

Knowledge, Awareness, and Information-Seeking Behaviors Regarding Polycystic Ovary Syndrome among Women in Dar-es-Salaam, Tanzania: A Cross-Sectional Study

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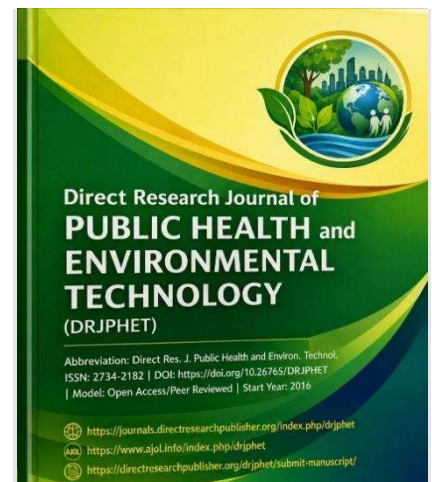
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ABSTRACT

Polycystic Ovary Syndrome (PCOS) is a prevalent endocrine and metabolic disorder associated with significant reproductive and cardiometabolic morbidity. Despite its global burden, community-level awareness in Sub-Saharan Africa remains under-researched. This study assessed the knowledge, awareness, information sources, and sociodemographic correlates of PCOS among women in Dar-es-Salaam, Tanzania. A community-based cross-sectional study was conducted among 405 women of reproductive age (15–49 years) in Dar-es-Salaam using a stratified multistage sampling technique. Data were collected via a structured questionnaire and analyzed using SPSS version 26. Chi-square tests were utilized to assess associations, with statistical significance set at $p < 0.05$. Participants demonstrated moderate-to-high awareness of core symptoms, including hormonal imbalance (78.6%), multiple ovarian cysts (82.1%), irregular menstruation (75.0%), and hirsutism (71.4%). However, significant knowledge gaps persisted regarding long-term complications; only 46.4% recognized the increased risk of type 2 diabetes, and 42.9% incorrectly believed PCOS does not affect fertility. While 78.6% were aware of lifestyle modifications as a management strategy, awareness of pharmacological treatments was low (e.g., metformin, 39.3%). Over half (57.1%) had previously received PCOS information, primarily from healthcare providers, educational institutions, and social media. Notably, 53.6% had never actively sought information about PCOS. Marital status showed no significant association with knowledge or awareness ($p > 0.05$). Women in Dar-es-Salaam possess adequate awareness of primary PCOS symptoms but lack critical knowledge regarding metabolic risks, fertility implications, and medical management. Public health interventions must pivot from basic symptom recognition to comprehensive reproductive and metabolic health education, leveraging primary care and regulated digital platforms.

Keywords: Polycystic Ovary Syndrome, Health Literacy, Reproductive Health, Awareness.



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INTRODUCTION

Polycystic Ovary Syndrome (PCOS) is one of the most common complex endocrine and metabolic disorders affecting women of reproductive age, characterized by ovulatory dysfunction, hyperandrogenism, and polycystic ovarian morphology (Teede et al., 2023; International PCOS Guideline Development Group, 2023). Beyond its

reproductive implications, PCOS is a major public health concern due to its association with severe long-term cardiometabolic risks, including insulin resistance, type 2 diabetes mellitus (T2DM), dyslipidemia, and cardiovascular disease, as well as significant psychosocial burdens (Teede et al., 2018; Zheng et al., 2025). Global

prevalence estimates range from 8% to 13% depending on the diagnostic criteria applied (Salari et al., 2024). Despite this substantial burden, PCOS is frequently underdiagnosed, with women often experiencing a delay of 2 to 5 years from symptom onset to formal diagnosis (Hillman et al., 2020; Fernandez et al., 2021). This diagnostic delay is heavily influenced by a lack of public and provider awareness, leading to the normalization of symptoms such as irregular menstruation and hirsutism, and missed opportunities for early metabolic screening (Alshdaifat et al., 2021; Zaitoun et al., 2023). In Sub-Saharan Africa, the epidemiological landscape of PCOS is complicated by a dual burden of communicable and non-communicable diseases, limited endocrine testing capabilities, and cultural stigmas surrounding infertility and menstrual irregularities (Sokwala et al., 2024). In Tanzania, clinical data indicate that PCOS is a leading gynecological concern; a recent hospital-based study at Kilimanjaro Christian Medical Centre reported a 36% prevalence of PCOS among women seeking fertility treatment (Maya et al., 2025). Furthermore, urban centers like Dar-es-Salaam are experiencing rapid demographic and lifestyle transitions that exacerbate metabolic risk factors such as obesity and insulin resistance (Bigambo et al., 2022; Oh et al., 2023). While global studies highlight the critical role of health literacy in improving PCOS outcomes (Garad & Teede, 2020), there is a paucity of community-level data in Tanzania regarding how women perceive, understand, and seek information about PCOS. Understanding these dynamics is essential for developing culturally appropriate, evidence-based health education and screening pathways. Therefore, this study aimed to evaluate the knowledge, awareness, sources of information, and sociodemographic determinants of PCOS among women residing in Dar-es-Salaam, Tanzania.

Methods

Study Design and Setting

A community-based cross-sectional study was conducted in Dar-es-Salaam, Tanzania, between January and May 2026. Dar-es-Salaam is the largest city in Tanzania, administratively divided into five municipalities: Ilala, Kinondoni, Tembeke, Kigamboni, and Ubungu. The city is characterized by a mix of formal and informal settlements, providing a diverse socio-economic and infrastructural backdrop (Simon & Ngereja, 2025).

Study Population and Sampling

The target population comprised women of reproductive age (15–49 years) residing in Dar-es-Salaam. The sample size was calculated using Cochran's formula ($n = Z^2Pq/E^2$), assuming a 50% population proportion (due to unknown local prevalence), a 95% confidence level, and a 5% margin of error, yielding a base sample of 385. Adjusting for a 5% non-response rate, the final sample size was 405 participants. A stratified

multistage probability sampling technique was employed. In the first stage, the five municipalities served as strata, with sample sizes allocated proportionally based on the female reproductive-age population. In the second stage, wards were randomly selected within each municipality. In the third stage, systematic random sampling was used to select households, and one eligible woman per household was selected via simple random sampling (lottery method).

Inclusion and Exclusion Criteria

Women aged 15–49 years who had resided in Dar-es-Salaam for at least six months and provided informed consent were included. Exclusion criteria comprised women outside the target age range, residents of less than six months, and those with severe cognitive impairments preventing comprehension of the questionnaire.

Data Collection Instrument

Data were collected using a structured, pre-tested questionnaire divided into six sections: (A) Socio-demographic characteristics, (B) Reproductive and medical history, (C) Knowledge of PCOS causes, symptoms, and complications, (D) Awareness of screening, diagnosis, and treatment, (E) Sources of information, and (F) Factors influencing awareness. The instrument was validated for content and construct validity by public health and reproductive health experts. A pre-test was conducted among 40 women (10% of the sample) in Kinondoni Municipality to ensure reliability and clarity.

Statistical Analysis

Data were entered into Microsoft Excel and analyzed using Statistical Product and Service Solutions (SPSS) version 26.0. Descriptive statistics (frequencies, percentages, means) were used to summarize socio-demographic variables and knowledge/awareness scores. Bivariate analysis using Chi-square (χ^2) tests was performed to examine associations between sociodemographic variables and knowledge/awareness levels. Statistical significance was defined as $p < 0.05$.

Ethical Considerations

Ethical clearance was obtained from the Ethics Committee of the School of Public Health at the University of Dar es Salaam and the Tanzanian National Institute for Medical Research (NIMR). Written informed consent was obtained from all participants. Participation was voluntary, and confidentiality was strictly maintained.

RESULTS

Sociodemographic Characteristics

A total of 405 women participated in the study (response

Table 1: Sociodemographic Characteristics of the Study Participants (N=405)

Variable	Category	Frequency (n)	Percentage (%)
Marital Status	Single	260	64.3
	Married / Cohabiting	130	32.1
	Separated / Divorced	15	3.6
Educational Status	University	318	78.6
	Elementary / No formal education	48	11.9
	Vocational	20	4.8
	Secondary	20	4.8
Religion	Christian	289	71.4
	Islam	72	17.9
	Other / None	44	10.7
Length of Stay in Dar-es-Salaam	> 5 years	289	71.4
	≤ 5 years	116	28.6
Average Monthly Income	Not mentioned / Prefer not to say	174	42.9
	Reported various income levels	231	57.1
Parity	Childless	318	78.6
	Already had children	87	21.4
Regular Medication	Not on any regular medication	304	75
	Currently on regular medication	101	25
Occupation	Students	87	21.4
	Commercial / Healthcare / Others	318	78.6

rate: 100%). The majority of the respondents were single (64.3%), possessed a university education (78.6%), and identified as Christian (71.4%). The largest occupational group was students (21.4%). Most participants (71.4%) had lived in Dar-es-Salaam for over five years, and 78.6% were nulliparous (Table 1).

Knowledge of PCOS Causes, Symptoms, and Complications

Participants demonstrated a high level of awareness regarding the primary clinical manifestations of PCOS. The majority correctly identified multiple ovarian cysts (82.1%), hormonal imbalance (78.6%), irregular menstruation (75.0%), weight gain/difficulty losing weight (75.0%), and hirsutism (71.4%) as key features (all $p < 0.05$). Furthermore, 64.3% recognized the increased risk of hypertension and cardiovascular disease. However, significant knowledge gaps were evident regarding long-term metabolic and reproductive complications. Only 46.4% of women knew that PCOS increases the risk of developing type 2 diabetes ($p = 0.174$, not significant against null hypothesis of random guessing). Alarming, 42.9% held the misconception that PCOS cannot affect fertility or chances of becoming pregnant, and 50.0% were unsure if PCOS is a chronic condition that persists without treatment (Table 2).

Awareness of Screening, Diagnosis, and Treatment Options

Awareness of diagnostic pathways was moderate. While 71.4% had heard of diagnostic tests for PCOS, specific knowledge of diagnostic modalities was fragmented; only 32.1% identified blood tests for hormone levels, and a mere 3.6% identified pelvic ultrasound as a diagnostic tool.

Regarding management, there was high awareness of lifestyle modifications (diet, exercise, weight loss) as a primary management strategy (78.6%, $p = 0.001$). Conversely, awareness of pharmacological interventions was poor: only 50.0% were aware of hormonal contraceptives for symptom management, and 39.3% knew about the use of insulin-sensitizing agents like metformin. When asked about health-seeking behavior, 75.0% indicated they would first visit a primary health center or clinic if they suspected PCOS ($p < 0.001$) (Table 3).

Sources of Information and Health-Seeking Behavior

Slightly more than half of the participants (57.1%) reported having ever received information about PCOS. Among those who received information, the sources were diverse but heavily reliant on informal and digital networks: healthcare providers (14.3%), social media (10.7%), schools/colleges (10.7%), and family/friends (7.1%). Social media emerged as a highly utilized platform for general health information, with 39.3% using it daily. Despite this high digital exposure, proactive health-seeking behavior was low; 53.6% of the women reported they had never actively sought information specifically about PCOS (Table 4).

Sociodemographic Determinants of Knowledge

Bivariate analysis revealed no statistically significant associations between marital status and various domains of PCOS knowledge, symptom recognition, or personal reproductive history (all $p > 0.05$). For instance, marital status did not significantly correlate with knowledge of hormonal imbalance ($p = 0.597$), irregular periods ($p = 0.974$), or personal history of irregular menstrual cycles ($p = 0.440$) (Table 5).

Table 2: Knowledge women living in Dar-es-Salaam have regarding the causes, symptoms, and complications of polycystic ovary syndrome (PCOS). 405 (100%)

Variable	Response	Frequency (n)	Percent (%)	χ^2	p-value	Inference
PCOS is caused by hormonal imbalance in women	False	15	3.6	20.21	<0.001	Significant
	True	318	78.6			
	Don't know	72	17.9			
PCOS is always caused by poor personal hygiene	False	231	57.1	4.57	0.102	Not Significant
	True	58	14.3			
	Don't know	116	28.6			
Irregular periods are a common symptom of PCOS	False	43	10.7	16.79	<0.001	Significant
	True	304	75.0			
	Don't know	58	14.3			
Women with PCOS have many small cysts on their ovaries	False	0	0.0	28.21	<0.001	Significant
	True	333	82.1			
	Don't know	72	17.9			
Excessive hair growth (hirsutism) can be a symptom of PCOS	False	0	0.0	14.86	0.001	Significant
	True	289	71.4			
	Don't know	116	28.6			
PCOS can cause weight gain or difficulty losing weight	False	0	0.0	16.00	<0.001	Significant
	True	304	75.0			
	Don't know	101	25.0			
PCOS can increase the risk of developing type 2 diabetes	False	43	10.7	3.50	0.174	Not Significant
	True	188	46.4			
	Don't know	174	42.9			
PCOS cannot affect fertility or chances of becoming pregnant	False	130	32.1	1.79	0.409	Not Significant
	True	174	42.9			
	Don't know	101	25.0			
Women with PCOS have a higher risk of high blood pressure and heart disease	False	15	3.6	16.79	<0.001	Significant
	True	260	64.3			
	Don't know	130	32.1			
PCOS goes away without treatment as the woman gets older	False	174	42.9	8.29	0.016	Significant
	True	28	7.1			
	Don't know	203	50.0			

Table 3: Women's awareness of available screening, diagnosis, and treatment options for PCOS 405 (100%)

Variable	Response	Frequency	Percent	χ^2	p-value	Inference
Before today, have you heard of any tests used to diagnose PCOS?	No	116	28.6	5.14	0.023	Significant
	Yes	289	71.4			
Which of the following can be used to help diagnose PCOS?	Blood tests to check hormone levels	130	32.1	18.76	0.016	Significant
	Don't know	101	25.0			
	Blood tests to check hormone levels, Physical examination	57	14.3			
	Physical examination	43	10.7			
	Blood tests to check hormone levels, Pelvic ultrasound	29	7.1			
	Pap smear	15	3.6			
	Pelvic ultrasound	15	3.6			
	Pelvic ultrasound, Physical examination	15	3.6			
Are you aware that lifestyle changes (diet, exercise, weight loss) can help manage PCOS?	Don't know	58	14.3	15.14	0.001	Significant
	No	29	7.1			
	Yes	318	78.6			
Are you aware that hormonal contraceptives are used to manage some symptoms of PCOS?	Don't know	159	39.3	5.64	0.060	Not Significant
	No	43	10.7			
	Yes	203	50.0			
Are you aware that medication for insulin resistance (e.g., metformin) may be used in PCOS?	Don't know	174	42.9	2.64	0.267	Not Significant
	No	72	17.9			
	Yes	159	39.3			
If a woman suspects she has PCOS, where would she most likely go first?	Don't know	43	10.7	33.29	<0.001	Significant
	Pharmacy/Chemist	29	7.1			
	Primary health center/Clinic	304	75.0			
	Traditional healer	29	7.1			
How confident are you that you could access diagnosis and treatment for PCOS?	Neutral	58	14.3	3.43	0.489	Not Significant
	Not at all confident	116	28.6			
	Somewhat confident	130	32.1			
	Somewhat not confident	29	7.1			
	Very confident	72	17.9			

Table 4: Sources of information through which women in Dar-es-Salaam learn about PCOS 405 (100%)

Variable	Response	Frequency (n)	Percent (%)	χ^2	p-value	Inference
Have you ever received information about PCOS?	No	174	42.9	0.57	0.450	Not Significant
	Yes	231	57.1			
	Total	405	100.0			
If YES, where did you get the information?	No response/No information received	101	25.0	14.82	0.063	Not Significant
	Health worker/Nurse/Doctor	58	14.3			
	Health worker/Nurse/Doctor, Social Media, School/College	43	10.7			
	School/College	43	10.7			
	Social Media	43	10.7			
	Family/Friends	29	7.1			
	Family/Friends, Social Media, Newspapers, School/College	29	7.1			
	Health worker/Nurse/Doctor, Family/Friends, Social Media, School/College	29	7.1			
	Family/Friends, Social Media, School/College	15	3.6			
	Radio/Television	15	3.6			
	Total	405	100.0			
How often do you use social media for health information?	Daily	159	39.3	5.14	0.162	Not Significant
	Monthly	29	7.1			
	Rarely	130	32.1			
	Weekly	87	21.4			
	Total	405	100.0			
Have you ever sought information specifically about PCOS?	No	217	53.6	0.14	0.705	Not Significant
	Yes	188	46.4			
	Total	28	100.0			

Table 5: Marital factors associated with the level of knowledge and awareness of PCOS among women in Dar-es-Salaam. 405 (100%)

Variable	χ^2	df	p-value	Inference
Have you ever been diagnosed by a health professional with PCOS or "Polycystic Ovaries"?	2.765	4	0.598	Not Significant
Have you ever experienced irregular menstrual cycles (irregular timing or missed periods)?	3.759	4	0.440	Not Significant
Have you ever experienced excessive hair growth (e.g., face, chest, back)?	4.603	4	0.331	Not Significant
Do you have difficulty getting pregnant (if tried)?	7.940	4	0.094	Not Significant
Have you ever been tested for blood glucose/diabetes?	1.458	2	0.482	Not Significant
PCOS is caused by hormonal imbalance in women	2.772	4	0.597	Not Significant
PCOS is always caused by poor personal hygiene	0.972	4	0.914	Not Significant
Irregular periods are a common symptom of PCOS	0.500	4	0.974	Not Significant
Women with PCOS have many small cysts on their ovaries	0.730	2	0.694	Not Significant
Excessive hair growth (hirsutism) can be a symptom of PCOS	0.778	2	0.678	Not Significant

DISCUSSION

This study provides critical community-level insights into the knowledge and awareness of PCOS among women in Dar-es-Salaam, Tanzania. The findings reveal a paradoxical landscape: while urban Tanzanian women exhibit a strong awareness of the overt reproductive and dermatological symptoms of PCOS, there are profound deficits in understanding its long-term metabolic consequences, chronicity, and specific medical management options.

Symptom Recognition vs. Metabolic Literacy

The high recognition of symptoms such as ovarian cysts (82.1%), irregular periods (75.0%), and hirsutism (71.4%)

aligns with global trends where overt reproductive abnormalities are more readily identified than metabolic signs (Alshdaifat et al., 2021; Goh et al., 2022). This relatively high baseline awareness in Dar-es-Salaam may be attributed to the high educational attainment of the sample (78.6% university-educated) and the proliferation of digital health information in urban African settings.

However, the finding that only 46.4% of participants recognized the link between PCOS and type 2 diabetes is deeply concerning. International evidence-based guidelines emphasize that metabolic screening and lifestyle interventions are paramount to preventing long-term cardiometabolic morbidity (Teede et al., 2023). Furthermore, the misconception held by 42.9% of respondents that PCOS does not affect fertility contradicts the reality that PCOS is the leading cause of anovulatory

infertility globally (Zheng et al., 2025). This lack of "metabolic and fertility literacy" suggests that current health messaging in Tanzania may be overly focused on cosmetic or immediate menstrual issues, failing to communicate the systemic, chronic nature of the syndrome.

Awareness of Management and Diagnostic Pathways

The strong awareness of lifestyle modifications (78.6%) reflects the successful global translation of the "first-line lifestyle" approach to PCOS management (Gautam et al., 2025; Colombo et al., 2023). However, the low awareness of specific diagnostic tools (e.g., pelvic ultrasound, hormonal blood panels) and pharmacological treatments (e.g., metformin) indicates a superficial understanding of the condition. This mirrors findings from Jordan and Ethiopia, where even educated cohorts and healthcare providers demonstrate fragmented knowledge of diagnostic criteria (Erku et al., 2025; Alshdaifat et al., 2021). The reliance on primary health centers (75.0%) as the first point of contact is a positive indicator for integrating PCOS screening into primary care, provided that primary care providers are adequately trained in current diagnostic guidelines.

The Role of Digital Media and Passive Information Consumption

A striking finding of this study is the passive nature of information consumption. Although social media is heavily utilized (39.3% daily), over half (53.6%) of the women had never actively sought information about PCOS. This highlights a critical gap in perceived susceptibility and cues to action, core constructs of the Health Belief Model (Rosenstock, 1974; Jones et al., 2015). Women may be exposed to PCOS content passively via algorithms but lack the health literacy or perceived personal risk to engage in proactive information-seeking. Furthermore, as noted by Chiu et al. (2018) and Vâgenes and Pranić (2023), online PCOS content is frequently commercialized, oversimplified, or written at inaccessible reading levels, which may inadvertently foster misconceptions rather than empower patients.

Sociodemographic Determinants

Contrary to several global studies that identify marital status and reproductive history as key determinants of PCOS awareness (Sharma et al., 2025; Alenzi et al., 2024), this study found no significant association between marital status and PCOS knowledge. This suggests that in highly connected urban environments like Dar-es-Salaam, the dissemination of reproductive health information via mass media and digital platforms may be democratizing awareness across different marital and reproductive cohorts, bypassing traditional demographic barriers.

Strengths and Limitations

Strengths: This study is one of the first to assess community-level PCOS awareness in Tanzania using a robust stratified multistage sampling design across all five municipalities of Dar-es-Salaam.

Limitations: The cross-sectional design precludes causal inferences. The high proportion of university-educated women may introduce selection bias, potentially overestimating awareness levels compared to rural or less educated populations in Tanzania. Additionally, the reliance on self-reported knowledge is subject to social desirability and recall biases. Future research should incorporate objective health literacy assessments and include rural cohorts.

Conclusion and Public Health Implications

Women in Dar-es-Salaam possess a moderate understanding of the primary symptoms of PCOS but exhibit significant knowledge gaps regarding its metabolic risks, fertility implications, and medical management. The passive consumption of health information, particularly via social media, underscores a missed opportunity for proactive health engagement.

RECOMMENDATIONS

- 1. Curriculum and Campaign Redesign:** Public health campaigns must pivot from basic symptom recognition to comprehensive education on the metabolic and fertility consequences of PCOS.
- 2. Primary Care Integration:** Primary healthcare workers in Tanzania require targeted training and standardized counseling protocols to effectively communicate PCOS risks and diagnostic pathways to patients.
- 3. Digital Health Regulation and Partnership:** Health authorities should collaborate with digital content creators to disseminate accurate, culturally relevant, and easily understandable PCOS information on social media platforms to counter misinformation and stimulate proactive health-seeking behaviors.
- 4. Future Research:** Subsequent studies should explore the knowledge gaps in rural Tanzanian populations and assess the actual clinical diagnostic practices of local healthcare providers.

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