of poor QoL was high (80.4%), PRs are reported as the primary measure of association, as ORs overestimate relative risk when outcome prevalence exceeds 10%. PRs were estimated using the P_1/P_0 formula with delta-method log-scale 95% CIs. Categories with zero good-QoL events (complete separation) were flagged; standard CI estimation was not possible for these strata. Reference categories were selected as the group with the lowest prevalence of poor QoL within each variable. For one variable (Education: Primary or below), a Haldane–Anscombe continuity correction (addition of 0.5 to all cells) was applied because the good-QoL cell was zero. Statistical significance was set at $P < 0.05$ for all tests.

3. RESULTS

3.1 Sociodemographic Characteristics

Table 1 summarizes the sociodemographic and anthropometric characteristics of all 331 participants. The mean age was 24.23 ± 5.08 years, with the majority (62.2%) in the 20–30-year age group. Most participants were students (72.8%) and held a graduation-level education or above (64.4%). Just over half were married (57.8%). In terms of BMI, approximately half of the participants (50.6%) had a normal BMI of 18.5-<25 kg/m², while 41.7% were overweight or obese (BMI ≥ 25 kg/m²).

Table 1
Sociodemographic and anthropometric characteristics of study participants (n = 331)

Characteristic	Frequency (n)	Percentage (%)
Age (years)		
≤19	92	27.8
20–30	206	62.2
>30	33	10.0
Mean ± SD	24.23 ± 5.08 years	
Level of Education		
Primary or below	33	10.0
Secondary/Higher secondary	85	25.6
Graduation and above	213	64.4
Marital Status		
Married	191	57.8
Unmarried	140	42.2
Occupation		
Student	241	72.8
Homemaker	46	13.9
Service/Employment	11	3.3
Others	33	10.0
BMI (kg/m²)		
<18.5 (Underweight)	26	7.8
18.5-<25 (Normal)	167	50.6
25-<30 (Overweight)	88	26.7
≥30 (Obese)	50	15.0

3.2 Menstrual and Reproductive History

Table 2 presents the menstrual and reproductive characteristics of participants. The majority (70.0%) experienced menarche between the ages of 11 and 14 years. Only 3.3% reported a regular menstrual cycle; the remainder had irregular (47.8%) or delayed/late cycles (48.9%). A high proportion (62.2%) of

participants had never been pregnant. Among the 103 women who were mothers, the majority (69.4%) had more than two children.

Table 2
Menstrual and reproductive history of study participants (n = 331)

Characteristic	Frequency (n)	Percentage (%)
Age at Menarche (years)		
11–14	232	70.0
>14	99	30.0
Menstrual Cycle Pattern		
Regular	11	3.3
Irregular	158	47.8
Delayed/Late	162	48.9
Parental Status		
Has children	103	31.1
No children	228	68.9
Number of Children (among mothers) (n = 103)		
≤2	32	30.6
>2	71	69.4
Pregnancy History		
Never pregnant	206	62.2
Pregnant ≤ 2 times	59	17.8
Pregnant > 2 times	66	20.0

Number of children reported among women with children only (n = 103). Pregnancy history was reported for all participants (n = 331).

3.3 Quality of Life Distribution and Associations

Overall, 80.4% (n = 266) of participants had poor QoL, and 19.6% (n = 65) had good QoL based on PCOSQOL-47 total scores. Table 3 presents the distribution of poor and good QoL across participant characteristics, along with chi-square P-values. Tables 4 and 5 present the corresponding crude ORs and PRs. Table 6 presents chi-square statistics and Cramér's V effect sizes for all variables.

Age was significantly associated with QoL (P = 0.018; V = 0.214, small effect), with all women aged > 30 years falling in the poor QoL category (PR = 1.44 relative to ≤ 19 years). Women aged 20–30 years had 18% higher prevalence of poor QoL than those aged ≤ 19 years (PR = 1.18; 95% CI: 1.02–1.37).

BMI showed the strongest association with QoL (P < 0.001; V = 0.423, moderate effect), with 100% of overweight and obese women reporting poor QoL. Among women with normal BMI, 67.7% reported poor QoL, compared with 57.7% among underweight women. Both overweight and obese categories showed complete separation relative to the underweight reference (PR = 1.73), precluding standard CI estimation.

Education level (P = 0.007; V = 0.235, small effect) and occupation (P = 0.001; V = 0.302, moderate effect) were significantly associated with QoL. Women with secondary or lower education, homemakers, service workers, and those in other non-student occupations showed substantially higher or complete poor-QoL prevalence. Marital status was not significantly associated with QoL (P = 0.397; V = 0.054, negligible effect).

Among reproductive variables, irregular menstrual cycles (P = 0.003; V = 0.251, small effect), having ≤ 2 children among mothers (P < 0.001; V = 0.330, moderate effect, assessed among n = 103 mothers), and pregnancy history (P = 0.004; V = 0.245, small effect) were each significantly associated with poorer QoL. Women with an irregular menstrual pattern had 27% higher prevalence of poor QoL compared with those with a delayed/late pattern (PR = 1.27; 95% CI: 1.13–1.42). Those who had been pregnant ≤ 2 times showed complete separation (100% poor QoL). Parental status alone was not significantly associated with QoL (P = 0.067).

Table 3
Association between sociodemographic, menstrual, and reproductive factors and quality of life among women with PCOS (n = 331)

Variable	Category	Poor QoL		Good QoL	
		n	%	n	%
Age	≤ 19 years	64	69.6	28	30.4
	20–30 years	169	82.0	37	18.0
	> 30 years	33	100.0	0	0.0
P-value 0.018					
BMI (kg/m²)	< 18.5	15	57.7	11	42.3
	18.5-<25	113	67.7	54	32.3
	25-<30	88	100.0	0	0.0
	≥ 30	50	100.0	0	0.0
P-value < 0.001					
Level of Education	Primary or below	33	100.0	0	0.0
	Secondary/HSC	57	67.1	28	32.9
	Graduation and above	176	82.6	37	17.4
P-value 0.007					
Marital Status	Married	157	82.2	34	17.8
	Unmarried	109	77.9	31	22.1
P-value 0.397					
Occupation	Student	176	73.0	65	27.0
	Homemaker	46	100.0	0	0.0
	Service	11	100.0	0	0.0
	Others	33	100.0	0	0.0
P-value 0.001					
Menstrual Cycle	Regular	11	100.0	0	0.0
	Irregular	141	89.2	17	10.8
	Delayed/Late	114	70.4	48	29.6
P-value 0.004					

Variable	Category	Poor QoL		Good QoL	
		n	%	n	%
P-value 0.003					
No. of Children† (n = 103)	≤ 2	32	100.0	0	0.0
	> 2	51	71.8	20	28.2
P-value < 0.001					
Pregnancy History	Never pregnant	161	78.2	45	21.8
	≤ 2 times	59	100.0	0	0.0
	> 2 times	46	69.7	20	30.3
P-value 0.004					

P-values from chi-square test or Fisher's exact test, as appropriate. Percentages are row percentages within each category. Bold P-values indicate statistical significance at P < 0.05. † Number of children was assessed among women who had children only (n = 103); all other variables assessed in the full sample (n = 331).

Table 4
Crude odds ratios (OR) and 95% confidence intervals for poor health-related quality of life among women with PCOS, Bangladesh (n = 331)

Variable	Category	Crude OR	95% CI	P-value
Age (years)	≤ 19 years (Ref)	1.00	—	—
	20–30 years	2.00	1.13–3.53	0.018
	> 30 years	Undefined*	—	0.018
BMI (Kg/m^2)	< 18.5 Underweight (Ref)	1.00	—	—
	18.5-<25 Normal	1.53	0.66–3.56	< 0.001
	25-<30 Overweight	Undefined*	—	< 0.001
	≥ 30 Obese	Undefined*	—	< 0.001
Education level	Graduation and above (Ref)	1.00	—	—
	Secondary/HSC	0.43	0.24–0.76	0.007
	Primary or below†	14.09	0.84–235.10	0.007
Menstrual cycle pattern	Delayed/Late (Ref)	1.00	—	—
	Irregular	3.49	1.91–6.40	0.003
	Regular*	Undefined*	—	0.003
Pregnancy history	Never Pregnant (Ref)	1.00	—	—
	Pregnant > 2 times	0.64	0.35–1.20	0.004
	Pregnant ≤ 2 times	Undefined*	—	0.004

OR = odds ratio; CI = 95% confidence interval; Ref = reference category. ORs computed from 2×2 contingency tables derived from Table 3. * Undefined: zero good-QoL events in this category (complete separation); OR is mathematically undefined and is not reported. † Haldane–Anscombe continuity correction (0.5 added to all cells) applied for Education Primary because the good-QoL cell is zero; the resulting CI is extremely wide (0.84–235.10) and should be interpreted with caution. P-values are from the chi-square test reported in Table 3. Reference categories were selected as the group with the lowest prevalence of poor QoL within each variable.

Table 5
Crude prevalence ratios (PR) and 95% confidence intervals for poor health-related quality of life among women with PCOS, Bangladesh (n = 331)

Variable	Category	Prevalence ratio	95% CI	P-value
Age (years)	≤ 19 years (Ref)	1.00	—	—
	20–30 years	1.18	1.02–1.37	0.018
	> 30 years	1.44	Complete sep.*	0.018
BMI (Kg/m^2)	< 18.5 Underweight (Ref)	1.00	—	—
	18.5–<25 Normal	1.18	0.84–1.67	< 0.001
	25–<30 Overweight	1.73	Complete sep.*	< 0.001
	≥ 30 Obese	1.73	Complete sep.*	< 0.001
Education level	Graduation and above (Ref)	1.00	—	—
	Secondary/HSC	0.81	0.69–0.95	0.007
	Primary or below†	1.21	1.13–1.30	0.007
Menstrual cycle pattern	Delayed/Late (Ref)	1.00	—	—
	Irregular	1.27	1.13–1.42	0.003
	Regular	1.42	Complete sep.*	0.003
Pregnancy history	Never Pregnant (Ref)	1.00	—	—
	Pregnant > 2 times	0.89	0.74–1.06	0.004
	Pregnant ≤ 2 times	1.27	Complete sep.*	0.004

PR = prevalence ratio; CI = 95% confidence interval; Ref = reference category. PRs are the preferred measure of association in cross-sectional studies when outcome prevalence exceeds 10% (poor QoL prevalence = 80.4%); the odds ratio overestimates relative risk under these conditions. PRs estimated as P_1/P_0 with the delta-method log-scale 95% CI. * Complete separation: all participants in this category had poor QoL (100% prevalence); the 95% CI cannot be estimated by standard methods. † Haldane correction applied (0.5 added to zero cell). P-values from chi-square test (Table 3). Reference categories as in Table 4.

Table 6
Chi-square statistics and Cramér's V effect sizes for the association between participant characteristics and quality-of-life category among women with PCOS, Bangladesh (n = 331)

Variable	χ^2	df	P-value	Cramér's V	Effect Size
Age (years)	15.23	2	0.018	0.214	Small
BMI (kg/m²)	58.34	3	< 0.001	0.423	Moderate
Education level	18.29	2	0.007	0.235	Small
Marital status	1.23	1	0.397	0.061	Negligible
Occupation	29.63	3	0.001	0.302	Small
Menstrual pattern	20.83	2	0.003	0.251	Small
Number of children	11.19	1	< 0.001	0.330	Moderate
Pregnancy history	19.77	2	0.004	0.245	Small

χ^2 = Pearson chi-square statistic computed from 2×k contingency tables. df = degrees of freedom (number of categories − 1). Cramér's V = $\sqrt{(\chi^2 / [n \times \min(r - 1, c - 1)])}$, where r = rows, c = columns (c = 2 for all variables). Effect size benchmarks (Cohen, 1988): V < 0.10 = Negligible; 0.10–0.29 = Small; 0.30–0.49 = Moderate; ≥ 0.50 = Large. Note that chi-square cells with an expected frequency < 5 may inflate the χ^2 statistic; Fisher's exact test was applied where appropriate in the original analysis (Table 3). P-values are from the original chi-square/Fisher's exact tests in Table 3, not recomputed here.

4. DISCUSSION

This study provides, to our knowledge, the first systematic assessment of HRQoL among women with PCOS in Bangladesh using a validated, disease-specific instrument, addressing a critical gap in the South Asian literature. The predominance of poor QoL (80.4%) underscores that PCOS exerts a clinically meaningful burden on affected Bangladeshi women, consistent with findings from comparable studies in neighboring countries and globally (11, 12). Notably, prior research conducted in Bangladesh has documented substantial QoL impairment among vulnerable populations experiencing chronic health and social stressors, underscoring the multidimensional nature of well-being deficits in this setting (13). The significant association between advancing age and declining QoL (V = 0.214) aligns with data from other low- and middle-income country (LMIC) settings, where older women with PCOS may accumulate greater cumulative disease burden, including worsening metabolic risk, longer histories of reproductive failure, and compounding psychosocial stress (14). The complete classification of women older than 30 years into the poor QoL category (PR = 1.44 vs. ≤19 years) suggests that aging with PCOS in a resource-constrained, socially pressured environment carries particularly severe quality-of-life consequences. BMI was the strongest predictor of QoL in this study (V = 0.423, moderate effect), consistent with the well-established pathophysiology of PCOS, in which insulin resistance and hyperandrogenism promote

central adiposity that in turn perpetuates hormonal dysregulation and metabolic risk (15). Importantly, obesity in PCOS is not merely a metabolic concern but also a psychosocial one: in Bangladesh, where feminine beauty norms are strongly linked to body weight and physical appearance, weight gain and associated symptoms such as hirsutism and acne may amplify feelings of stigma, shame, and reduced self-worth (4). Sociodemographic and lifestyle factors, including dietary behavior and physical inactivity, have been identified as important drivers of elevated BMI and cardiometabolic risk among Bangladeshi women with chronic conditions (16). The finding that 100% of overweight and obese participants reported poor QoL, compared with 67.7% among those with normal BMI, positions BMI as a particularly modifiable and high-impact determinant of QoL in this context, warranting prioritization in clinical management. Higher educational attainment was associated with better QoL (V = 0.235), a relationship that may reflect greater health literacy, improved capacity to navigate the healthcare system, broader social support networks, and enhanced sense of agency over one's health. Conversely, lower educational attainment may translate to reduced awareness of PCOS management options, delayed diagnosis, and greater vulnerability to the social consequences of symptoms. These findings align with broader evidence that education is a fundamental social determinant of health outcomes in LMICs (17). In Bangladesh specifically, educational attainment has been shown to influence dietary diversity, nutritional status, and health-seeking behaviors among young women, with better-educated individuals demonstrating improved health literacy and nutritional outcomes (18, 19). Occupation was also a significant predictor (V = 0.302, moderate effect), with non-student occupational groups - homemakers, service workers, and others, showing uniformly 100% poor QoL. This may reflect the compounding effect of chronic disease on workplace productivity and role functioning, as well as reduced access to peer support and health resources in non-student settings. Students, who comprised 72.8% of the sample, had the highest proportion of good QoL (27.0%), possibly benefiting from campus health resources, peer networks, and flexible schedules. Menstrual irregularity was significantly associated with poorer QoL (PR = 1.27; 95% CI: 1.13–1.42 for irregular vs. delayed/late pattern; V = 0.251). Beyond the physical discomfort of unpredictable menstrual patterns, menstrual irregularity in Bangladesh carries significant social implications, particularly as it signals potential fertility concerns in a society where childbearing is often central to a woman's social identity and marital security (20). The association between infertility indicators and poorer QoL reinforces this interpretation: women who had been pregnant ≤ 2 times demonstrated 100% poor QoL, and those with ≤ 2 children showed the same pattern (V = 0.330, moderate effect), likely reflecting both the physiological burden of anovulation and the emotional and social toll of infertility in a context where pronatalist norms are pervasive. Despite the significant associations identified, marital status per se was not associated with QoL in this study (P = 0.397; V = 0.054, negligible effect). This contrasts with some prior reports and may reflect the diversity of social support configurations in this sample, where unmarried women, many of whom were students with strong peer networks, may not necessarily experience worse QoL than married women facing infertility-related pressures within their relationships. From a clinical standpoint, these findings carry several actionable implications. First, BMI management should be prioritized in PCOS care in Bangladesh, as it represents both the most modifiable risk factor and the most impactful correlate of QoL identified in this study. Lifestyle interventions incorporating calorie-controlled diets and structured physical activity are

supported by international guidelines and are cost-effective to implement at scale (6). Research among Bangladeshi university students has documented poor dietary diversity and imbalanced macronutrient intake that could exacerbate insulin resistance and weight gain in those with underlying PCOS, highlighting a critical window for nutritional intervention in this demographic (21). Second, the psychological dimensions of PCOS, particularly those linked to fertility concerns and appearance, should be systematically addressed during consultations; training of primary care physicians and gynecologists in brief psychological screening and counseling is warranted. Third, community health education programs should be expanded to improve PCOS awareness, reduce diagnostic delays, and destigmatize both the condition and its associated mental health consequences. Evidence from Bangladesh suggests that limited knowledge of behavioral risk factors continues to hinder effective management of chronic non-communicable conditions, and this gap extends to reproductive and endocrine disorders such as PCOS (22).

5. LIMITATIONS AND STRENGTHS

Several limitations of this study warrant acknowledgment. First, the cross-sectional design precludes the establishment of causal relationships between participant characteristics and HRQoL. Second, the use of purposive sampling from four tertiary care hospitals may limit the representativeness of the study population and restrict the generalizability of the findings to women with PCOS in rural areas or those with limited access to specialized healthcare. Third, the absence of a comparison group without PCOS limits the ability to determine the extent to which observed QoL impairment is specifically attributable to PCOS. Fourth, data on reproductive history and QoL were self-reported and may be subject to recall and social desirability bias. Fifth, several predictor categories showed complete separation (100% poor QoL), which precluded standard estimation of confidence intervals for some ORs and PRs and prevented multivariable modeling; future studies should employ Firth-penalized logistic regression to address this issue. Fifth, the PCOSQoL-47 was originally developed for married women, whereas the present sample also included unmarried women; the sexuality-related items may therefore have been interpreted differently across marital status. Sixth, the Bengali version of the questionnaire was validated only for internal consistency, and further psychometric validation is warranted. Finally, eight chi-square tests were conducted without formal correction for multiple comparisons; while results at conventional significance thresholds are reported, readers should note that age ($P = 0.018$) does not survive Bonferroni correction ($\alpha = 0.00625$) and should be interpreted with appropriate caution.

Despite these limitations, this study has several notable strengths. To our knowledge, it is among the first multicenter studies in Bangladesh to comprehensively assess HRQoL among women with PCOS using the validated PCOSQOL-47 instrument. The inclusion of participants from multiple tertiary care hospitals enhances the diversity of the study population. The use of a disease-specific QoL instrument with established psychometric properties enabled a more nuanced assessment than generic measures would allow. Furthermore, this study extends beyond simple significance testing by reporting effect sizes (Cramér's V) and crude measures of association (ORs and PRs) for all tested predictors, providing a more complete characterization of the data for evidence synthesis and future meta-analysis.

6. CONCLUSION

PCOS substantially impairs HRQoL among Bangladeshi women, with the majority experiencing poor quality of life. BMI emerged as the strongest and most modifiable predictor, followed by occupation and number of children, both with moderate effect sizes. Advancing age, lower educational attainment, irregular menstrual cycles, and limited pregnancy history were additional significant predictors. These findings highlight the urgent need for integrated, multidisciplinary PCOS care in Bangladesh that addresses both the metabolic and psychosocial dimensions of the condition. Health policy should prioritize PCOS awareness, early detection, and accessible lifestyle and psychological support programs, with particular attention to the high-risk subgroups identified in this study. Future longitudinal research employing multivariable modeling is needed to establish independent predictors of QoL and to evaluate the effectiveness of targeted interventions.

Abbreviations

PCOS
Polycystic Ovary Syndrome
HRQoL
Health-Related Quality of Life
QoL
Quality of Life
BMI
Body Mass Index
AES
Androgen Excess Society
OR
Odds Ratio
PR
Prevalence Ratio
CI
Confidence Interval
SD
Standard Deviation
SPSS
Statistical Package for Social Sciences

Declarations

Ethics approval and consent to participate

This study was approved by the DIU Faculty of Allied Health Science Research Ethics Committee (Approval No. DIUAHS-2024-132). Written informed consent was obtained from all participants prior to data collection. All procedures were performed in accordance with the relevant guidelines and regulations, including the Declaration of Helsinki. Although the eligibility criteria included women aged 15 years and above, no participant younger than 16 years was enrolled; therefore, parental or guardian consent was not required. Written informed consent to participate was obtained from all participants.

Consent for publication

Not applicable.

Competing interests

The authors declare that they have no competing interests.

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Author Contribution

AA conceived and designed the study. AA, SB, MAH, ASK, MSA, RAE, SSS, BS, BIB, MHIS, and MTI contributed to participant recruitment, data collection, and data entry across the study sites. AAMR performed the statistical analysis and interpreted the data with input from the co-authors. AA drafted the manuscript. AA, SB, MAH, ASK, MSA, RAE, SSS, BS, BIB, MHIS, MTI, and AAMR critically reviewed the manuscript for important intellectual content.

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Data Availability

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

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