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Prevalence of cystic ovary in women with DM and other risk factors

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***Abstract*---**Three hundred women were enlisted from among the female patients of Baghdad Province clinics for the research. In accordance with the PCOS diagnostic criteria provided by the Iraqi Ministry of Health, all cases considered to be PCOS patients exhibited at least one of the following symptoms: oligomenorrhea, amenorrhea, or abnormal uterine bleeding; hyperandrogenism; or polycystic ovaries. In order to establish the diagnosis, it is necessary to rule out other potential causes of hyperandrogenism and polycystic ovaries. Patients with mental disorders, dementia, Alzheimer's, Alzheimer's, hepatitis, HIV/AIDS, and malignant tumors were not included in the study. Women averaged 26.23 (4.88), 160.05 (8.42), and 63.96 (13.15) years old. There was a mean age of menarche of 12.69 (1.474) years. Among the women, 153 (50.8%) were doctors, while 113 (37.54%) were students at universities. Sixty-nine out of 179 students (59.46%) achieved graduation. Of these women, only 118 (38.1%) have PCOS. In addition, 112 (37.0%) think that ultrasonography is the gold standard for diagnosing PCOS. Inconclusion, there was no statistically significant difference in the total number of births between the "No PCOS group" and the "PCOS group," according to the results of this research. There was no noticeable change in menstruation onset. There was a statistically significant difference between the "No PCOS group" and the "PCOS group" with regard to the frequency of MC. There is no statistically significant difference between the "No PCOS group" and the "PCOS group" when it comes to daily activities, depression, stress or nervousness, family history of PCOS (mother or sister), diabetes Mellitus, or history of mother MC; however, there is a statistically significant difference when it comes to diet system, which is around the significant value. However, there were notable differences between the groups with regard to familial issues and a history of diabetes.

***Keywords*---**PCOS, DM, women, risk.

Introduction

Globally, the prevalence of diabetes mellitus (DM) is rising. This also applies to gestational diabetes mellitus (GDM), a form of diabetes in pregnant women [1]. Gestational diabetes mellitus is defined as any degree of glucose intolerance with beginning or first detection during pregnancy, perhaps from exacerbated physiological alterations in glucose metabolism, as opposed to overt diabetes mellitus [2, 3]. According to the existing data, GDM may have short- or long-term negative effects on both mothers and their kids [4,5,6]. Additionally, data showed that GDM is among the world's top causes of illness and death for both mothers and newborns [7]. Numerous epidemiological studies have demonstrated the high frequency of gestational diabetes mellitus worldwide 5.4-14.8% [7,8,9,10].

Polycystic ovary syndrome (PCOS), one of the most prevalent endocrine conditions affecting women during their reproductive years, is a syndrome of ovarian dysfunction characterized by chronic anovulation, hyperandrogenism, and typical morphologic changes of the ovaries as determined by ultrasonographic examination [11,12,13]. Affected patients frequently report with symptoms and indicators of menstruation irregularity, obesity, and infertility [2], and the incidence of PCOS is estimated to be between 5.00% and 14.00% among women throughout the reproductive years [14,15,16]. According to earlier research, women with PCOS are more likely to acquire GDM [17,18,19,20,21,22]. An increased risk of unfavorable pregnancy outcomes may exist in women who have both PCOS and GDM [23].

Preeclampsia and pregnancy-induced hypertension are thought to be more common in women with PCOS and GDM, as is the risk of premature delivery [24]. Furthermore, neonatal hyperbilirubinemia [24], metabolic, and cardiovascular disorders [25] may be more common in babies of mothers who have PCOS and GDM together. We do not precisely know how many PCOS patients may acquire GDM, despite the fact that prior research has demonstrated that PCOS is a predictor of GDM. Currently, studies have found a wide range in the incidence of GDM in women with PCOS, ranging from 4.12% to 59.50% [26, 27]. Additionally, many variables have been linked to the prevalence of GDM in women with PCOS, including age, overweight, obesity, and smoking, but the findings varied across studies [28,29,30,31]. This investigation looked at the cumulative incidence of GDM in PCOS-positive women.

Materials and Methods

Direct in-person interviews using a questionnaire administered by the interviewer to gather demographic and risk factors like age, marital status, pregnancy, gender, occupation type, address, history of hypertension, duration of T2DM, prior history of CVD, family history of first-degree relatives with T2DM, and smoking habits.

Results

The demographic information for the study participants is shown in Table 1. Women's average ages were 26.23 (4.88), 63.96 (13.05), and 160.05 (8.42), respectively, for height and weight. The average age of menarche was 12.69 (1.474). Medical doctors made up the majority, with 153 (50.8%), followed by college students with 113 (37.54%). 179 of them (59.46%) graduated from college. Only 118 (38.9%) of these women have PCOS. And the majority of them (37.0%) think that ultrasound 112 was used to diagnose PCOS.

Table 1. Demographic data for the study participants

Demographic data	N (%) OR Mean (± SD)
Age	26.23 (± 4.88)
Height	160.05 (± 8.42)
Weight	63.96 (± 13.05)
Menarche age	12.69 (± 1.474)
Occupation	
○ College Professor	1 (0.33%) o College student 113 (37.54%)
○ Employee	24 (7.97%) ₀ Engineer 2 (0.66%) ₀ Housewife 5 (1.66%) o Medical assist 3 (0.99%) o Medical doctor 153 (50.8%)
Educational status	
○ College student/secondary	116 (38.53%) ₀ Graduate 179 (59.46%) o Secondary 6 (2%)
PCOS	
₀ YES	118 (38.9%) ₀ NO 185 (61.1%)
Diagnosis of PCOS	₀ Ultrasound 112 (37.0%) o Delayed MC 15 (5.0%) ₀ Hormones 20 (6.6%) o Appearance of coarse hair in unwanted places 18 (5.9%)

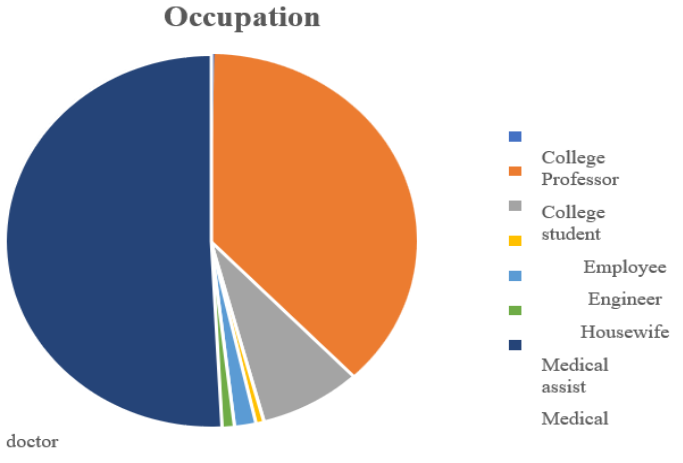

Figure 1 represents the occupation status. The majority of women was medical doctor 153 (50.8%) and college student 113 (37.54%).

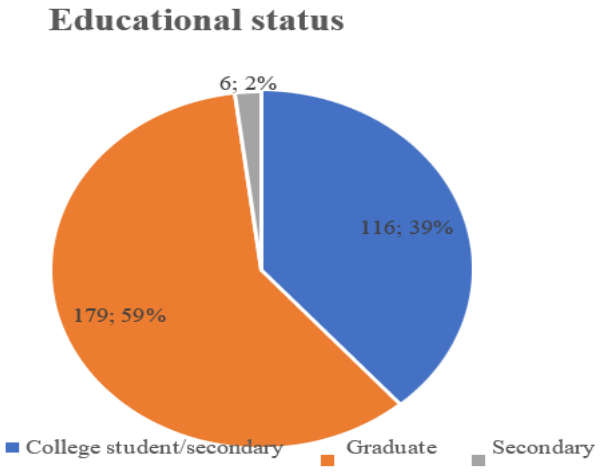

Figure 2 represents the educational status of women. Most of them was graduated 179 (59.46%)

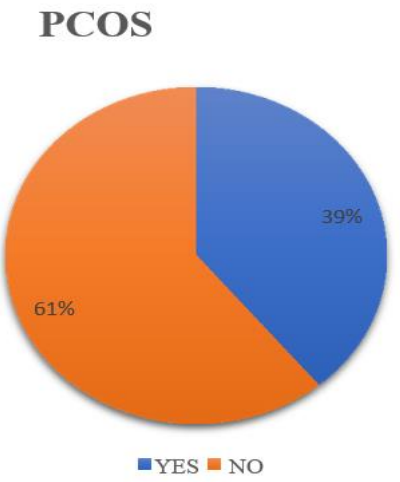

Figure 3 shows frequency of women who have PCOS. Among these women only 118 (38.9%) have PCOS

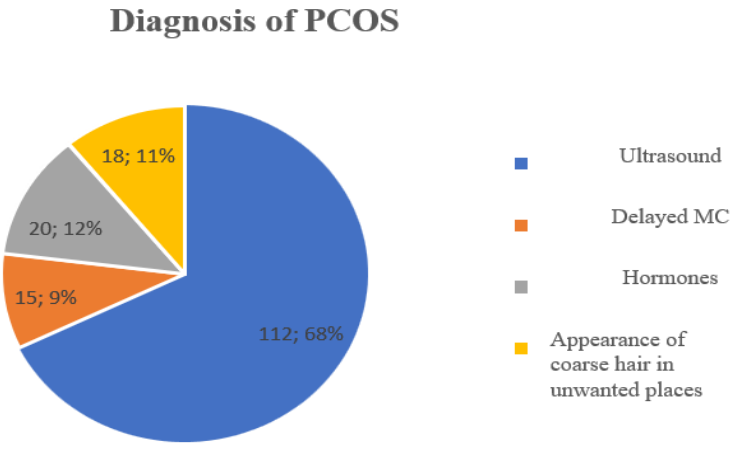

Figure 4 represent the diagnosed of PCOS. Most of them believe that the diagnosis of PCOS done by ultrasound 112 (37.0%)

According to table 2's findings, there is a statistically significant difference in body mass index between the "No PCOS group" and the "PCOS group" (p≤ 0.001). Additionally, there is no statistically significant difference in occupation status between "No PCOS group" and "PCOS group" (p = 0.535). Additionally, the differences in educational level and marital status between the "No PCOS group" and the "PCOS group" are not statistically significant (p values = 0.156 and 0.335, respectively).

Table 2 comparison of Body Mass Index, Occupation, Educational status, and Marital state in terms of incidence of PCOV.

Factors		PCOS		P-value
		No PCOS	PCOS	
Body Mass Index	Normal	102	47	<0.001
	Overweight	65	46	
	Obese	7	22	
	Morbid obesity	0	2	
	Underweight	6	4	
Occupation	College Professor	1	0	0.535
	College student	73	40	
	Employee	17	7	
	Engineer	1	1	
	Housewife	3	2	
	Medical assist	2	1	
	Medical doctor	83	70	
Educational status	College student/secondary	77	39	0.156
	Graduate	99	80	

	Secondary	4	2	
Marital state	Unmarried	127	79	0.335
	Married	53	42	

According to table 3's statistics, there is no statistically significant difference in the number of pregnancies between the "No PCOS group" and the "PCOS group" (p=0.563). Age at menarche not significantly different, p=0.412. There was a statistically significant difference between the "No PCOS group" and the "PCOS group," with the "No PCOS group" having a greater frequency of MC on a regular basis. And when comparing the two groups using the diet approach, p=0.055 comes close to being significant. Daily activities, sadness, stress or anxiety, family history of PCOS (mother or sister), diabetes mellitus, and maternal MC history are not statistically different from "No PCOS group" and "PCOS group." On the other hand, there were notable differences between the two groups in terms of family issues and DM family history.

Table 3. Risk factor of PCOS

Factors		PCOS		P-value
		No PCOS	PCOS	
Number of pregnancies	0	1	0	0.563
	1	18	13	
	2	12	14	
	3	10	5	
	4	1	0	
	5	1	0	
	6	3	1	
	None	8	9	
	unmarried	126	78	
Menarche	Up to 12 years	75	60	0.412
	At 12-15 years	82	47	
	More than 15 years	20	13	
Frequency of MC	Regular (every 21-35) days	172	68	<0.001
	Irregular	5	25	
	Every 2-3 months	1	22	
	Every 6 months and more	0	5	
	5	1	0	
Diet system	Sweats and sugars	82	73	0.055
	Stimulants like tea and coffee	42	23	
	Drinking much green tea	7	0	
	Others like "irregular diet, or following specific diet"	30	21	
Daily activities	On regular exercise	11	3	0.135
	Active person daily	48	31	
	Home activities and cleaning	54	30	
	Inert and sleep a lot	61	56	
Depression, stress or		4	0	

nervousness	No depression, stress or nervousness	14	7	0.198
	Depression, stress and nervousness	162	114	
Family problems	No family problems	127	68	0.022
	Having family problems	50	52	
Family history of PCOS (mother or sister)	No family history of PCOS	132	77	0.176
	Family history of PCOS	46	43	
Diabetes Mellitus	Not diabetic	176	120	0.348
	Diabetic	1	1	
Family history of DM	Negative family history of DM	105	57	0.026
	Positive family history of DM	71	64	
History of mother MC	The mother didn't experience irregular MC	142	106	0.089
	The mother experienced irregular MC	35	15	

Discussion

PCOS is an endocrine system condition that affects its sufferers for the rest of their lives and is defined by abnormal follicular development. According to reports, 5%–10% of women of reproductive age have PCOS (32). The condition, which is one of the main causes of anovulatory infertility, is characterized by oligomenorrhea or amenorrhea, unovulation, insulin resistance (IR), hyperandrogenemia, and ovarian cysts. Women's physical and emotional health are negatively impacted by it. The cause of PCOS is unclear, and the incidence of the condition varies depending on the sufferers' genetic make-up and living conditions.

The etiology of PCOS is uncertain due to its complexity. One research claims that the interplay of hereditary and environmental variables is what causes it (33). Due to the fact that PCOS patients share a strong clinical manifestation of hyperandrogenemia, male hormone has gained widespread recognition as a biomarker for PCOS in recent years. In addition to hyperandrogenemia, PCOS is linked to obesity, type 2 diabetes, and insulin resistance, all of which lead to an increase in ovarian androgen production. Furthermore, some research indicates that teenage obesity raises the likelihood of developing PCOS later in life and that insulin resistance and the ensuing hyperinsulinemia may directly or indirectly cause LH production, which leads to hyperandrogenemia (34). There is hypothesis that obesity, insulin resistance, and hyperandrogenism were all possible risk factors for PCOS since obesity has been shown to be the main risk factor for type 2 diabetes.

The results of the research indicate that irregular periods, a family history of infertility and diabetes, the mother's irregular periods, an unpleasant mood, and a lack of physical exercise are all PCOS risk factors. The majority of PCOS patients have irregular menstruation throughout adolescence, and irregular menstruation and anovulation may be caused by any component of the hypothalamic-pituitary-gonadal axis being dysregulated (35). Furthermore, our research supports the notion that irregular menstruation is closely related to PCOS. Several of our individuals had IR, which was shown to be a key cause of

PCOS. According to some research, up to 70% of people with PCOS had IR (36). The likelihood of getting PCOS is also markedly increased by a family history of diabetes, especially an inherited metabolic disease. This supports the findings made by Roe et al. in their 2013 study (37).

Studies using psychological assessment techniques in both the United States and other countries have uncovered serious mental or psychological abnormalities in PCOS patients, suggesting that an unhappy disposition may potentially raise the risk of PCOS. Similar results were reported by Xiao et al. in their study (38). Uneven accumulation of fat throughout the body, brought on by a lack of movement, is a major contributor to the development of centripetal obesity. Obese patients with polycystic ovary syndrome (PCOS) can expect significant improvement in metabolism and internal secretion after three months of combining medicine with kinesitherapy and personalized nutrition therapy, as recommended by one study (39).

Conclusions

There was no statistically significant difference in the total number of births between the "No PCOS group" and the "PCOS group," according to the results of this research. There was no noticeable change in menstruation onset. There was a statistically significant difference between the "No PCOS group" and the "PCOS group" with regard to the frequency of MC. And when comparing the dietary systems of the two groups, the differences are rather substantial. No statistically significant difference was found between the "No PCOS" and "PCOS" groups with respect to quality of life measures such as sadness, stress, and nervousness, PCOS in the mother or sister, diabetes Mellitus, and maternal MC history. However, there were notable differences between the groups with regard to familial issues and a history of diabetes.

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