

Original article

Prevalence of Polycystic Ovarian Disease in Zawia Medical Center

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Abstract

Polycystic Ovary Syndrome (PCOS) is a prevalent endocrine disorder affecting women of reproductive age, leading to various metabolic, hormonal, and reproductive health complications. This study aimed to evaluate the prevalence and demographic characteristics of PCOS in Zawia, Libya, among women aged 18–45 years. A descriptive, cross-sectional survey was conducted at Zawia Medical Center (ZMC) from March to May 2024, involving 200 women diagnosed with PCOS and 500 controls. The Rotterdam criteria were used for diagnosis, with participants completing questionnaires on demographics, symptoms, and family history. The prevalence of PCOS was found to be 28.5%, with most patients aged 18-29 years (71.5%). Common symptoms included weight gain (87.5%), hirsutism (82%), and irregular periods (82%), and a significant proportion of patients (56%) reported a family history of PCOS. Obesity was prevalent, with 76% of patients classified as obese. The findings underscore the need for early diagnosis, awareness, and targeted interventions to manage PCOS and reduce its associated health risks. The study highlights the significance of genetic factors and emphasizes a comprehensive approach to treatment that includes lifestyle modifications, education, and counseling to improve the quality of life for women affected by PCOS in Libya.

Keywords: Polycystic Ovary Syndrome, PCOS, Prevalence, Demographic Characteristics, Infertility, Epidemiology.

Introduction

Polycystic Ovary Syndrome (PCOS) is a prevalent endocrine disorder affecting young women of reproductive age, with significant implications for their health. While the exact cause of PCOS is still unknown, it is believed to result from a combination of factors that disrupt normal ovarian function and oocyte development. These factors may include genetic predisposition, environmental influences, and oxidative stress—an imbalance between free radicals and antioxidants in the body, which can lead to an excess of free radicals and chronic inflammation.

PCOS is characterized by hyperandrogenism, which is biochemically assessed through elevated levels of testosterone, dehydroepiandrosterone sulfate (DHEAS), Follicle Stimulating Hormone (FSH), and Luteinizing Hormone (LH) in the blood [1]. These hormonal imbalances manifest as symptoms such as hirsutism (excessive hair growth), acne, and hair loss. Insulin resistance and hyperinsulinemia are also common in PCOS, leading to chronic anovulation and impaired glucose metabolism.

Clinically, PCOS often presents with oligomenorrhea (infrequent menstrual periods) or amenorrhea (absence of menstrual periods), along with hirsutism, acne, and infertility. Women with PCOS are also at increased risk for developing a range of comorbidities, including metabolic syndrome, type 2 diabetes, hypertension, cardiovascular diseases, and high cholesterol levels.

Studying the epidemiological and clinical characteristics of PCOS is vital for early diagnosis, effective treatment, and reducing the risk of associated comorbidities [2].

The present study holds particular importance as the first survey conducted in Zawia to explore the epidemiological and clinical characteristics of PCOS among women of reproductive age (18-45 years). By providing baseline data on the prevalence of PCOS in this region, the study aims to raise awareness about the condition, promote early diagnosis, and encourage timely interventions. This study aims to assess the prevalence and demographic characteristics of Polycystic Ovary Syndrome (PCOS) in Zawia in 2024.

Methods

Study design and setting

This study is a descriptive, cross-sectional investigation conducted at the Gynecology and Obstetrics Department of Zawia Medical Center (ZMC) in Zawia, Libya, during the period from March to May 2024. ZMC is one of the most important healthcare centers on the western coast of Libya, serving a diverse population from cities along the west coast, including Zawia, Sabratha, Jamil, and Al Jabil.

Selection criteria

We included all Libyan women aged 18 to 45 years who attended the gynecological clinics at ZMC during this period, met the Rotterdam PCOS criteria, and agreed to participate. These participants were compared to women without PCOS who visited the same department for other health conditions during the same time

frame. While, women who met any of the following criteria were excluded from the study: Non-Libyan women / Women aged under 18 or over 45 years / Menopausal women / Women who had undergone hysterectomy or bilateral oophorectomy / Pregnant women / Women with androgen-secreting tumors, Cushing syndrome, congenital adrenal hyperplasia, or hyperprolactinemia.

Data collection

Questionnaires were provided to women with PCOS who presented at the gynecology and obstetrics department and consented to participate. All responses were collected with full confidentiality.

The study included a total of 200 Libyan women diagnosed with PCOS and 500 women without PCOS, who attended ZMC during the data collection period. A structured questionnaire, adapted from previous studies on PCOS, was used to collect data through face-to-face interviews. The questionnaire gathered information on demographic characteristics, signs and symptoms of PCOS, and family history of the condition.

Data analysis

The collected data were summarized, coded, and analyzed using the Statistical Package for the Social Sciences (SPSS), version 25. Descriptive statistics, including mean, standard deviation (SD), and frequency distribution, were used to summarize the data. A p-value of ≤ 0.05 was considered statistically significant.

Results

This study found the mean age for the patients was (23 ± 7.3 years). The maximum age of the patients was 45, and the minimum age of the patients was 18. Most of the patients were aged between 18 and 29 years, 143 (71.5%), and only 57 (28.5%) patients were older than 30 years old.

Table 1. Age distribution among PCOS patients at ZMC, 2024

Age group	Number of patients	Percentage
18-29	143	71.5%
30-45	57	28.5%
Total	200	100%

The majority of patients, 181 (82.5%), resided in Zawia, and only 19 (17.5%) resided outside of Zawia.

Table 2: Residency distribution among PCOS patients

Residency	Count	%
Zawia	181	82
Outside of Zawia	19	18

The majority of patients were married women, 168 (84%), who had difficulty conceiving, followed by single patients, 32 (16%), who had irregular menstrual periods, acne, and hirsutism.

Table 3: Marital status among PCOS patients

Marital status	Count	%
Married	168	84
Single	32	16
Total	200	100

This study found that the majority of patients' highest level of education was secondary school, 82 (41%), followed by college, 76 (38%), middle school, 30 (15%), and primary school education at only 12 (6%).

Table 4: Distribution of education level among PCOS patients

Education level	Number of Patients	Percentage
Primary school	12	6%
Middle school	30	15%
Secondary	82	41%
College	76	38%
Total	200	100%

This study found that the highest proportion of participants were classified as obese, 152 (76%), followed by overweight individuals, 43 (21.5%), and those with average weight, 5 (2.5%).

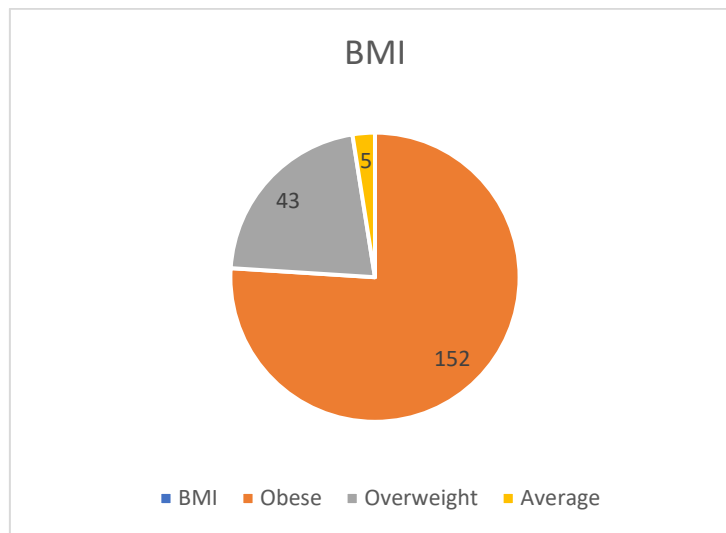


Figure 1: Distribution of the PCOS patients based on BMI level

This study reported that 175 (87.5%) experienced weight gain. Additionally, 164 (82%) of patients had hirsutism, and 164 (82%) had irregular periods. Acne was reported by 138(69%) of patients, while 152 (76%) experienced amenorrhea and 140(70%) had dysmenorrhea. Darkened skin was noted in 112 (56%) of patients, and 164 (82%) reported hair loss, with a p-value of ≤ 0.05 to all above variables, which were considered statistically significant.

Table 5. Distribution of PCOS patients according Signs and Symptoms

Statement	Yes		No		P -value
	Count	%	Count	%	
Have you had an increase in weight?	175	87.5	25	12.5	0.01
Have you had increased hair growth?	164	82	36	18	0.01
Have you had irregular periods/cycles?	164	82	36	18	0.03
Have you had pimples/acne?	138	69	62	31	0.01
Have you missed periods?	152	76	48	24	0.01
Do you have period/menstrual pain?	140	70	60	30	0.02
Do you have darkened skin of the neck?	112	56	88	44	0.01
Do you have hair loss?	164	82	36	18	0.01

The results show that a significant proportion of participants (56%) reported having a family member with polycystic ovary syndrome (PCOS), while 44% did not report a family history of PCOS, with a p-value of 0.034, which is statistically significant.

Table 6: Distribution of PCOS patients according to their family history

Do any of your family members have PCOS?	Count	%	P- value
Yes	112	56	0.034
No	88	44	

Discussion

Existing data suggest that polycystic ovarian syndrome (PCOS) is a common health issue affecting women of reproductive age (18 to 45 years old). The World Health Organization reports that the prevalence of PCOS globally ranges from 8% to 13%, depending on the diagnostic criteria used. This study indicates that PCOS is prevalent in Zawia City, affecting 28.5% of women of reproductive age, with the prevalence varying according to the diagnostic methods employed. PCOS is associated with a high risk of various comorbidities, including gestational diabetes, high cholesterol, hypertension, dyslipidemia, cardiovascular disease, and infertility [1,2].

The clinical presentation of PCOS is heterogeneous and depends on the degree of hyperandrogenism and insulin resistance. Common symptoms include irregular periods, anovulation, acne, hirsutism, weight gain, skin darkening, infertility, and alopecia. In this survey, the mean age of PCOS patients was 23 ± 7.3 years, with 82.5% of patients residing in Zawia. Most patients had a secondary education (41%) or a college education (38%).

Obesity is a major factor contributing to the development and exacerbation of PCOS. The survey revealed that participants' mean body mass index (BMI) was 30. The most common presenting complaint was weight gain. Among the participants, 67 individuals (21.4%) were categorized as overweight (BMI 25–29.9), while

152 participants (76%) were classified as obese. These findings align with Sarwat Anjum et al.'s report, which found that 82% of participants were obese, with a BMI of 30 or more [3].

Clinical features of hyperandrogenism and insulin resistance commonly manifest as menstrual irregularities, such as amenorrhea (absence of menstruation for 6 months), which was found in 152 patients (76%), and oligomenorrhea (infrequent menstruation, 3–4 cycles per year), reported in 184 participants (82%). Other symptoms include hirsutism (increased male-pattern hair growth) in 164 participants (82%), alopecia (hair loss) in 184 participants (82%), and acne in 138 participants (69%). These findings are consistent with those of Najem et al., who reported a mean age of 25.8 ± 5.3 years, with 93% of participants having obesity (BMI ≥ 30) [4]. Oligomenorrhea and amenorrhea were present in 93% of participants, and hirsutism affected 91% of them. However, these results differ from those of Sarwat Anjum et al., who found that the most prevalent symptoms were menstrual irregularities, with oligomenorrhea in 39.85% and amenorrhea in 38.9%, followed by hirsutism (52.3%), acne (21.5%), and alopecia (15.6%) [3].

Acanthosis nigricans, a skin condition associated with an increased risk of diabetes, was observed in 56% of PCOS patients in this survey. This finding is consistent with Shivaprakash et al., who also reported a prevalence of 56% among women with PCOS [5].

Family history is an important factor in determining the risk of developing PCOS. Studies suggest that the risk of PCOS inheritance among first-degree relatives is about 55–60%. This study found that 55.5% of participants had a positive family history of PCOS. These results provide baseline data for further research on the epidemiology, clinical features, and associated comorbidities of PCOS. Such studies are vital for the early diagnosis and treatment of PCOS and for reducing the associated comorbidities.

There are several potential limitations to this study. A convenience sample was drawn from a single medical center, which may restrict the generalizability of the findings to the broader Libyan female population or women outside of Zawia Medical Center, particularly due to the small sample size. Further research is needed to validate our findings and to explore the genetic and environmental factors contributing to PCOS.

Conclusion

This study provides important baseline data on the epidemiological and clinical characteristics of PCOS in women at Zawia Medical Center, highlighting its prevalence and impact on physical, reproductive, and emotional health. The findings show that PCOS commonly presents with symptoms like weight gain, obesity, irregular menstruation, hirsutism, and infertility, along with associated conditions such as acne and hair loss. The study also reveals a high proportion of women with a family history of PCOS, suggesting a genetic component. These results emphasize the need for early diagnosis, comprehensive care, and effective treatment strategies to address both the immediate and long-term health risks of PCOS, including hypertension, diabetes, and cardiovascular diseases. The study calls for increased awareness, education, and improved healthcare access for women affected by PCOS in Libya, as well as further research into the social, cultural, and genetic factors influencing the condition.

Conflict of interest

The authors declare no conflicts of interest.

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المستخلص

متلازمة المبايض المتعددة الكيسات هي اضطراب هرموني شائع يؤثر على النساء في سن الإنجاب، مما يؤدي إلى العديد من المضاعفات الصحية المتعلقة بالتمثيل الغذائي، والهرمونات، والصحة الإنجابية. تهدف هذه الدراسة إلى تقييم انتشار وخصائص متلازمة المبايض المتعددة الكيسات في مدينة الزاوية، ليبيا، بين النساء اللواتي تتراوح أعمارهن بين 18 و45 عامًا. تم إجراء مسح وصفي عبر مقطعي في مركز الزاوية الطبي من مارس إلى مايو 2024، شمل 200 امرأة تم تشخيصهن بمتلازمة المبايض المتعددة الكيسات و500 حالة ضابطة. تم استخدام معايير روتردام للتشخيص، حيث أكمل المشاركون استبيانات حول الخصائص الديموغرافية والأعراض والتاريخ العائلي. تبين أن انتشار متلازمة المبايض المتعددة الكيسات كان 28.5٪، حيث كانت الغالبية العظمى من المرضى تتراوح أعمارهن بين 18-29 سنة (71.5٪). كانت الأعراض الشائعة تشمل زيادة الوزن (87.5٪)، الأشعرانية (82٪)، وعدم انتظام الدورة الشهرية (82٪)، وأفاد نسبة كبيرة من المرضى (56٪) بوجود تاريخ عائلي للإصابة بالمتلازمة. كانت السمنة شائعة حيث تم تصنيف 76٪ من المرضى على أنهم يعانون من السمنة. تؤكد النتائج على أهمية التشخيص المبكر، وزيادة الوعي، والتدخلات المستهدفة لإدارة متلازمة المبايض المتعددة الكيسات وتقليل المخاطر الصحية المرتبطة بها. تسلط الدراسة الضوء على أهمية العوامل الوراثية وتؤكد على ضرورة اتباع نهج شامل في العلاج يشمل تعديلات نمط الحياة، والتعليم، والإرشاد لتحسين جودة الحياة للنساء المصابات بمتلازمة المبايض المتعددة الكيسات في ليبيا.