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PREVALANCE AND RISK FACTORS OF OVARIAN CYSTS AMONG WOMEN OF THE REPRODUCTIVE AGE IN LADY READING HOSPITAL, PESHAWAR, PAKISTAN

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ABSTRACT

An ovarian cyst is a pocket that grows in the ovary and is filled with fluid or semifluid solutions. Ovarian cysts are among the most frequent gynecological concerns affecting women of reproductive age, often linked with hormonal imbalances, lifestyle factors, and reproductive history. Despite their high prevalence, limited data is available in the local context to find the magnitude as well as associated factors. From May to August 2025, this cross-sectional study was carried out at Lady Reading Hospital's Radiology Department in Peshawar. Finding out how common ovarian cysts occur in women of reproductive age and the danger factors that go along with them was the goal. Cochran's formula was used to recruit 126 participants in total, with the following parameters set: 95% prevalence, 95% confidence interval along with 5% margin of error. Women between the ages of 15 and 60 who gave their informed consent were included; pregnant women, those with a history of ovarian cancer, oophorectomy, endocrine disorders, pelvic infections, incomplete records, or refusal to participate were excluded. Data were collected using a structured questionnaire divided into five sections: demographic profile, reproductive and menstrual history, medical and family history, lifestyle and risk factors, and clinical findings based on pelvic ultrasonography. Ethical clearance was obtained from the Institutional Review Board, and confidentiality was strictly maintained. Statistical analysis was carried out in SPSS version 27. Descriptive statistics (means, SD, frequencies, and percentages) shortened the data, while chi-square tests and cross tabulation determined associations and independent risk factors. A p-value <0.05 was considered statistically significant. The analysis revealed the 84.9% frequency of ovarian cysts in the study inhabitants and identified significant associations with demographic, reproductive, and lifestyle risk factors.

INTRODUCTION

An ovarian cyst is a pocket that grows in the ovary and is filled with fluid or semifluid solutions. Females between the ages of 18 and 44 who are of reproductive age are most likely to develop ovarian cysts. (Tashfeen et al., 2024). Ovarian cysts typically form during ovulation and are quite common. Every month, the ovary releases an egg, which is known as ovulation. Many women who have ovarian cysts are asymptomatic. Usually, the cysts are not harmful. (Cheryl et al., 2024). According to estimates, the incidence is roughly one in every 2600 live births. In the third trimester, fetal ovarian cysts are frequently reported. An approximated 2.6 out of 100,000 ladies have ovarian tumours during young age and young adulthood each year. About 10–30% of ovarian enlargements found in girls younger than 17 are cancerous, accounting for 1% of all early life cancers and 8% of paediatric abdominal tumour's. This can be difficult to identify and diagnose OCs early because patients might put off getting help until the tumor or cyst becomes large to show symptoms. It can be challenging to identify the root cause of pain when a patient visits a family physician or other primary care physician (PCP) as their initial point of contact Mariia and Melnyk, (2025).Throughout the menstrual cycle, the female reproductive system experiences complicated hormonal changes that expose the ovaries to the development of physiological (functional) cysts. These usually include corpus luteum cysts, which develop when the corpus luteum full up with fluid after ovulation, and follicular cysts, which arise when the dominant follicle fails to burst and give an egg. In addition to these functional variations, the overall burden of ovarian masses is also influenced by a variety of non-functional cysts, including endometriomas, cystadenomas, and dermoid cysts (mature cystic teratomas). Benign growths called cystadenomas can appear on the exterior. They may be filled with mucus or a clear, watery substance. Endometriomas are conditions where tissues that commonly develop inside the uterus may develop outside and stick to the ovaries. Endometriosis is the disorder that causes endometriomas. Women under 50 are more likely to develop endometriomas, which can cause painful periods. Because different cyst types have different clinical presentations and outcomes, epidemiological studies are crucial for guiding clinical practice and public health initiatives Andreas et al, (2021).Ultrasound is liberated of ionizing radiation and has potency resembling to that of CT in high-risk diagnosis Smith-Bindman et al, (2014). In images of ovarian follicles, the doctor finds it difficult to distinguish between the cystic and non-cystic areas. Interfollicular areas are, therefore, hard to identify because they blend in with their surroundings. Given how similar they appear, it could be difficult for a medical professional to distinguish between a cyst and a normal ovarian follicle. An important diagnostic tool for fetal ovarian cysts is ultrasound. (Rotar et al., 2022).On ultrasound, basic cysts are clear, distinct, echo lucent, round structures with back acoustic enhancement that has no inside flux on color Doppler US. Although the US is a great, low cost, and easily reachable tool for finding supposed cysts, CT or MRI may be needed for better diagnosing as the complicated or large sized cysts. A cyst can be detected on CT as a distinct rounded lesion with same approximated water attenuation Joseph et al, (2021). It is advised to use CT, MRI, and sonography to distinguish between benign and cancerous OC. While pelvic ultrasonography is thought to be the best way to identify ovarian cysts early on, it needs a full bladder in order to see the ovaries. Tumor markers and pelvic magnetic resonance imaging (MRI) will be required if an ultrasound scan finds a complex ovarian cyst Pramana et al, (2020). Simple adnexal cysts are found in 14% to 18% of postmenopausal women on ultrasound. The prevalence of CT, which includes both premenopausal and postmenopausal women, is 7% Boos et al, (2017).

METHADOLOGY

This research study was performed at the radiology department of Lady Reading Hospital, Peshawar. The research was carried out in the radiology department of the Lady Reading Hospital Peshawar between May 2025 and August 2025. We have calculated a sample size of 126 ovarian cysts patients through world health organization formula.The study included women aged 15 to 60 years who provided informed consent and were willing to undergo clinical assessment and pelvic ultrasound.

Participants had to be non- pregnant, medically stable, and without any history of oophorectomy. Women included were either visiting outpatient departments or identified through community screening and had no prior diagnosis of ovarian malignancy. Those with regular or irregular menstrual cycles were eligible, allowing the study to assess a wide range of potential risk factors related to ovarian cyst formation. Exclusion criteria deals with women below 15 or above 60 years, pregnant women, those with prior oophorectomy, cancer diagnosis or treatment, endocrine disorders, pelvic infections, incomplete records, or refusal to consent or undergo ultrasound. Sample collection was conducted at Lady Reading Hospital, Peshawar. We collected our data through a standard and valid questionnaire including three parts. The data analysis done by using SPSS software version 27.

RESULTS

A sum of 126 women enrolled in the study, with key demographic characteristics indicating that the majority were married (Mean = 1.59, SD = 0.49), residing in urban or semi- urban areas (Mean = 1.66, SD = 0.47), and having a moderate level of education (Mean = 2.31, SD = 1.22). Cross-tabulation of age and occupation showed most participants were housewives, particularly in the 20-35 year age groups, while servant and housemaid occupations were comparatively less frequent.

Table 4.1 : Mean, Median, Mode, St. Deviation ,Range for Demographic information

	tal status of patient	sidence of patient	Education level of patient
Mean	1.5952	1.6667	2.3095
Median	2.0000	2.0000	2.0000
Mode	2.00	2.00	1.00
Std. Deviation	.49281	.47329	1.22940
Range	1.00	1.00	4.00

Table No 4.1.2: Crosstabulation between different age group and their occupation

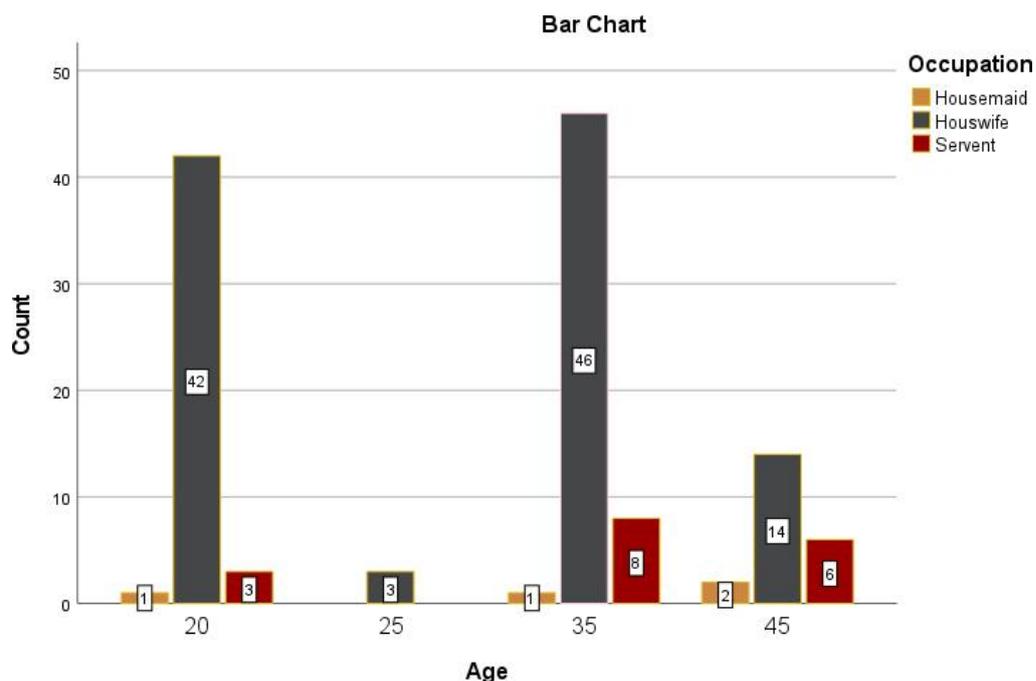|		Occupation			Total
		Housemaid	Housewife	Servant	
Age	20	1	42	3	46
	25	0	3	0	3
	35	1	46	8	55
	45	2	14	6	22
Total		4	105	17	126

Fig No 4.1.2.(a) : The bar chart illustrates cross tabulation age and occupation of the patients added into the study.

Table . 4.2.1: Descriptive Statistic of Continuous variables

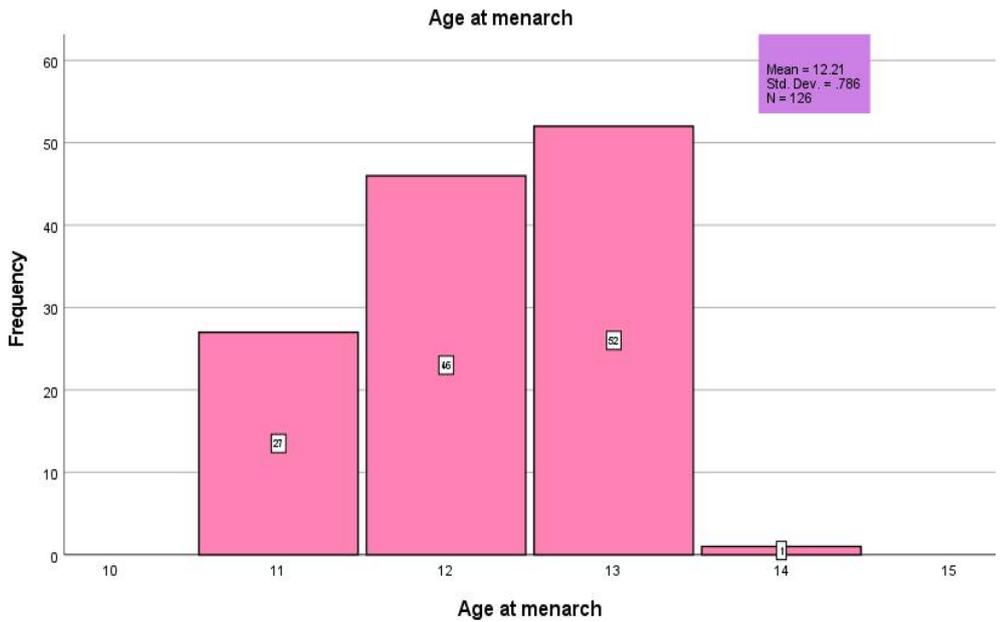| Variables	No	Range	Min	Max	Mean	Std. Deviation
Number of pregnancies	126	12	0	12	2.07	3.425
Number of children live births	126	11	0	11	1.79	2.983
Average cycle length	126	30	20	50	32.94	6.847
Age at menarche	126	3	11	14	12.21	.786
Valid N cases	126					

Fig No 4.2.1(a): The bar chart illustrates the frequency of age at menarche among the patients included in the study.
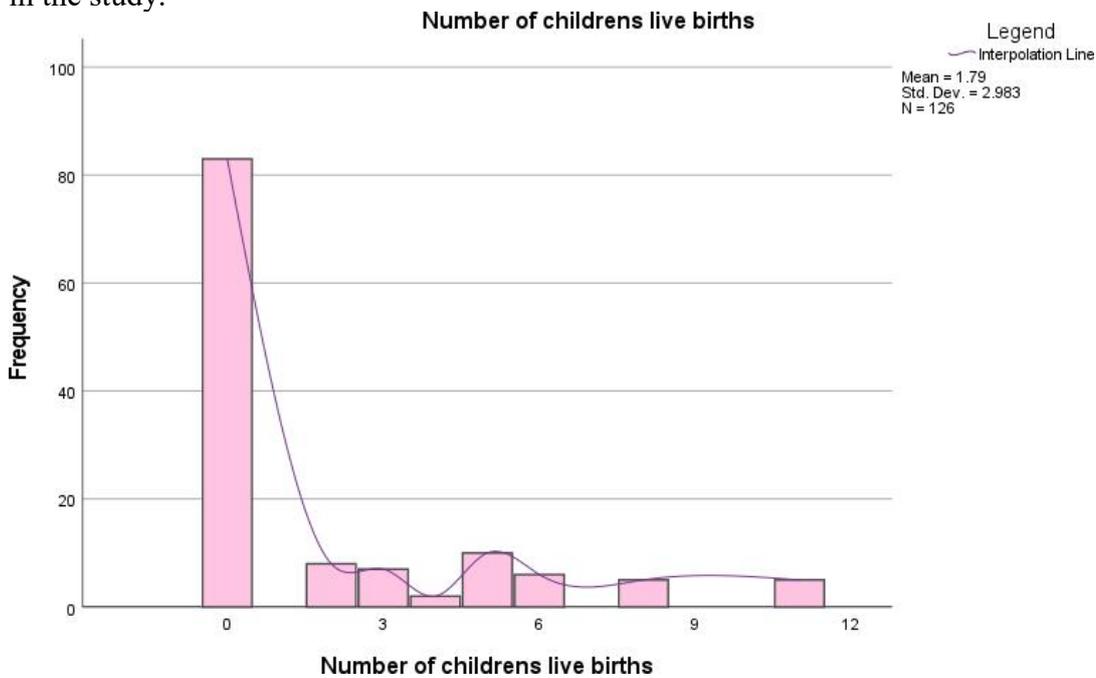
Fig No 4.2.1(b) : Histogram illustrates the frequency of number of children's live birth among the patients included in the study.
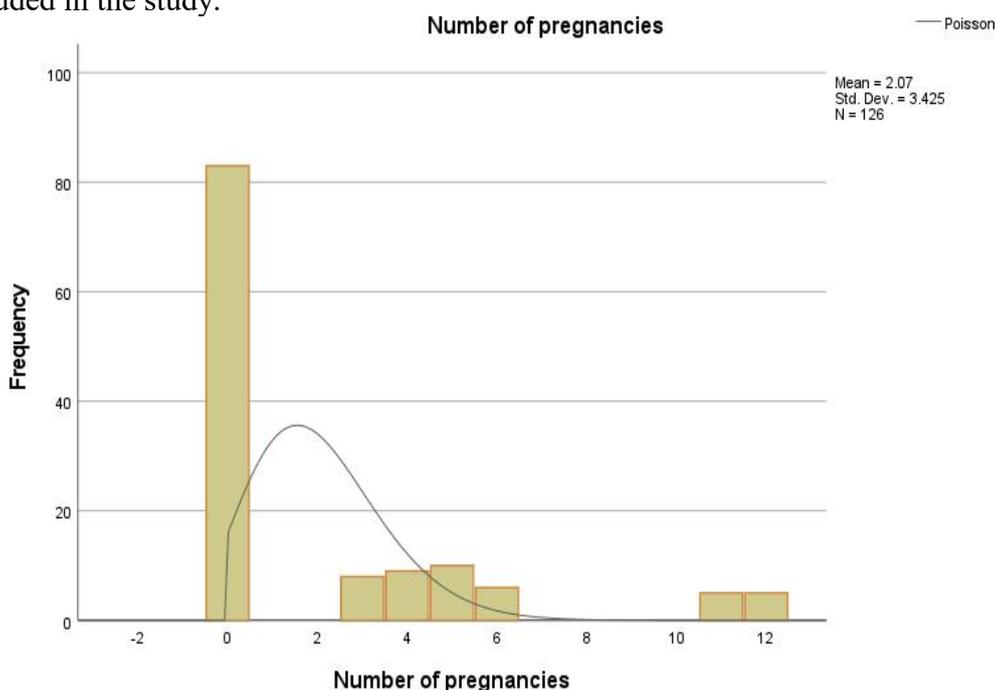

Fig No 4.2.1(b): Histogram chart illustrates the frequency of number of pregnancies among the patients included in the study.

Table No 4.2.2: Number of pregnancies between married and unmarried women finding it out through compare means.

Marital status of patient	Mean	N	Std. Deviation
single	.00	51	.000
married	3.48	75	3.853
Total	2.07	126	3.425

Fig No 4.2.1(c): The histogram shows that most patients had an average menstrual cycle length between 28 and 40 days, mean of 32.94 days and SD 6.85, indicating a moderate change in cycle lengths within the study population.
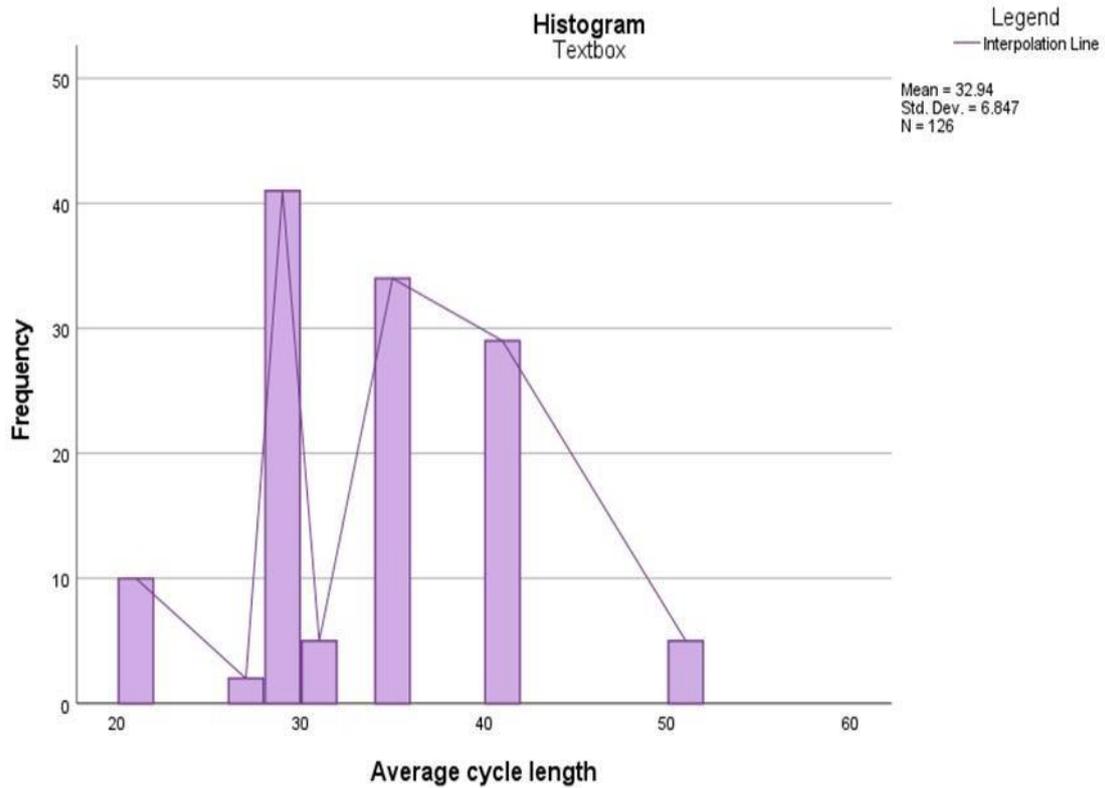
Fig No 4.2.1(c): The histogram shows that most patients had an average menstrual cycle length between 28 and 40 days, mean of 32.94 days and SD 6.85, indicating a moderate change in cycle lengths within the study population.

Table. 4.2.3: Descriptive statistics of menstrual health parameters among 126 patients, including menstrual cycle regularity, bleeding duration, dysmenorrhea, and infertility history;

Variables	Menstrual cycle of patient	Duration of bleeding	History of dysmenorrhea	History of infertility
Mean	1.6508	2.7460	1.4921	1.6746
Median	2.0000	3.0000	1.0000	2.0000
Mode	2.00	3.00	1.00	2.00
Std. Deviation	.47862	.63165	.50193	.47039
Range	1.00	2.00	1.00	1.00

Menstrual cycle of patient
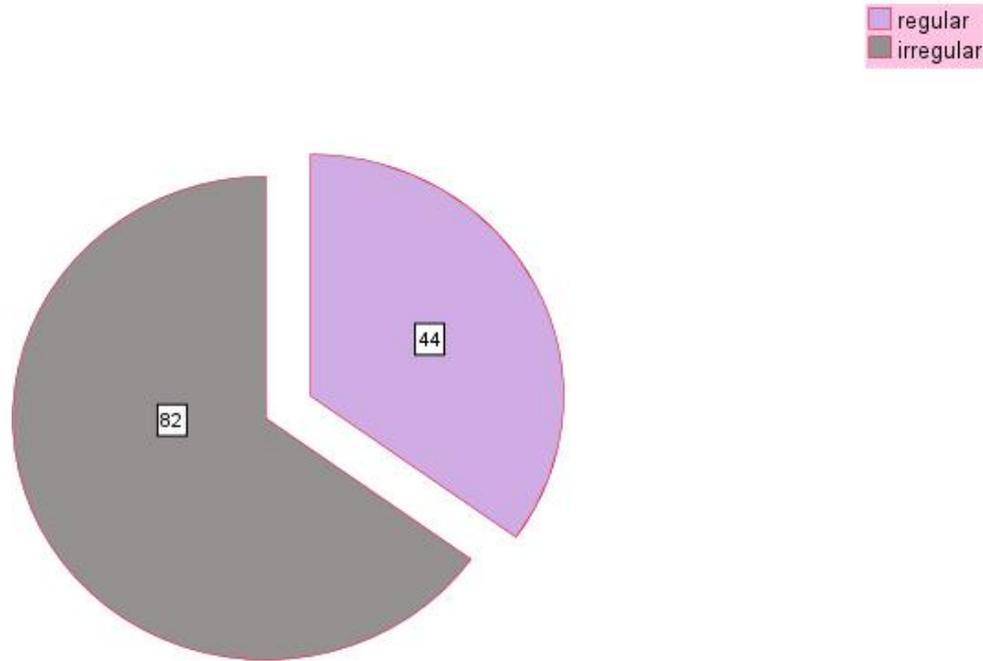
The pie chart outlines that most patients (65.1%) reported irregular menstrual cycles, while 34.9% had regular cycles, highlighting a notable prevalence of menstrual irregularities among the study population as shown in Figure 4.2.3(a).

4.1. Lifestyle and Risk Factors:

Table. 4.4.1: Descriptive statistics of lifestyle factors among 126 patients, including physical activity, smoking and alcohol use, and dietary habits such as fast food and fruit/vegetable intake.

Descriptive statistics	Physical activity level	Smoking status	Alcohol use	Intake of fast food	Intake of fruits or vegetables
Mean	2.1429	2.9444	1.9683	2.5952	1.9524
Median	2.0000	3.0000	2.0000	3.0000	2.0000
Mode	2.00	3.00	2.00	3.00	2.00

Table No 4.5.4: Specify cysts type if known and difficulty conceiving Crosstabulation

Variables Names		Difficulty conceiving		Total
		yes	no	
Specify cysts type if known	Cystadenoma	5	0	5

		yes	no	Total
	Dermoid cyst	7	0	7
	Endometriomas	12	2	14
	Functional cysts	19	37	56
	Haemorrhagic cysts	0	6	6
	Large functional cysts	3	5	8
	PCOS	1	13	14
	Unknown	0	16	16
Total		47	79	126

Table No 4.5.5 : Specify cysts type if known and bloating Crosstabulation

Variables Names		Bloating		Total
		yes	no	
Specify cysts type if known	Cystadenoma	0	5	5
	Dermoid cyst	0	7	7
	Endometriomas	12	2	14
	Functional cysts	46	10	56
	Haemorrhagic cysts	6	0	6
	Large functional cysts	0	8	8

	PCOS	1	13	14
	Unknown	0	16	16
Total		65	61	126

Table No 4.5.6: Specify cysts type if known any symptom of lower abdominal pain Crosstabulation

Variables Names		Symptom of lower abdominal pain		Total
		yes	no	
Specify cysts type if known	Cystadenoma	5	0	5
	Dermoid cyst	7	0	7
	Endometriomas	14	0	14
	Functional cysts	47	9	56
	Haemorrhagic cysts	6	0	6
	Large functional cysts	8	0	8
	PCOS	14	0	14
	Unknown	16	0	16
Total		117	9	126

Table No 4.5.7: Do you have polycystic ovarian syndrome (PCOS) and Irregular menstruation Crosstabulation

Variables		Irregular menstruation		Total
		yes	No	
Do you have polycystic ovarian syndrome (PCOS)	YES	31	0	31
	NO	43	44	87

	Total	74	44	118

A statistically notable correlation was found among the 2 variables, $\chi^2(1) = 25.000$, $p < .001$. The assumption of minimum cell number was contented, with all cells having expected numbering higher than 5.

Table No 4.5.8: Cross Tabulation between specific cysts types with average cycle length.

Variables Names		Average cycle length							Total
		20	26	28	30	35	40	50	
Specify cysts type if known	Cystadenoma	1	0	0	0	4	0	0	5
	Dermoid cyst	0	0	0	0	2	4	1	7
	Endometriomas	4	0	0	1	2	6	1	14
	Functional cysts	4	2	30	3	12	5	0	56
	Haemorrhagic cysts	0	0	0	0	0	3	3	6
	Large functional cysts	1	0	1	0	4	2	0	8
	PCOS	0	0	0	0	6	8	0	14
	Unknown	0	0	10	1	4	1	0	16
Total		10	2	41	5	34	29	5	126

Cystadenomas and dermoid cysts, though fewer in number, were predominantly associated with longer cycles (35–40 days). Interestingly, haemorrhagic cysts, while rare, were linked exclusively to the longest cycle lengths (40 and 50 days), suggesting potential associations with extended menstrual intervals.

Variable	N	Mean
Any diagnosis of ovarian cysts	126	1.1508

Table 4.5.10

The commonness of OC among women of reproductive age in this review was found to be 84.9%.

DISCUSSION:
The present study explored the demographic, reproductive, and clinical characteristics of women diagnosed with ovarian cysts, with the aim of identifying key patterns and implications for reproductive health. The findings provide valuable insight into the prevalence, symptom profiles, and management approaches associated with different types of cysts. By examining these factors in relation to the participants' backgrounds and health histories, this discussion highlights important associations, compares the results with existing evidence, and considers their broader clinical and public health significance.Nearly all participants underwent pelvic ultrasound, with 86% receiving a confirmed diagnosis of ovarian cysts. This high diagnostic yield supports the recommendation of ultrasound as the gold standard for ovarian mass evaluation. NICE, (2020). Ultrasound not only differentiates between functional and pathological cysts but also aids in determining whether conservative management or surgical intervention is warranted. Management strategies in this study were predominantly conservative. About half of the women were managed with medications, while observation and surgery were recommended in fewer cases. This aligns with international guidelines, which suggest that most simple and functional cysts resolve spontaneously, and medical management should be prioritized over surgical procedures ACOG, (2016).

Conclusion
Ovarian cysts are a major gynecological concern among women of reproductive age, influenced by lifestyle, reproductive, and demographic factors. The prevalence of OC in the midst of women at reproductive age in this study was found to be 84.9%. Married women with OC were mostly to live in urban or semi-urban areas and had a moderate level of education. Functional cysts were the most common, followed by polycystic ovarian syndrome (PCOS) and endometriomas. The most frequently reported symptoms were infertility, irregular menstruation, and abdominal pain. Housewives or women with fewer educational opportunities often presented with advanced or complex cysts.

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