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## Knowing About PCOS among Iraqi Females in Some Collage of Tikrit Universities Students

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**Abstract: Background:** *According to Rotterdam Diagnostic criteria, polycystic ovarian syndrome (PCOS) affects 4–10% of women worldwide and may affect 15–21% of them. With significant effects on women's worldwide reproductive, metabolic, and psychological health, it is becoming a significant public health concern. It has three major features which are cysts in the ovaries, high levels of male hormones and uneven Periods.*

**Aim:** *The purpose of the study was to determine how much knowledge Iraqi female university students have about the polycystic ovarian syndrome (PCOS), as well as to identify the sources of such knowledge and inform them of the condition's prevalence.*

**Method:** *Survey research data was collected January 18, 2023 through the publication of A Google form on social media, whatsapp, telegram and link sent to all files asked the groups of students in different disciplines all the questions of the form three questions about characteristics features includ (age, marital status) and the remaining questions (15) were about Their information about PCOS Survey research ended on February 25, 2023.*

**Results:** *The researches received 130 surveys from different Iragi Governorates.*

*90.8% age from (20-30) years. 66% thought that cause of PCOS is hormonal. 87% thought that gynaecologist is specialist in treatment of PCOS.*

*98.5% thought that PCOS affected the menstrual cycle and 1.5% thought it did not. 76.2% said that PCOS is not considered chronic and 23.8 said that it is. 86.2% said lifestyle affects PCOS and 13.8% said no. 93.1% thought that PCOS affects the fertility rate and only 6.9 said it does not.*

**Conclusion** *This study demonstrates that young Iraqi participant women (aged 20-40) had good knowledge of the causes and symptoms of PCOS but poor knowledge of the specialists required to treat the condition. The majority of participant women had unclear knowledge of the proper treatment, and about one-third of participant women obtained their information from social media.*

**Keywords:** *PCOS, CVD, Qol, LH and FSH.*



## 1. INTRODUCTION

According to Rotterdam diagnostic criteria, polycystic ovarian syndrome (PCOS) affects 4–10% of women worldwide and may affect 15–21% of them <sup>[1]</sup>.

It is growing in importance as a global public health issue that has a significant impact on women's reproductive, metabolic, and psychological health. It has three key characteristics. It can include irregular periods, excessive amounts of male hormones, and ovarian cysts <sup>[2]</sup>.

The word polycystic indicates multiple cysts or many cysts that each one contains an immature egg. Regarding that, ovulation cannot be triggered as the eggs never mature enough <sup>[3]</sup>. The lack of ovulation alters levels of estrogen, progesterone, FSH, and LH. Androgen levels will be higher than usual, while estrogen and progesterone levels are lower than usual <sup>[4]</sup>.

Currently, the Rotterdam Criteria is used for diagnosing PCOs, which states that any two of the following characteristics must be present to make the diagnosis of PCOS: anovulation/oligo-ovulation, hyperandrogenism, and the presence of polycystic ovaries on ultrasound <sup>[3]</sup>.

PCOS's etiology is uncertain. Numerous studies imply that PCOS may be caused by innate abnormalities of ovarian steroidogenesis and follicular development.

The syndrome is associated with chronically rapid gonadotropin-releasing hormone (GnRH) pulses, an excess of LH, and inadequate FSH secretion in addition to excessive ovarian androgen production and ovulatory failure <sup>[5]</sup>.

Insulin plays a significant role, either directly or indirectly, in PCOS etiology. In fact, higher circulating androgen levels have been found in 80–90% of PCOS women with oligomenorrhea. Insulin directly stimulates ovarian theca cells to promote the synthesis and release of androgens.

High glucose levels and insulin indirectly impede the hepatic production of sex hormone-binding globulin (SHBG), increasing the amount of bioavailable circulation free-androgens as a result <sup>[7]</sup>.

The most common symptoms of PCOS include irregular periods, weight gain, exhaustion, and low energy. They can include menstrual cycles that are irregular or nonexistent (characterized by erratic menses that occur at intervals of less than 21 days or greater than 35 days). In addition, hirsutism, thinning hair (or thinning hair that is only noticeable on a certain part of the head), the difficulties of pregnancy, acne and other skin conditions like dark spots, pelvic pain throughout menstruation, frequent and chronic headaches, voice changes, and sleep problems <sup>[8]</sup>. It is possible to distinguish between polycystic ovarian syndrome's short-term and long-term problems. Early effects include infertility and obstetric problems. Cardiovascular risk: a long-term consequence. Traditional CVD risk factors such as hypertension, hyperglycemia, dyslipidemia, obesity, and diabetes were more prevalent in PCOS-affected women. Cancer Risk: PCOS is thought to be a lifelong multi-systemic and



multidimensional disorder with a higher risk of acquiring cancers such endometrial, ovarian, and breast cancer as well as psychological issues and a lower quality of life (QoL) compared to women who are healthy. Between 14% and 67% of PCOS patients report having depression, and they are four times more likely to have depressive symptoms than control women of the same age <sup>[9]</sup>.

There are a number of strategies to treat and manage PCOS even though there is no known cure for it. If a girl is overweight, losing weight can help alleviate many of the health issues related to PCOS. In some cases, weight loss alone can help hormone levels return to normal, causing many symptoms to go away or become milder. Exercise and a healthy diet can help prevent weight gain <sup>[10]</sup>.

Teenagers are becoming more aware of PCOS, and there has been an increase in PCOS diagnoses as well as the prevalence of co-morbid conditions like type 2 diabetes and obesity. The Poly Cystic Ovaries Syndrome is thought to affect more women than any other endocrine condition <sup>[11]</sup>.

### **Aim of Research**

The purpose of the study was to determine the prevalence of polycystic ovarian syndrome (PCOS) among female university students in Iraq and to determine the level of knowledge among those students.

### **Method and Data Collection**

The study based on questionnaire were collected by posting a Google form on social media, whatsapp, telegram and link sent. We asked groups of students in various disciplines all questions which is highly confidential excluding any specific personal information for reasons of confidentiality and to encourage them to answer the questionnaire freely. Survey take one month and seven days, from January 18, 2023 to February 25, 2023 through it, female students of different ages, marital statuses, and colleges submitted the questionnaire until reaching “130 answers,” which was the end point. The data collection is then shown to us according to the questionnaire formula as results

### **Results of the Study**

This chapter provides a descriptive study of the sample's sociodemographic characteristics, age, educational attainment, and marital status. It also discusses the characteristics of PCOS, the degree to which university students are aware of its symptoms, and how PCOS menstrual cycle is affected. This chapter also determines the relationship between PCOS and obesity, insulin resistance, DM type 2 and lifestyle. The present study's data were analyzed using statistical techniques, and they were then changed and interpreted. These findings are based on how research participants responded to the survey.

### **Part one: Socio-Demographic Characteristic:**

130 surveys were sent to the researchers, and 90.8% of them were from people in their 20s to 30s, 6.2% from 30 to 40, and 3% from 40 to 50. About 45.4% of people have a scientific



college, 32.3% a college of education, 18.5% an engineering college, and 3.8% a college of business and economics. 27.7% of them were married, while 72.3% of them were unmarried.

Table 1: Characteristic of participants

Parameter		%
Age	20-30	90.8%
	30-40	6.2%
	40-50	3%
Marital status.	Single	72.3%
	Married	27.7%
College	College of science	45.5%
	College of education	32.3%
	College of engineering	18.5%
	College of administration and economics	3.8%

**Part two: Knowledge about PCOS:**

**What is the cause of PCOS?**

During the survey about people's perception of PCOS, whether it is genetic or otherwise, respondents say that 9% of causes genetic, 66% of causes hormonal, 12% others cause and 13% They don't know.

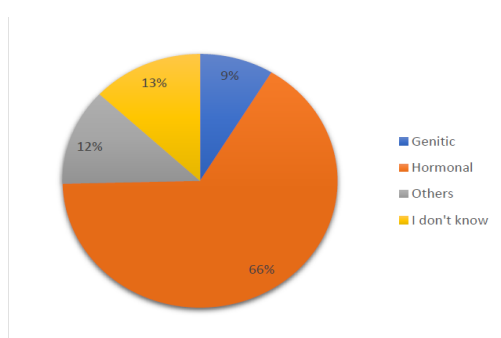


Fig.4.: % of participants according to their information about the reason for PCOS.

**Who do you Think that Specialised in Treatment of PCOS?**

When asked who, in their opinion, focuses on polycystic ovarian syndrome treatment, the results were 87% gynaecologist, 11% Endocrinologist and 2% Pharmacist specialised in treatment of PCOS.

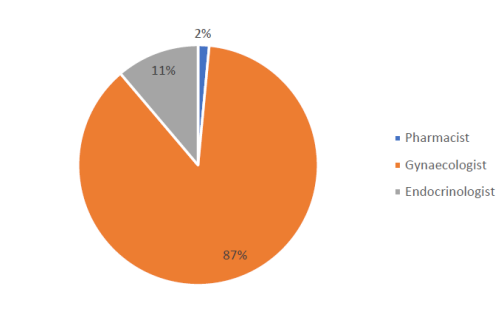


Fig. 5. % of participants according to their information about the treatment of PCOS.

### What is Needed for the Treatment of PCOS?

People believe that, 45% refer to self-lifestyle as treatment, 34% need drug treatment, 12% need symptomatic treatment regardless of the cause and 9% need supplementation as treatment.

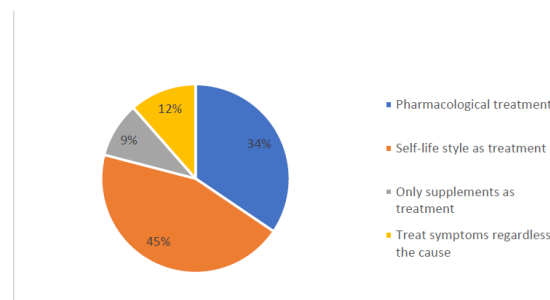


Fig.6. % of participants according to their information about needed for the treatment of PCOS.

### What is the Source of Your Information?

We also asked about the source of the information, so the results were 36.9% from social media, 28.5% from a doctor, 11.5% from Pharmacist 10.8% of relatives, 7.7% of friends and 4.6% of nurses.

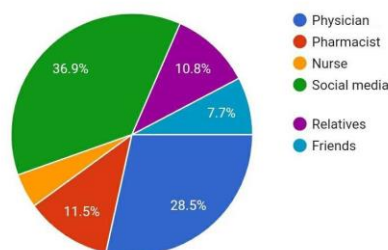


Fig.7. % of participants according to their source of information about PCOS.

### Is Acne one of PCOS Symptoms?

When asked if acne is a symptom of PCOS the results were 55.4% thought that acne is symptom of PCOS and 44.6% said the opposite.

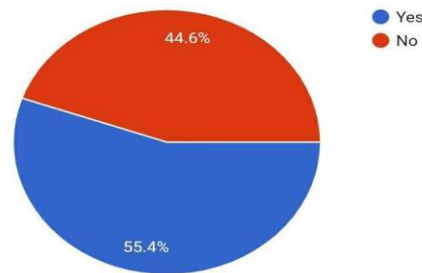


Fig.8. % of participants who thought of the participants who thought that acne is a symptom of PCOS.

### Is hirsutism one of PCOS symptoms?

When asked if hirsutism is a symptom of PCOS the results were 79.2% thought that hirsutism one of PCOS symptoms and 20.8% said no.

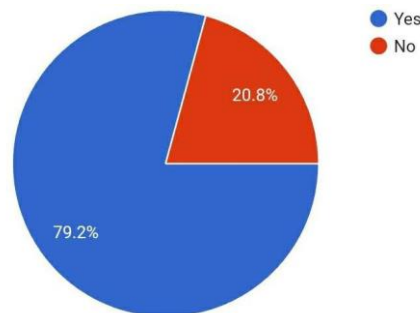


Fig.9. % of participants who thought of the participants who thought that hirsutism is a symptom of

### Is acantosis Nigricans of PCOS symptoms?

When asked if acantosis nigricans was a symptom of PCOS the results were 54.6% thought that acantosis Nigricans of PCOS and 45.4% said the opposite.

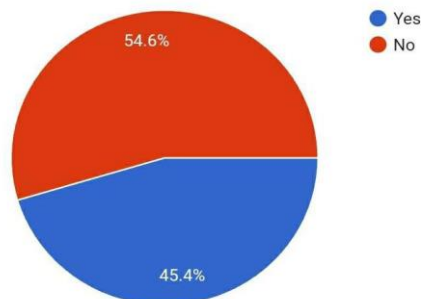


Fig.10. % of participants who thought of the participants who thought that acantosis nigricans is a symptom of PCOS.

### Do you think that PCOS related to obesity?

When asked do you think PCOS is related to obesity, the results were 76.9% thought that obesity related and 23.1% didn't.

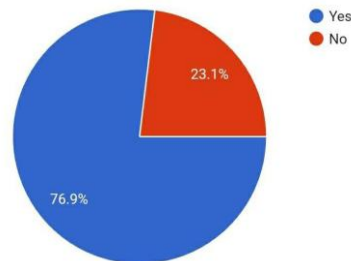


Fig.11. % of participants who thought obesity related to PCOS.

### Is PCOS affecting menstrual cycle?

When asked if PCOS affects the menstrual cycle, the results were 98.5% of the participants said yes to the impact of the menstrual cycle with PCOS.

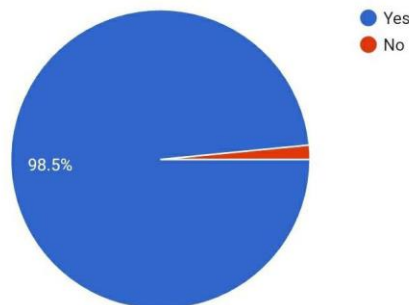


Fig.12. % of participants who thought PCOS affect on menstrual cycle.

### If your answer about above question is Yes, do you think PCOS affects on frequency of menstrual cycle?

When asked if your answer about above question is Yes, do you think PCOS affects on frequency of menstrual cycle, the results were 97.7% of participants said yes and just 2.3% didn't.

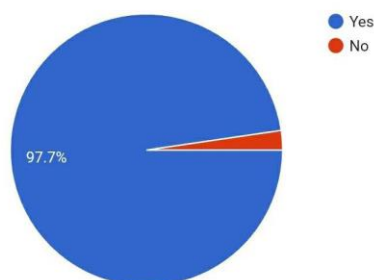


Fig.13. % of participants who thought PCOS affect on frequency of menstrual cycle.

### Is PCOS considered a chronic disease?

When asked If PCOS considered a chronic disease the results were 76.2% said that PCOS is not considered chronic and 23.8 said that it is.

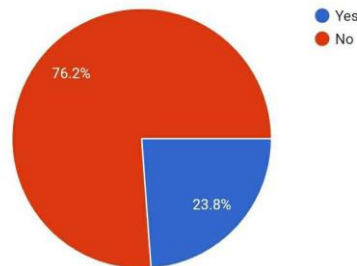


Fig.14. % of participants who consider PCOS a chronic disease.

### Are PCOS Symptoms Converted to Type 2 DM After the Age of Thirty?

when asked if are PCOS symptoms converted to type 2 DM after the age of thirty the results were 72.3% said PCOS symptoms do not turn into type 2 diabetes and 27.7% said yes.

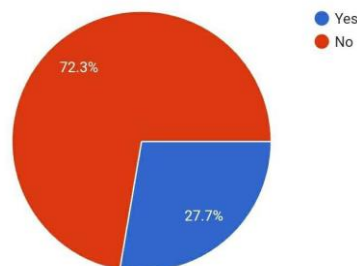


Fig.15. % of participants who thought PCOS symptoms converted to type 2 DM after the age of thirty.

### Do you think that life style (diet - exercise) affects PCOS?

When asked if do you think that life style (diet - exercise) affects PCOS the results were 86.2% said lifestyle affects PCOS and 13.8% said no.

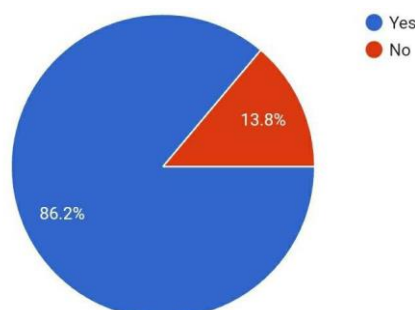


Fig.16. % of participants who thought that lifestyle affects PCOS.



### Do you think that PCOS affects fertility?

When asked If Do you think that PCOS affects fertility the results were 93.1% thought that PCOS affects the fertility rate and only 6.9 said it does not.

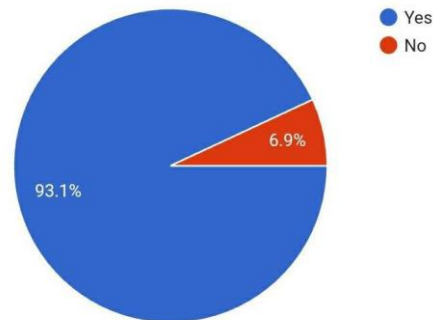


Fig.17. % of participants who thought PCOS affects fertility.

### Is insulin resistance one of causes of PCOS?

when asked If insulin resistance one of causes of PCOS the results were 53.1% thought that insulin resistance is one of the causes of PCOS and 46.9% say it is not.

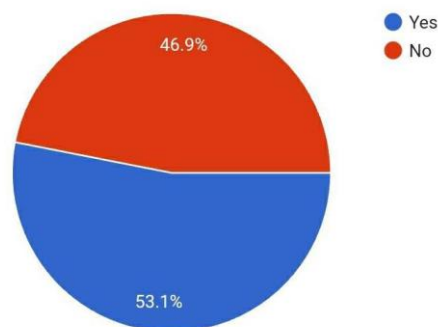


Fig.18. % of participants who thought insulin resistance one of causes of PCOS.

## 2. DISCUSSION

One of the main endocrine conditions that worry women is PCOS. PCOS causes gynecological, metabolic, hormonal, and cosmetic issues. It was first noted by Stein and Leventhal in 1935 among women, and the prevalence ranged from 5% to 15%, per the diagnostic criteria utilized <sup>[13]</sup>. The current study's objective was to assess female college-bound students' familiarity with PCOS. The survey was posted to Google Forms and disseminated among students via social media. Both Arabic and English were used in the questions and responses. Participants in the survey included female university students from Iraq. There were 130 students in all that took part in the study. 90.8% of them were in the 20–30 age range, 6.2% were in the 30–40 age range, and 3% were in the 40–50 age range. Despite the fact that PCOS can affect people of reproductive age, from diverse colleges, 45.4% have a scientific college, 32.3% have an education college, 18.5% have an engineering



college, and 3.8% have an administration and economics college<sup>[12]</sup>. There were 27.7% married people and 72.3% divorced participants, While the majority of study participants thought that hormones and their imbalance were to blame for PCOS, the majority were unaware of the symptoms of PCOS, that this condition may result from genetic factors and may be inherited from parents, as well as predisposing factors for the development of PCOS including obesity, among others (9% of participants responded that the cause of PCOS is genetics, 13% of participants replied that the cause of PCOS is hormonal, 12% of participants responded that the cause of PCOS is hormonal)<sup>[13]</sup>. Additionally, lifestyle choices, diet, and environmental factors all had an impact on how PCOS and its consequences developed<sup>[14]</sup>. Regarding the pupils' sources of PCOS information Information came from social media in 47% of cases, doctors in 28%, pharmacists in 17%, relatives in 16%, friends in 12%, and nurses in 12%. Participants at Jordan institution of Science and Technology reported using doctors as their source of information, along with 285 lectures and classes at the institution, 283 friends, 425 media, 378 family, and 261 other sources<sup>[15]</sup>. While a survey done in Saudi Arabia found that reading was the last resource used and that questioning doctors or patients was the source of knowledge that was used the most, it offers us an idea of how the people there like to learn<sup>[16]</sup>. About 87% of the participants in our study believed they needed a gynecologist, while 11%, 2%, and pharmacists believed they needed endocrinologists, respectively. However, this belief is unfounded because PCOS is a complex condition involving the hypothalamic pituitary-ovarian axis. It causes IR, hormonal abnormalities, and alterations in metabolism. It interferes with a woman's bodily functions, outward appearance, mental health, and sense of self, which in turn affects her social and family life. Depending on the symptoms, a female may require the services of a dermatologist, endocrinologist, gynecologist, dietitian, psychiatrist, and physical therapist. A multidisciplinary team with strong communication among all of its members is necessary for the management of the condition<sup>[17]</sup>. While reproductive endocrinologists advocate lifestyle changes for PCOS management more frequently than obstetrician-gynecologists do in North America, our research revealed that younger physicians were more likely to suggest these changes. Our study's participants had little knowledge about PCOS treatment, and based on their responses, 45% believed that lifestyle changes were the only thing needed, 34% believed that medications were the only option, and 12% and 9% believed that supplements were the only thing needed to treat symptoms, respectively. Due to the fact that medical endocrinologists were more likely to recommend metformin than OCPs, in contrast to what the current PCOS guideline indicates, discipline inequities were also brought to light. The woman's most important and troubling symptom, as well as the knowledge and updates accessible about the most recent treatment recommendations, are likely to have an impact on the healthcare provider's decision regarding the course of therapy<sup>[18]</sup>. Endocrine imbalances are the root cause of PCOS, a persistent multisystem illness. It manifests with a variety of symptoms, such as: Infertility, an irregular menstrual cycle, obesity, hirsutism, androgenization, and insulin resistance<sup>[19]</sup>. 93.1% of the participants in our study believed that PCOS had an impact on fertility. According to The PCOS Society India, 70% of females with PCOS have trouble getting pregnant, which can take longer and necessitate medical assistance. Consequently, it is advised to start family planning before age 35. It's important to educate young women about the illness that<sup>[18]</sup>. has become more prevalent, especially in cities. It is



crucial to pinpoint the areas where young college-going females in Gurgaon district, which, during the past two to three decades, has witnessed dramatic developments in industry and urbanization, lack understanding and awareness of PCOS [17]. The participants' awareness of their familiarity with the signs and symptoms of PCOS was Acne: 55.4% of respondents believed that PCOS was a symptom of acne, while 44.6% disagreed. Menstrual cycle: The majority of participants, 98.5%, agreed that they were hirsute; 79.2% of them believed that hirsutism was a symptom of PCOS, while 20.8% disagreed. Weight gain: 76.9% of our participants believed that obesity was connected, whereas 23.1% did not. fertility Participants' responses showed that 93.1% believed PCOS had an impact on reproductive rates, with only 6.9 disagreeing. The International Classification of Diseases (ICD) classifies PCOS as a difficult disorder that causes infertility, hirsutism, obesity, and monthly irregularities such oligomenorrhea, amenorrhea, and an-ovulation. PCOS is characterized by bilaterally enlarged ovaries that are speckled with atretic follicles and exhibit symptoms of fluid-filled cysts, according to ultrasound screening [20].

### 3. CONCLUSION

This study demonstrates that young Iraqi participant women (aged 20 to 40) had good knowledge of the causes and symptoms of PCOS but poor knowledge of the specialists required to treat the condition. The majority of participant women had unclear knowledge of the proper treatment, and about one-third of participant women obtained their information from social media.

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