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Original Research

Assessment of Women's Knowledge About Ovarian Cysts at a Maternity Teaching Hospital: A Cross-Sectional Study in Erbil, 2024-2025

Srwa Abdulrahman Mustafa [1] . Ala Sabah Nashat [2] . Eman Qaid Ebrahim [2] . Dashne Kayfi Majid [2] . Gardoon Yassin Abdulrahman [2] . Jihad Haji Saleh [3]

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Abstract

Background and Aim In Erbil, Iraq, limited awareness about ovarian cysts among women can delay diagnosis, affect treatment decisions, and contribute to complications. This study aimed to assess the level of knowledge regarding ovarian cysts among women attending Maternity Teaching Hospital in Erbil.

Methods This cross-sectional study was conducted from September 15, 2024, to January 15, 2025, at Maternity Teaching Hospital in Erbil. A structured questionnaire was used, which included socio-demographic characteristics and 27 items assessing knowledge related to the definition, types, symptoms, causes, risk factors, complications, and prevention and treatment of ovarian cysts. Data were analyzed using SPSS version 27. Chi-square tests were used to assess associations between knowledge levels and demographic variables, followed by ordinal regression analysis for adjusted associations.

Results A total of 220 women participated in the study. More than half demonstrated a fair level of knowledge, while a substantial proportion had good awareness, particularly regarding symptoms and prevention methods. A statistically significant association was found between number of children and knowledge levels, with women who had fewer or no children showing better understanding. Ordinal regression analysis further confirmed that marital status significantly influenced knowledge, with divorced women having higher knowledge levels than others.

Conclusion The study revealed that most women had fair to good knowledge about ovarian cysts, particularly in symptomatic and preventive aspects. Policymakers and healthcare providers are recommended to implement targeted educational programs to improve awareness, especially in areas related to causes, risk factors, and complications.

Keywords Ovarian Cyst · Women's Health · Knowledge · Risk Factors · Gynecology

✉ Srwa Abdulrahman Mustafa
srwa.mustafa@hmu.edu.krd

[1] Department of Maternity Nursing, College of Nursing, Hawler Medical University, Erbil, Iraq

[2] College of Nursing, Hawler Medical University, Erbil, Iraq

[3] Department of Biology, Harran university, Şanlıurfa, Turkey

Introduction

Ovarian cysts are fluid-filled sacs that develop on or within an ovary, commonly affecting women of reproductive age, with an estimated global prevalence ranging from 8% to 18% in this population (Trinh and Kennedy, 2015). While most ovarian cysts are benign and asymptomatic, some may cause serious complications such as rupture, torsion, or malignancy, particularly when not detected or managed early (Zahidy and Abdulkareem, 2018). Awareness and early recognition of symptoms are crucial for timely medical intervention, yet studies consistently reveal that a significant number of women have limited understanding of ovarian health issues (Brain et al., 2014). In regions such as the Middle East, cultural norms, educational disparities, and limited access to reproductive health education can further exacerbate this knowledge gap. In Iraq, particularly in urban centers like Erbil, the intersection of traditional beliefs and modern medical practices influences women's health-seeking behaviors and awareness of gynecological conditions. The level of health literacy among women visiting maternity hospitals can significantly impact early diagnosis, treatment compliance, and long-term health outcomes (Arabin et al., 2019). As ovarian cysts are a prevalent condition with potential implications for fertility and general well-being, understanding women's knowledge levels is vital for healthcare planning.

A woman's knowledge about ovarian cysts can influence not only her personal health decisions but also her willingness to engage in preventative care and seek early intervention when symptoms arise. Educational level, age, and previous exposure to health information are primary factors found to shape reproductive health awareness (Kyilleh et al., 2018). Prior studies show that women with higher education levels are more likely to correctly identify symptoms and seek medical attention (Gold et al., 2016). Conversely, lack of awareness can lead to delayed diagnosis, resulting in complications that might otherwise be preventable. In some Middle Eastern societies, discussions about reproductive health remain sensitive, which can hinder knowledge dissemination. Research in comparable settings has emphasized the role of culturally sensitive health education programs in improving awareness and reducing stigma (Ahad et al., 2023). Despite growing recognition of ovarian health issues globally, there remains a paucity of data on women's knowledge levels in Iraqi healthcare settings.

Furthermore, several studies underscore the importance of hospital-based educational interventions in improving reproductive health literacy. Teaching hospitals, often serving diverse populations, provide a unique setting to assess baseline knowledge and introduce targeted health education (Johnson et al., 2020). Cross-sectional studies have shown that women who engage with maternity services are often receptive to acquiring health information, suggesting these visits present crucial opportunities for educational outreach (Wilmore et al., 2015, Vamos et al., 2019). Knowledge gaps about ovarian cysts can result in underreporting of symptoms, misinterpretation of warning signs, or reliance on non-clinical advice, thereby delaying appropriate care. In Erbil, existing health promotion strategies may lack specific focus on gynecological conditions like ovarian cysts, limiting their effectiveness. Additionally, social determinants such as urban-rural divides and income disparities influence health literacy and access to accurate information. Prior research from Kurdistan indicates a need for tailored public health strategies that resonate with local beliefs and educational backgrounds (Akbar et al., 2024). Evaluating knowledge in a hospital setting can provide insights into current education gaps and guide policy development.

Although global research emphasizes the significance of health literacy in managing reproductive health, limited studies have been conducted in Iraq, particularly concerning ovarian cyst awareness. Most available literature either lacks localized focus or does not delve deeply into the contextual factors affecting knowledge acquisition. The Erbil region, with its unique sociocultural and healthcare environment, remains underrepresented in gynecological health research. Moreover, no comprehensive study has assessed the awareness of ovarian cysts among women attending maternity hospitals in this region. Therefore, in this study we aim to assess women's knowledge about ovarian cysts at a maternity teaching hospital in Erbil during the period 2024–2025.

Research Question

What is the level of knowledge about ovarian cysts among women attending a maternity teaching hospital in Erbil during 2024–2025?

Methods

Study Design, Setting, Period, and Sampling

This study was conducted at Maternity Teaching Hospital in Erbil City from September 15, 2024, to January 15, 2025, using a non-probability convenience sampling technique to recruit eligible women who visited the hospital and met the inclusion criteria.

Sample Size

The sample size for this study was calculated using Epi Info 7, based on a 95% confidence level, a 5% margin of error, and an assumed population proportion of 50%, yielding a recommended sample size of 385 participants. However, due to time and resource limitations, a total of 220 women who met the inclusion criteria and were available during the data collection period were included using a non-probability convenience sampling technique.

Inclusion/exclusion

The inclusion criteria for participants were women who had been diagnosed with an ovarian cyst and agreed to participate in the study during their visit to Maternity Teaching Hospital. On the other hand, women who had diagnosed mental disorders or declined to participate in the study were excluded.

Study Tools and Data Collection

The questionnaire was divided into two main parts. The first part gathered demographic data, including age group, religion, marital status, level of education, occupation, income, residential area, and number of children. The second part was a self-structured knowledge assessment tool developed by the researchers to evaluate women's understanding of ovarian cysts, including its definition, types, causes, symptoms, risk factors, complications, and methods of prevention and treatment. The questionnaire was originally developed in English and later translated into Kurdish using the forward-backward translation method. Data were collected through face-to-face interviews with women who met the inclusion criteria. Interviews were conducted at Maternity Teaching Hospital, three days a week between 8:00 a.m. and 1:00 p.m., with each session lasting approximately 30 to 45 minutes.

Pilot Study

The study questionnaire was initially tested in a pilot study involving a group of 25 women who met the inclusion criteria at Maternity Teaching Hospital. The pilot phase was conducted to assess the internal consistency and reliability of the questionnaire before its use in the main study. Testing was carried out between August 5 and September 5, 2024. Reliability was evaluated using Cronbach's alpha (Taber, 2018), and the overall alpha value was found to be 0.84, indicating a good level of internal consistency. Data collected during the pilot study were used solely for validation purposes and were excluded from the final analysis.

Measures

Sociodemographic Characteristics

The first section of the questionnaire gathered information on key socio-demographic variables of the participants, including age group, religion, marital status, level of education, occupation, income level, residential area, and number of children.

Knowledge Assessment on Ovarian Cysts

The second section of the questionnaire consisted of a self-structured knowledge assessment developed by the researchers to evaluate women's understanding of ovarian cysts. This section covered six thematic domains, including the definition and types of ovarian cysts, causes, symptoms, risk factors, complications, and methods of prevention and treatment. Each knowledge item was scored as either correct or incorrect, with a total of 30 items included. The cumulative score was used to classify the participants' knowledge levels into three categories: poor (1–10), fair (11–20), and good (21–30).

Ethical Approval and Informed Consent

This study adhered to the ethical principles outlined in the Declaration of Helsinki and institutional research ethics standards. Ethical approval was obtained from the Undergraduate Research Committee at the College of Nursing, Hawler Medical University, under approval code 24039, granted on August 20, 2024. Written informed consent was obtained from all participants prior to data collection after explaining the objectives, confidentiality measures, and voluntary nature of the study.

Statistical Consideration

Data were summarized and reported using frequencies and percentages for qualitative variables, while means and standard deviations were used to describe continuous variables. The association between women's knowledge levels and their socio-demographic characteristics was assessed using the Chi-square test. To further validate and refine the findings, ordinal regression analysis was conducted to explore the adjusted relationship between knowledge levels and potential confounding variables. All statistical analyses were performed using SPSS version 27 (IBM Corp., Armonk, NY), with a significance level set at $p < 0.05$.

Results

Demographic and Clinical Characteristics

A total of 220 women participated in the study, with a mean age of 29.83 ± 8.41 years. The largest age group was between 16 and 25 years, representing 37.3% (n = 82), followed closely by those aged 26–35. All participants were Muslim, and the majority were married (79.5%, n = 175). In terms of education, high school graduates formed the largest group (37.3%), while 15% were illiterate. Most participants were housewives (72.7%), with a smaller proportion being students and employed women. The majority reported a

medium income level (80%), and most resided in urban areas (61.8%). Regarding family size, 41.8% had 1–3 children, while 33.6% had no children. In terms of knowledge about ovarian cysts, 55.9% demonstrated a fair level, followed by 34.5% with good knowledge, and only 9.6% with poor knowledge, indicating generally moderate knowledge among participants. Detailed demographics are presented in Table 1.

Assessment of Women's Knowledge Regarding Ovarian Cysts

The results showed that participants demonstrated relatively high awareness in several key areas related to ovarian cysts. A large majority correctly identified menstrual disorders (88.6%), regular doctor visits (86.8%), medication (89.1%), and healthy diet (79.5%) as relevant to the condition, indicating strong knowledge in prevention and symptom recognition. Knowledge about hormonal imbalance (78.2%) and previous ovarian cysts (75.5%) as risk factors was also notably high. However, significant gaps were observed in understanding certain causes and risk factors—only 35.5% recognized family history as a cause, 24.1% identified pregnancy, and just 25.9% acknowledged advanced age as a risk factor. Furthermore, awareness of types of ovarian cysts was mixed, with only 53.6% correctly identifying functional cysts and 45.5% recognizing pathological types. (Table 2)

Association Between Socio-Demographic Variables and Knowledge Levels

The results showed that most socio-demographic characteristics had no statistically significant association with women's knowledge levels about ovarian cysts. While younger women, particularly those aged 16–25, showed relatively higher rates of good knowledge, and high school graduates made up the largest proportion of those with good knowledge, these differences were not statistically significant. Notably, the only variable with a significant association was number of children ($p < .001$), where women with fewer or no children tended to have higher levels of knowledge compared to those with more children. For example, nearly half of the women with no children demonstrated good knowledge, whereas those with four or more children had notably lower knowledge levels. For more details, refer to Table 3.

Ordinal Regression Analysis of Factors Affecting Knowledge Levels

The results revealed that most socio-demographic variables were not significant predictors of knowledge levels about ovarian cysts among the participants. However, marital status showed a statistically significant association, with both single and married women having significantly lower knowledge levels compared to divorced women ($p = 0.001$). While not statistically significant, some positive estimates were observed among students and employed women, indicating a possible trend toward better knowledge compared to unemployed women. Similarly, women with no children or fewer children (1–3) had higher knowledge scores, supporting earlier findings from the chi-square analysis. For more details, refer to Table 4.

Discussion

The present study was conducted to assess women's knowledge about ovarian cysts at a maternity teaching hospital in Erbil during the period 2024–2025. Overall, the results revealed that the majority of participating women demonstrated fair to good levels of knowledge regarding ovarian cysts, suggesting that general awareness about this gynecological condition is relatively widespread among the study population.

Ovarian cysts represent a common gynecological condition affecting women across various age groups, with potential implications for reproductive health, fertility, and quality of life (Teshome et al., 2016, Lotfy et al., 2024). In Erbil, despite the prevalence of ovarian cysts and their impact on women's health, there remains limited research examining women's understanding and awareness of this condition within the local context. The Kurdish region of Iraq faces unique healthcare challenges, including varying levels of access to health education and services, which may influence women's knowledge about gynecological conditions. Given the importance of these details, we aimed to assess women's knowledge about ovarian cysts at a maternity teaching hospital in Erbil to establish a baseline understanding of awareness levels among the female population.

The demographic profile of our study participants provides valuable insights into the distribution of knowledge across various segments of the female population attending the maternity hospital in Erbil. The inclusion of women from diverse educational backgrounds, different age groups, and varying marital statuses offers a comprehensive representation of women seeking maternal healthcare services. This demographic diversity aligns with similar studies conducted in neighboring regions, where sociodemographic factors significantly influence women's health knowledge (Barbieri et al., 2018, Maricic et al., 2021). However, unlike some international studies that report substantial knowledge disparities across different educational levels, our findings indicated more nuanced

patterns of awareness that were not primarily determined by conventional education, suggesting that knowledge about ovarian cysts may be acquired through various channels beyond formal education.

Table 1: Demographic and Clinical Characteristics of Participants (N=220)

Variables	Characteristics n=220	F	%
Age group (Years)	16-25	82	37.3
	26-35	79	35.9
	36-45	47	21.4
	46-55	12	5.5
	Mean ± SD	29.83 ± 8.407	
Religion	Muslim	220	100
Marital state	Single	44	20
	Married	175	79.5
	Divorced	1	0.5
Level of Education	Illiterate	33	15
	Primary school graduated	55	25
	Secondary school graduated	50	22.7
	High school graduated	82	37.3
Occupation of Women	Employed	16	7.3
	House wife	160	72.7
	Student	34	15.5
	Unemployed	10	4.5
Income	Low	38	17.3
	Medium	176	80
	High	6	2.7
Residential Area	Urban	136	61.8
	Suburban	69	31.4
	Rural	15	6.8
Number of Children	No child	74	33.6
	1-3	92	41.8
	4-6	51	23.2
	7-9	3	1.4
Knowledge Levels	Poor	21	9.6
	Fair	123	55.9
	Good	76	34.5

Note: F = Frequency, % = Percentage; and Sd= Standard Deviation.

Our study found that the majority of participating women had fair levels of knowledge regarding ovarian cysts, suggesting a reasonable baseline awareness about this gynecological condition. This finding partially aligns with studies from other middle-income countries that have reported moderate levels of knowledge about common gynecological conditions (Mustafa et al., 2024, Hamad et al., 2024, Ahmed et al., 2024, Mousa et al., 2021). However, the relatively high proportion of women with good knowledge in our study differs from some international findings, where knowledge about specific gynecological conditions is often reported to be inadequate. This comparatively favorable knowledge status may reflect successful health education initiatives within the maternity hospital setting, community awareness programs, or cultural

factors that facilitate information sharing about women's health issues within the Kurdish context.

Table 2: Assessment of Women's Knowledge Regarding Ovarian Cysts

Items	Incorrect		Correct	
Type of ovarian cyst.	**F**	**%**	**F**	**%**
What is ovarian cyst?	78	35.5%	142	64.5%
Functional ovarian cyst is the type of ovarian cyst?	102	46.4%	118	53.6%
Pathological ovarian cyst another type of ovarian cyst?	120	54.5%	100	45.5%
Cause of ovarian cyst.	**F**	**%**	**F**	**%**
Family history?	142	64.5%	78	35.5%
Obesity?	84	38.2%	136	61.8%
Infection?	120	54.5%	100	45.5%
Increase male hormones?	67	30.5%	153	69.5%
Symptoms of ovarian cyst.	**F**	**%**	**F**	**%**
Menstrual disorders?	25	11.4%	195	88.6%
Hair growth on the face and body?	46	20.9%	174	79.1%
Breast pain and tenderness?	102	46.4%	118	53.6%
Pelvic pain?	56	25.5%	164	74.5%
Nausea and vomiting?	129	58.6%	91	41.4%
Risk factors of ovarian cyst.	**F**	**%**	**F**	**%**
Hormonal imbalance?	48	21.8%	172	78.2%
Pregnancy?	167	75.9%	53	24.1%
Previous ovarian cyst?	54	24.5%	166	75.5%
Advanced age (35-45)?	163	74.1%	57	25.9%
Use of hormonal contraceptives?	139	63.2%	81	36.8%
Complication of ovarian cyst.	F	%	F	%
Bleeding?	119	54.1%	101	45.9%
Rupture of ovarian cyst?	90	40.9%	130	59.1%
Infection of the ovary?	103	46.8%	117	53.2%
Prevention and treatment of ovarian cyst.	**F**	**%**	**F**	**%**
Eating healthy diet?	45	20.5%	175	79.5%
Regular review of the doctor?	29	13.2%	191	86.8%
Losing weight?	54	24.5%	166	75.5%
Reducing drinking tea and coffee?	147	66.8%	73	33.2%
Medication?	24	10.9%	196	89.1%
Surgery?	46	20.9%	174	79.1%

Note: F = Frequency, and % = Percentage.

Table 3: Association Between Demographic Characteristics and Knowledge Levels Among Women Attending Maternity Teaching Hospital in Erbil City

Demographic Information	Categories	Knowledge Levels			N	χ^2 test
		Poor	Fair	Good		
Age group (Years)	16-25	5 (23.8%)	43 (35.0%)	34 (44.7%)	82	
	26-35	6 (28.6%)	46 (37.4%)	27 (35.5%)	79	χ^2=9.56
	36-45	7 (33.3%)	29 (23.6%)	11 (14.5%)	47	p=0.15
	46-55	3 (14.3%)	5 (4.1%)	4 (5.3%)	12	
Religion	Muslim	21 (9.5%)	123 (55.9%)	76 (34.5%)	220	χ^2=2.91
						P=0.4
Marital Status	Single	1 (4.8%)	24 (19.5%)	19 (25.0%)	44	
	Married	20 (95.2%)	99 (80.5%)	56 (73.7%)	175	χ^2=6.29
	Divorced	0 (0.0%)	0 (0.0%)	1 (1.3%)	1	p=0.18
Level of Education	Illiterate	5 (23.8%)	17 (13.8%)	11 (14.5%)	33	
	Primary school graduated	7 (33.3%)	34 (27.6%)	14 (18.4%)	55	χ^2=11.29 p=0.08
	Secondary school graduated	7 (33.3%)	28 (22.8%)	15 (19.7%)	50	
	High school graduated	2 (9.5%)	44 (35.8%)	36 (47.4%)	82	
Occupation of Women	Employed	0 (0.0%)	11 (8.9%)	5 (6.6%)	16	χ^2=8.84
	House wife	20 (95.2%)	89 (72.4%)	51 (67.1%)	160	p=0.18
	Student	0 (0.0%)	18 (14.6%)	16 (21.1%)	34	
	Unemployed	1 (4.8%)	5 (4.1%)	4 (5.3%)	10	
Income	Low	5 (23.8%)	20 (16.3%)	13 (17.1%)	38	χ^2=3.67
	Medium	16 (76.2%)	101 (82.1%)	59 (77.6%)	176	p=0.45
	High	0 (0.0%)	2 (1.6%)	4 (5.3%)	6	
Residential Area	Urban	16 (76.2%)	75 (61.0%)	45 (59.2%)	136	χ^2=4.47
	Sub-Urban Rural	4 (19.0%)	37 (30.1%)	28 (36.8%)	69	p=0.35
		1 (4.8%)	11 (8.9%)	3 (3.9%)		
Number of Children	No child	2 (9.5%)	37 (30.1%)	35 (46.1%)	15	
	1-3	8 (38.1%)	56 (45.5%)	28 (36.8%)	74	
	4-6	10 (47.6%)	29 (23.6%)	12 (15.8%)	92	
	7-9	1 (4.8%)	1 (0.8%)	1 (1.3%)	51	
						χ^2=17.76
						p <.001

Note: F = Frequency, % = Percentage; Sd= Standard Deviation, Significance was set at p <.001, and Chi-Square was used.

A particularly encouraging finding from our study was that most women correctly identified key symptoms and effective prevention methods for ovarian cysts. This practical knowledge is crucial for early detection and appropriate health-seeking behaviors, potentially leading to better health outcomes. Similar patterns of practical knowledge have been reported in studies from other regions, where women often possess better understanding of symptoms than of disease mechanisms or risk factors (Smith et al., 2018, Han et al., 2018). The strength in symptom recognition observed in our study population represents a valuable foundation for promoting early detection and timely medical consultation.

Table 4: Ordinal Regression of Factors Affecting Knowledge Levels

Variables	Knowledge			
	Estimate	P-Value	CI %95	
			LB	UB
Age group (Years)				
16-25	-0.20	0.81	-1.82	1.43
26-35	-0.04	0.96	-1.52	1.44
36-45	-0.25	0.74	-1.72	1.22
46-55	0 [a]	-	-	-
Marital Status				
Single	-16.89	0.001	-18.14	-15.64
Married	-16.34	0.001	-16.34	-16.34
Divorced	0 [a]	-	-	-
Level of Education				
Illiterate	-0.00	0.10	-1.06	1.06
Primary school graduated	-0.57	0.21	-1.46	0.32
Secondary school graduated	-0.46	0.25	-1.32	0.35
High school graduated	0 [a]	-	-	-
Occupation of Women				
Employed	0.36	0.69	-1.41	2.12
House wife	0.34	0.68	-1.28	1.97
Student	0.62	0.41	-0.83	2.06
Unemployed	0 [a]	-	-	-
Income				
Low	-1.49	0.12	-3.39	0.40
Medium	-1.48	0.11	-3.27	0.31
High	0 [a]	-	-	-
Residential Area				
Urban	0.22	0.70	-0.90	1.35
Sub-Urban Rural	0.64	0.28	-0.52	1.80
Urban	0 [a]	-	-	-
Number of Children				
No child	1.49	0.32	-1.44	4.41
1-3	0.53	0.71	-2.26	3.32
4-6	0.06	0.97	-2.66	2.77
7-9	0 [a]	-	-	-

Note: Abbreviations: LB, lower bound; UP, upper bound.
[a] This parameter is reference

An intriguing finding from our study was the significant association between the number of children and knowledge levels, where women with fewer or no children showed better awareness about ovarian cysts. This pattern contrasts with some studies in maternal health knowledge, where multigravida women often demonstrate better knowledge due to increased healthcare exposure (Prathima, 2014,

Akhagbaker et al., 2024). Our finding suggests a different dynamic in gynecological health awareness, where nulliparous or women with fewer children may be more attuned to reproductive health issues, possibly due to greater concerns about fertility, more recent educational exposure, or different patterns of healthcare utilization. This inverse relationship between parity and knowledge has been observed in some studies on gynecological health awareness, suggesting that women with fewer children may invest more in monitoring their reproductive health (Igras et al., 2014, Prathima, 2014).

Our study revealed that marital status emerged as a significant factor affecting knowledge about ovarian cysts, with divorced women demonstrating comparatively higher knowledge levels. This finding presents an interesting pattern that diverges from some traditional assumptions about health knowledge distribution. The higher awareness among divorced women may be attributed to several factors, including potentially increased healthcare system interaction during life transitions, greater personal responsibility for health following separation, or enhanced health literacy developed through navigating healthcare independently. Similar patterns have been observed in studies examining health knowledge among divorced women in other contexts, where life experiences associated with marital transitions sometimes correlate with increased health awareness (Kutob et al., 2017).

Despite the valuable insights provided by this study, several limitations should be acknowledged. The cross-sectional design captures knowledge at a specific point in time, limiting our ability to observe how awareness evolves over the life course or in response to educational interventions. The hospital-based sampling may not fully represent women who do not access institutional healthcare, potentially overestimating knowledge levels in the broader community. Future research should consider community-based sampling to capture knowledge levels among women who do not regularly attend healthcare facilities, longitudinal designs to track knowledge evolution over time, and intervention studies to evaluate the effectiveness of targeted educational programs about ovarian cysts.

Conclusion

The findings of this study indicated that the majority of women possessed a fair to good level of knowledge about ovarian cysts, with stronger understanding observed in the areas of symptoms and prevention. It is advised that policymakers and healthcare professionals develop focused educational initiatives to raise awareness, particularly concerning the causes, risk factors, and potential complications of ovarian cysts. Future research should explore the impact of educational interventions on improving long-term knowledge retention and behavioral outcomes. Additionally, integrating ovarian health education into routine maternal healthcare services may enhance early detection and management efforts across the community.

Statements and Declarations

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Data Availability Statement The data that support the findings of this study are available from the corresponding author upon reasonable request.

Patient consent statement Written informed consent was obtained from all participants before they filled out the questionnaires.

Clinical trial registration This study did not constitute a clinical trial and therefore did not require registration.

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