

Assessment of Awareness and Prevalence of Polycystic Ovarian Syndrome Risk Factors in Reproductive-Aged Women in Saudi Arabia

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Abstract

Introduction: Polycystic ovarian syndrome (PCOS) is a prevalent endocrine disorder among women of reproductive age, characterized by hormonal imbalance, menstrual irregularities, and metabolic complications. It is associated with long-term risks such as infertility, Type 2 diabetes, and cardiovascular diseases. Despite its high prevalence, especially in Middle Eastern countries, including Saudi Arabia, awareness of PCOS and its risk factors remains low. Previous studies have shown that limited knowledge among women contributes to delayed diagnosis and poor management outcomes. **Objectives:** This study aims to assess the level of awareness and the prevalence of risk factors associated with PCOS among reproductive-aged women in Saudi Arabia. **Methodology:** This is a cross-sectional observational study conducted between July and December 2025 in Saudi Arabia. Participants were recruited using social media platforms such as Twitter, Instagram, Snapchat, and WhatsApp. Of 430 respondents, 300 eligible women without prior PCOS were analyzed (mean age 25.9 ± 8.6 years; 69.0% aged 18–24). Ten-item knowledge and ten-item awareness scores (0–10 each) were categorized as poor (<5), moderate (5–8), or high (9–10). Associations were assessed using Chi-square; correlation between scores was measured using Spearman's rho. **Results:** Knowledge was high overall: 64.7% had high knowledge, 30.7% moderate, and 4.7% poor. Most participants had heard of PCOS (93.0%) and androgen hormones (84.7%) and recognized increased androgen levels (86.7%) and polycystic ovarian morphology (85.0%). Symptom recognition was highest for menstrual irregularity/amenorrhea (95.3%) and hirsutism (89.3%). Awareness was lower: 26.3% high, 59.0% moderate, and 14.7% poor. Diagnostic awareness was moderate (ultrasound 77.0%; blood tests 61.7%). Awareness of infertility/reduced fertility (83.0%) and anxiety/depression (91.3%) exceeded awareness of diabetes (59.7%) and heart disease (36.3%). For treatments, hormonal therapy (75.0%) and symptomatic treatment (75.3%) were commonly endorsed, whereas metformin awareness was lower (55.7%). Knowledge level differed by age, region, education, employment status, and weight (all $P \leq 0.047$), but awareness showed no significant sociodemographic associations (all $P > 0.05$). Knowledge level was significantly associated with awareness level ($P < 0.001$), and scores were moderately correlated ($\rho = 0.49$, $P < 0.001$). **Conclusion:** Saudi reproductive-aged women demonstrated strong symptom-focused PCOS knowledge but only moderate awareness of cardiometabolic risks and some evidence-based management options,

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supporting targeted education to promote earlier evaluation and long-term risk reduction, particularly regarding metabolic screening and cardiovascular prevention efforts.

Key words: Awareness, polycystic ovarian syndrome, prevalence, Saudi Arabia

INTRODUCTION

Polycystic ovarian syndrome (PCOS) is one of the most prevalent endocrine disorders among women of reproductive age. It is characterized by menstrual irregularities, hirsutism, obesity, acne, and hair thinning.^[1] Early detection of PCOS facilitates simpler management, whereas delayed diagnosis often leads to more complicated treatment approaches.^[2] PCOS involves the formation of multiple cysts in the ovaries, leading to hormonal imbalances and insulin resistance. This condition disrupts normal glucose metabolism, elevates androgen levels, and contributes to anovulation, making PCOS a major cause of infertility.^[3] Polycystic ovary syndrome (PCOS) is influenced by both modifiable and non-modifiable risk factors. These include negative lifestyle habits, such as physical inactivity and poor attitude, as well as genetic predispositions like a family history of diabetes or infertility. Clinical indicators associated with PCOS include irregular menstrual cycles, a body mass index (BMI) of 25 or above, a waist-to-hip ratio exceeding 0.86, dyslipidemia, impaired glucose regulation, central obesity, high blood pressure, and insulin resistance.^[4] PCOS is typically diagnosed through clinical findings such as ovulatory dysfunction, hyperandrogenism, and the presence of polycystic ovaries on ultrasound. The syndrome was first described in 1935 and is also known historically as Stein–Leventhal syndrome.^[5] PCOS can contribute to the development of insulin resistance, a condition where the body's cells become less responsive to insulin. This leads to elevated blood glucose levels, which in turn increase androgen production and disrupt ovulation.^[3]

Endocrine system diseases such as polycystic ovarian syndrome (PCOS) typically affect women of all races and ethnicities following puberty.^[6,7] It is among the most prevalent endocrinopathies, impacting between 5% and 10% of women globally who are of reproductive age.^[7]

In a study published in 2021, the majority of women were found to lack awareness about PCOS, including its causes, risk factors, and symptoms.^[8] According to the survey's findings, as individuals age, PCOS symptoms often worsen, highlighting the importance of early detection and timely management. Research supports a comprehensive, patient-centered approach involving gynecologists, dermatologists, endocrinologists, and diabetes educators.^[9] Early prevention and detection of PCOS-related morbidities in adolescent girls are critically important. Obesity, particularly central obesity, is a significant risk factor for the development of PCOS and is more commonly observed in affected individuals. Raising awareness is essential to reduce the risk of PCOS and its

potential long-term health consequences. Furthermore, conditions such as prehypertension, stress, and depression are also significantly more prevalent among women with PCOS.^[10]

Despite PCOS being common among women of reproductive age, few recent studies – particularly in 2021 – have focused on awareness of its risk factors. Most existing research emphasizes clinical features and treatment rather than prevention. In addition, there is limited data from specific regions where cultural and educational factors may influence awareness. This highlights the need for more research to address the knowledge gap. Raising awareness of PCOS risk factors is crucial for early detection, timely intervention, and preventing long-term complications. This study aims to assess awareness levels and contribute to better reproductive and overall health outcomes.

Objectives

This study aims to determine the prevalence of risk factors of polycystic ovarian syndrome (PCOS) among women of reproductive age in different regions of Saudi Arabia and to assess their level of awareness.

METHODOLOGY

Study design and setting

This is a cross-sectional observational study conducted between July and December 2025 in Saudi Arabia. Data will be collected using a structured questionnaire designed to assess the awareness level of polycystic ovarian syndrome (PCOS) risk factors. Participants involved Adult female Saudi and non-Saudi residents were included in the study population. The willing participants provided their appropriate consent. Males and children were not allowed in the study. The study targeted all women aged between 18 and 49 years. Data were collected using a web-based, valid questionnaire conducted through social media.

Sample size

To ensure a 95% confidence level with a 5% margin of error, a sample size of 384 is desired. An online survey will evaluate their knowledge of PCOS risk factors; participants who are younger than 18 or have a history of diagnosis will not be included. By gaining informed consent, data confidentiality will be preserved throughout the study.

Inclusion and exclusion criteria

This study included females aged 18–49 years (reproductive age), who were able to read and understand Arabic or English, had not been previously diagnosed with polycystic ovarian syndrome (PCOS), and were willing to participate voluntarily. Females were excluded if they were younger than 18 or older than 49 years, had a prior diagnosis of PCOS, were pregnant at the time of data collection, had cognitive or psychological conditions affecting their understanding, or declined to participate or complete the questionnaire.

Method for data collection, instrument

Data were collected using a self-administered online questionnaire, and participants were recruited through convenience sampling through various online platforms. This study used questionnaire that were developed by (Goh *et al.*).^[11]

The questionnaire consisted of three sections, including questions about demographic information, knowledge assessment, health-related practices, and PCOS risk factors. Knowledge score ranged from 0 to 10, with scores below 5 classified as poor awareness, from 5 to 8 as moderate, and 9 or 10 as high knowledge. While awareness score ranged from 0 to 10, with scores below 5 classified as poor practice, from 5 to 8 as moderate, and 9 or 10 were high awareness level. Descriptive statistics were applied to summarize demographic characteristics, and inferential statistics were used to examine differences, associations, and correlations among the study variables.

Pilot test

A pilot study was conducted by distributing the questionnaire to a sample of 20 individuals to evaluate its clarity and assess the feasibility of the research methodology. The data obtained from the pilot study were excluded from the final analysis.

Analyzes and entry method

Data were initially entered using Microsoft Office Excel 2016 (Windows) and subsequently transferred to the Statistical Package for the Social Sciences, version 25 (IBM Corp., Armonk, NY), for comprehensive statistical analysis. Descriptive statistics will summarize the numerical variables for baseline characteristics. For categorical variables, frequencies and percentages will be calculated. The Chi-square test will be used to identify associations between categorical variables.

RESULTS

The study participants were 430 in total. Out of them, 21 were excluded because they were not reproductive-aged

women, and 117 participants were previously diagnosed with PCO. A total of 300 eligible reproductive-aged women (18–49 years) were included in the analysis [Table 1]. The mean age was 25.9 ± 8.6 years, and most participants were aged 18–24 years (207; 69.0%). Most respondents lived in the Western region (186; 62.0%), followed by the Eastern (43; 14.3%) and Central regions (39; 13.0%). Most participants had a bachelor's degree (66.7%), and almost two-thirds were students (63.0%). Monthly household income was predominantly <5000 SR (61.3%). In line with the study inclusion criteria, none of the participants reported being medically diagnosed with PCOS. Most respondents reported no underlying chronic health conditions (85.7%); among the 14.3% who selected at least one condition, the most commonly selected options were “other” (6.7%), hypertension (4.7%), and diabetes (3.3%), noting that multiple selections were permitted and percentages therefore overlap. The mean self-reported weight and height were 60.9 ± 15.5 kg and 158.4 ± 12.4 cm, respectively.

Table 2 presents item-level frequencies for the 10 knowledge questions. Overall knowledge of PCOS concepts was high: 93.0% had heard of the term “PCOS” and 84.7% had heard of androgen (male) hormones. Most participants endorsed key pathophysiological and clinical statements, including increased androgen levels in PCOS (86.7%), the presence of multiple small ovarian cysts (85.0%), and obesity as a potential contributor (87.7%). Symptom recognition was strongest for menstrual irregularity/amenorrhea (95.3%) and hirsutism (89.3%). Comparatively lower endorsement was seen for some metabolic and dermatologic manifestations, including prediabetes/insulin resistance as a contributor (80.0%), hair loss (79.0%), and severe acne during the menstrual cycle (75.0%), indicating persistent knowledge gaps around these features.

Table 3 summarizes responses to the 10 awareness questions about diagnostic approaches, complications, and treatment options. Diagnostic awareness was moderate: 77.0% indicated that vaginal ultrasound can be used to confirm diagnosis, and 61.7% indicated that blood tests can be used in diagnosis. Awareness of long-term complications varied substantially. While a high proportion recognized infertility/reduced fertility (83.0%) and psychological consequences such as anxiety and depression (91.3%), fewer participants recognized metabolic and cardiovascular outcomes, with only 59.7% endorsing diabetes and just 36.3% endorsing heart disease as potential consequences of PCOS. Regarding treatment awareness, approximately three-quarters endorsed hormonal therapy (75.0%), symptomatic treatment options (75.3%), and surgery to remove ovarian cysts (77.7%), whereas awareness of metformin use was lower (55.7%).

As shown in Table 4, knowledge scores were generally high. Nearly two-thirds of participants were classified as having high knowledge (score 9–10; 64.7%), 30.7% had moderate knowledge (score 5–8), and 4.7% had poor knowledge

Table 1: Sociodemographic characteristics of participants

Parameter	No.	Percentage
Age group		
18–24	207	69.0
25–34	47	15.7
35–44	18	6.0
45–49	28	9.3
Residential area		
Southern region	10	3.3
Western region	186	62.0
Central region	39	13.0
Eastern region	43	14.3
Northern region	22	7.3
Educational qualification		
High school or less	75	25.0
Diploma	16	5.3
Bachelor's degree	200	66.7
Postgraduate	9	3.0
Employment status		
Unemployed	21	7.0
Employed	68	22.7
Self-employed	5	1.7
Student	189	63.0
Housewife	17	5.7
Monthly household income		
<5000 SR	184	61.3
5000–10000 SR	92	30.7
11000–15000 SR	10	3.3
16000–20000 SR	8	2.7
>20000 SR	6	2.0
Medically diagnosed with PCOS		
No	300	100.0
Any underlying health conditions		
Yes	43	14.3
No	257	85.7
Weight (kg)		
<50	75	25.0
50–59	68	22.7
60–69	74	24.7
≥70	83	27.7
Height (cm)		
<155	60	20.0
155–164	173	57.7
≥165	67	22.3

(score <5). Awareness levels were comparatively lower: Most participants fell in the moderate category (59.0%),

Table 2: Frequency distribution of participants' responses to the knowledge questions

Parameter	No.	Percentage
Have you heard about the term called "polycystic ovary syndrome (PCOS)"?		
No	21	7.0
Yes	279	93.0
Have you heard about the androgen (male) hormone (e.g., testosterone)?		
No	46	15.3
Yes	254	84.7
In PCOS, there is an increased level of androgen.		
No	40	13.3
Yes	260	86.7
Patients suffering from PCOS have small multiple cysts in their ovaries.		
No	45	15.0
Yes	255	85.0
Obesity may cause PCOS.		
No	37	12.3
Yes	263	87.7
Prediabetes (due to decreased insulin action in the body) may cause PCOS.		
No	60	20.0
Yes	240	80.0
Irregular or absence of menstrual (periods) cycle is a symptom of PCOS.		
No	14	4.7
Yes	286	95.3
Unusual hair growth on different body parts (e.g., upper lip, chin, abdomen, breast, thighs) is a symptom of PCOS.		
No	32	10.7
Yes	268	89.3
Severe acne during the menstrual (periods) cycle is a symptom of PCOS.		
No	75	25.0
Yes	225	75.0
Hair loss from the scalp more than normal is a symptom of PCOS.		
No	63	21.0
Yes	237	79.0

while 26.3% demonstrated high awareness and 14.7% had poor awareness.

Figures 1 and 2 display the distributions of knowledge and awareness proficiency levels, respectively, and visually emphasize the larger proportion of participants with high knowledge compared with high awareness.

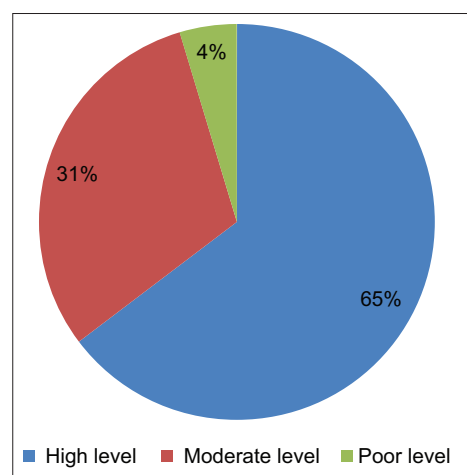
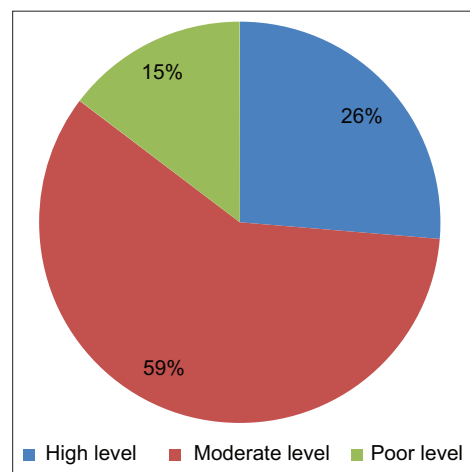
Table 3: Frequency distribution of participants' responses to the awareness questions

Parameter	No.	Percentage
PCOS diagnosis can be confirmed by vaginal ultrasound.		
No	69	23.0
Yes	231	77.0
A specific blood test can be used for the diagnosis of PCOS.		
No	115	38.3
Yes	185	61.7
PCOS may lead to diabetes (long-term high blood sugar).		
No	121	40.3
Yes	179	59.7
PCOS may lead to heart diseases.		
No	191	63.7
Yes	109	36.3
PCOS may lead to infertility or reduced fertility.		
No	51	17.0
Yes	249	83.0
PCOS may lead to anxiety and depression.		
No	26	8.7
Yes	274	91.3
Hormonal therapy (oral contraceptives, hormonal intrauterine device, etc.) may be used to treat PCOS.		
No	75	25.0
Yes	225	75.0
Anti-diabetic medications (metformin) may be used to treat PCOS.		
No	133	44.3
Yes	167	55.7
Symptomatic treatment (e.g., clomiphene, letrozole, acne topical creams, spironolactone, etc.) may be given to relieve PCOS symptoms.		
No	74	24.7
Yes	226	75.3
Surgery may be used to remove ovarian cysts.		
No	67	22.3
Yes	233	77.7

Table 5 presents Chi-square analyses of associations between participant characteristics and knowledge level. Knowledge level differed significantly by age group ($P < 0.001$), residential area ($P = 0.042$), educational qualification ($P < 0.001$), employment status ($P = 0.012$),

Table 4: Distribution of knowledge and awareness proficiency levels

Score	Frequency	Percentage
Knowledge		
High level	194	64.7
Moderate level	92	30.7
Poor level	14	4.7
Awareness		
High level	79	26.3
Moderate level	177	59.0
Poor level	44	14.7

**Figure 1:** Knowledge level distribution**Figure 2:** Awareness level distribution

and weight group ($P = 0.047$). High knowledge was common among women aged 18–34 years ($\approx 70\%$ high within each age group), but was less frequent among women aged 45–49 years (28.6% high; 14.3% poor). Knowledge also varied by region; participants from the Central region showed lower high knowledge (48.7%) compared with other regions. Educational qualification demonstrated a clear gradient: participants with postgraduate education had

Table 5: Association between sociodemographic characteristics and knowledge level ($n=300$)

Parameters	Knowledge level			Total ($n=300$) (%)	P-value*
	Poor (%)	Moderate (%)	High (%)		
Age group					
18–24	8	53	146	207	0.000
	57.1	57.6	75.3	69.0	
25–34	2	12	33	47	
	14.3	13.0	17.0	15.7	
35–44	0	11	7	18	
	0.0	12.0	3.6	6.0	
45–49	4	16	8	28	
	28.6	17.4	4.1	9.3	
Residential area					
Southern region	0	1	9	10	0.042
	0.0	1.1	4.6	3.3	
Western region	5	57	124	186	
	35.7	62.0	63.9	62.0	
Central region	6	14	19	39	
	42.9	15.2	9.8	13.0	
Eastern region	2	13	28	43	
	14.3	14.1	14.4	14.3	
Northern region	1	7	14	22	
	7.1	7.6	7.2	7.3	
Educational qualification					
High school or less	6	16	53	75	0.000
	42.9	17.4	27.3	25.0	
Diploma	3	10	3	16	
	21.4	10.9	1.5	5.3	
Bachelor's degree	5	64	131	200	
	35.7	69.6	67.5	66.7	
Postgraduate	0	2	7	9	
	0.0	2.2	3.6	3.0	
Employment status					
Unemployed	0	12	9	21	0.012
	0.0	13.0	4.6	7.0	
Employed	5	25	38	68	
	35.7	27.2	19.6	22.7	
Self-employed	0	2	3	5	
	0.0	2.2	1.5	1.7	
Student	9	44	136	189	
	64.3	47.8	70.1	63.0	
Housewife	0	9	8	17	
	0.0	9.8	4.1	5.7	
Monthly household income					
<5000 SR	6	56	122	184	0.691
	42.9	60.9	62.9	61.3	

(Contd...)

Table 5: (Continued)

Parameters	Knowledge level			Total (n=300) (%)	P-value*
	Poor (%)	Moderate (%)	High (%)		
5000–10000 SR	7	28	57	92	
	50.0	30.4	29.4	30.7	
11000–15000 SR	1	2	7	10	
	7.1	2.2	3.6	3.3	
16000–20000 SR	0	4	4	8	
	0.0	4.3	2.1	2.7	
>20000 SR	0	2	4	6	
	0.0	2.2	2.1	2.0	
Any underlying health conditions					
Yes	1	16	26	43	0.490
	7.1	17.4	13.4	14.3	
No	13	76	168	257	
	92.9	82.6	86.6	85.7	
Weight group (kg)					
<50	4	21	50	75	0.047
	28.6	22.8	25.8	25.0	
50–59	0	18	50	68	
	0.0	19.6	25.8	22.7	
60–69	2	22	50	74	
	14.3	23.9	25.8	24.7	
≥ 70	8	31	44	83	
	57.1	33.7	22.7	27.7	
Height group (cm)					
<155	4	11	45	60	0.179
	28.6	12.0	23.2	20.0	
155–164	6	59	108	173	
	42.9	64.1	55.7	57.7	
≥ 165	4	22	41	67	
	28.6	23.9	21.1	22.3	

*P-value was considered statistically significant if ≤ 0.05

the highest proportion of high knowledge (77.8%), whereas those with a diploma had the lowest (18.8%) and were more frequently in the moderate/poor categories. Students had a higher proportion of high knowledge (72.0%) compared with unemployed participants and housewives. Participants weighing ≥ 70 kg showed a lower proportion of high knowledge (53.0%) and a higher proportion of poor knowledge (9.6%) than those in lower weight groups. Monthly household income, underlying health conditions, and height group were not significantly associated with knowledge level (all $P > 0.05$).

Table 6 shows that none of the examined demographic variables were significantly associated with awareness level (all $P > 0.05$). Employment status ($P = 0.065$) and residential

area ($P = 0.093$) approached but did not reach statistical significance, suggesting that awareness about diagnostic methods, complications, and treatment options was broadly similar across sociodemographic strata in this sample.

Additional analyses demonstrated a strong relationship between knowledge and awareness. Knowledge level was significantly associated with awareness level ($P < 0.001$). For example, 36.6% of women with high knowledge also demonstrated high awareness, whereas 71.4% of women with poor knowledge fell into the poor awareness category. Knowledge and awareness scores were also moderately positively correlated (Spearman's $\rho = 0.49$, $P < 0.001$), indicating that higher knowledge scores tended to accompany higher awareness scores.

Table 6: Association between sociodemographic characteristics and awareness level ($n=300$)

Parameter	Awareness level			Total ($n=300$) (%)	P-value*
	Poor (%)	Moderate (%)	High (%)		
Age group					
18–24	25	122	60	207	0.145
	56.8	68.9	75.9	69.0	
25–34	7	29	11	47	
	15.9	16.4	13.9	15.7	
35–44	3	12	3	18	
	6.8	6.8	3.8	6.0	
45–49	9	14	5	28	
	20.5	7.9	6.3	9.3	
Residential area					0.093
Southern region	0	7	3	10	
	0.0	4.0	3.8	3.3	
Western region	27	104	55	186	
	61.4	58.8	69.6	62.0	
Central region	9	21	9	39	
	20.5	11.9	11.4	13.0	
Eastern region	8	30	5	43	
	18.2	16.9	6.3	14.3	
Northern region	0	15	7	22	
	0.0	8.5	8.9	7.3	
Educational qualification					0.400
High school or less	11	43	21	75	
	25.0	24.3	26.6	25.0	
Diploma	2	13	1	16	
	4.5	7.3	1.3	5.3	
Bachelor's degree	31	114	55	200	
	70.5	64.4	69.6	66.7	
Postgraduate	0	7	2	9	
	0.0	4.0	2.5	3.0	
Employment status					0.065
Unemployed	2	16	3	21	
	4.5	9.0	3.8	7.0	
Employed	13	32	23	68	
	29.5	18.1	29.1	22.7	
Self-employed	2	1	2	5	
	4.5	0.6	2.5	1.7	
Student	24	115	50	189	
	54.5	65.0	63.3	63.0	
Housewife	3	13	1	17	
	6.8	7.3	1.3	5.7	
Monthly household income					0.553
<5000 SR	24	116	44	184	
	54.5	65.5	55.7	61.3	

(Contd...)

Table 6: (Continued)

Parameter	Awareness level			Total (n=300) (%)	P-value*
	Poor (%)	Moderate (%)	High (%)		
5000–10000 SR	14	49	29	92	
	31.8	27.7	36.7	30.7	
11000–15000 SR	2	5	3	10	
	4.5	2.8	3.8	3.3	
16000–20000 SR	3	4	1	8	
	6.8	2.3	1.3	2.7	
>20000 SR	1	3	2	6	
	2.3	1.7	2.5	2.0	
Any underlying health conditions					
Yes	6	28	9	43	
	13.6	15.8	11.4	14.3	0.640
No	38	149	70	257	
	86.4	84.2	88.6	85.7	
Weight group (kg)					
<50	11	47	17	75	
	25.0	26.6	21.5	25.0	0.169
50–59	5	44	19	68	
	11.4	24.9	24.1	22.7	
60–69	13	46	15	74	
	29.5	26.0	19.0	24.7	
≥ 70	15	40	28	83	
	34.1	22.6	35.4	27.7	
Height group (cm)					
<155	11	38	11	60	
	25.0	21.5	13.9	20.0	0.398
155–164	23	104	46	173	
	52.3	58.8	58.2	57.7	
≥ 165	10	35	22	67	
	22.7	19.8	27.8	22.3	

*P-value was considered statistically significant if ≤ 0.05

DISCUSSION

Polycystic ovary syndrome (PCOS) is a prevalent endocrine-metabolic disease linked with reproductive, psychological and cardiometabolic morbidity throughout the life course.^[12] The aim of the current study was to evaluate the knowledge and awareness on the topic of PCOS among reproductive-aged women (18–49 years) who were not previously diagnosed with PCOS in Saudi Arabia. Among 300 eligible respondents, even though the knowledge about the core concepts of PCOS, as well as the most typical symptoms, was high, awareness of some of the complications and evidence-based treatment options was more frequently moderate, suggesting clear priorities for public and clinical information.

Knowledge performance was good: 64.7% of the participants achieved high knowledge scores (9–10/10), and only 4.7% were poor in knowledge. The majority of the respondents had heard of PCOS (93.0%) and androgen hormones (84.7%), and correct the answer about increased androgen levels (86.7%) and polycystic ovarian morphology (85.0%). Symptom recognition was highest for menstrual irregularity/amenorrhea (95.3%) and hirsutism (89.3%), and for most of them, obesity was also seen as a contributing factor (87.7%). Such results are in line with the Rotterdam diagnostic framework, which conceptualizes PCOS as a syndrome of ovarian dysfunction with cardinal features of hyperandrogenism and polycystic ovarian morphology,^[13] and also the International Evidence-based Guideline from 2023, which stresses comprehensive assessment beyond symptom recognition.^[14]

Awareness was comparatively low with 59.0% considered as moderate awareness, 26.3% high awareness and 14.7% poor awareness. Although there was a significant correlation between knowledge and awareness ($P < 0.001$) and a moderate correlation (Spearman's $\rho = 0.49$, $P < 0.001$), the maintenance of only moderate awareness among the majority of participants indicates that factual knowledge is not always connected with understanding of diagnostic pathways, long-term risks or treatment choices. This “knowledge-awareness gap” is of clinical relevance as guideline-concordant care depends on informed help-seeking, involvement in the screening for comorbidities, and adherence to maintenance of lifestyle and medical management when needed.^[14]

Diagnostic awareness in our sample was moderate-to-good, as 77.0% were aware of ultrasound and 61.7% were aware of blood tests as part of a diagnosis. This is in keeping with recommendations that the diagnosis is based on a syndrome in relation to ovulatory dysfunction and hyperandrogenism, and supported by ultrasound assessment of polycystic ovarian morphology where appropriate and biochemical testing to characterize phenotype and rule out mimics.^[14,13] However, regional evidence would indicate that widespread knowledge of PCOS may still coexist with little in-depth understanding; for example, one study from the UAE found that the majority of women had some knowledge of PCOS but only a minority met criteria for adequate awareness.^[2]

The greatest deficit in awareness in our findings was limited recognition of cardiometabolic outcomes. Only 59.7% supported diabetes, and 36.3% supported heart disease as residual possibilities, even though there is strong evidence of an association between PCOS and dysglycemia and longer-term cardiometabolic risks. A systematic review and meta-analysis showed a higher prevalence of impaired glucose tolerance and Type 2 diabetes in women with PCOS, even when analyses were done on a BMI-matched basis.^[15] Longitudinal evidence also suggests an increased incidence of cardiometabolic risk factors (e.g. hypertension, Type 2 diabetes) and risk of some CV outcomes over time in women with PCOS.^[16] Accordingly, the 2023 guideline recommends that glycemic status should be routinely assessed and more widespread cardiometabolic risk management taken as part of standard care.^[14] Low cardiometabolic awareness in the present sample, therefore, represents a critical educational target; this is especially so because early detection of dysglycemia and lifestyle intervention can alter long-term risk.

However, awareness was high for infertility/reduced fertility (83.0%) and for anxiety and depression (91.3%). Unsurprisingly, a high level of fertility-related awareness is observed, considering that anovulatory infertility is a key presentation of PCOS, with recommendations from guidelines focusing on fertility counseling according to reproductive aims.^[14] High endorsement of psychological consequences is

consistent with findings of the prevalence of symptoms of depression and anxiety in PCOS; a systematic review and meta-analysis found significantly greater odds of moderate and severe depressive and anxiety symptoms in women with PCOS compared with controls.^[17] These data support further integration of mental health screening and support in PCOS education and clinical pathways, which are recommended in the guideline.^[14]

Treatment awareness mixed understanding. Approximately three-fourths acknowledged hormonal therapy (75.0%), which is consistent with guideline-supported utilization of hormonal approaches to deal with menstrual irregularity and hyperandrogenic symptoms among those not looking for pregnancy.^[14] Awareness of metformin was less (55.7%), despite its role for the metabolic indications and as an adjunct in selected circumstances.^[14] Of note, 77.7% supported the surgery for removing ovarian cysts, which, perhaps, reflects the misconception that PCOS is a surgical “cyst” condition, yet in reality, management is largely medical and lifestyle-oriented, and procedures are reserved for specific indications.^[14] Educational interventions may therefore be enhanced by the explicit association of PCOS with insulin resistance and cardiometabolic risk, clarification of the rationale for the use of medications, and correction of myths about surgical management.

Subgroup analyses suggested that knowledge (but not awareness) was different among participant characteristics. Knowledge varied significantly according to age, region, education, employment, and weight category (all $P \leq 0.047$), with lower proportions high knowledge in the oldest age category (45–49 years) and women weighing ≥ 70 kg. These patterns are directionally consistent with Saudi studies that found relationships between awareness/knowledge and education and information sources.^[6,7] However, there was no significant difference between sociodemographic variables and awareness (all $P > 0.05$) in our sample, which may suggest that discrepancies in understanding of complications and treatment options are not limited to specific groups.

From the point of view of the health system, these results provide the arguments in favor of the incorporation of PCOS education into primary care and reproductive health services, with a focus on long-term monitoring rather than inter-episode control of symptoms. Given that awareness was not strongly patterned by sociodemographic factors, broad messaging may be warranted, but that content could be tailored for those with lower knowledge (e.g. older participants and those with a lower level of education). Community campaigns and online platforms can raise awareness of the importance of evaluating persistent menstrual irregularity and clinical hyperandrogenism, and the fact that PCOS is associated with insulin resistance, and screening for glucose intolerance and other risk factors of cardiovascular disease is indicated even in the absence of overt symptoms.^[14]

Several limitations should be considered. The cross-sectional design limits causal inference, and online convenience sampling (with most participants aged 18–24 years) may limit generalizability. Responses were self-reported and may be affected by recall or social desirability bias, and the questionnaire primarily assessed recognition rather than depth of understanding or actual healthcare-seeking behaviors. Despite these limitations, the present study identifies evidence-based priorities for patient and public education, especially cardiometabolic risk and guideline-concordant therapy aligned with international recommendations for comprehensive PCOS care.^[14]

CONCLUSION

Overall PCOS knowledge was high, with strong recognition of menstrual irregularity and hirsutism and broad endorsement of obesity as a contributing factor. Awareness was predominantly moderate and showed gaps in understanding of cardiometabolic sequelae and evidence-based management. Awareness of diabetes (59.7%) and especially heart disease (36.3%) was limited, despite high awareness of infertility (83.0%) and anxiety/depression (91.3%). Knowledge varied by age, region, education, employment, and weight, whereas awareness did not, indicating that deeper risk and treatment information is needed across groups. Programs should prioritize education on metabolic screening, long-term cardiovascular risk, and appropriate medical and lifestyle management to support earlier evaluation and risk reduction in practice.

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ETHICAL APPROVAL

The study was fully explained to all participants, and it was emphasized that participation was voluntary. Written informed consent was obtained from each participant before enrollment. All collected information was securely stored and used exclusively for research purposes.

INFORMED CONSENT

Written informed consent was obtained from all study participants.

DATA AND MATERIALS AVAILABILITY

All data generated or analyzed during this study are included in this published article.

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