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Awareness of Polycystic Ovarian Syndrome among Jordanian Females

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ABSTRACT

Many endocrine-related conditions have attracted the attention of medical societies worldwide. Many of them may have a serious impact on female productivity and overall health. Among them is the polycystic ovarian syndrome (PCOS). However, an early diagnosis is crucial in avoiding any potential complications. This study aimed at evaluating the awareness of PCOS among Jordanian females. The outcomes shall be implemented to improve public health through the various educational services, medical campaigns, and healthcare practitioners in Jordan and other societies. A cross-sectional study using a survey (questionnaires) was directed toward a sample of Jordanian females aged 18-40 years. The assessment of their knowledge and understanding included its signs, symptoms, and associated health risks. Thus, the collected data were subject to processing and statistical analysis. The majority of females (73.3%) were aware of the potentiality of PCOS, but the majority of the sample was not satisfactorily familiar with the signs and symptoms of the disease, and only 6% confirmed getting education directly from a doctor. The study outcome reveals that the current level of PCOS awareness among Jordanian females needs a comprehensive educational effort.

1. Introduction

Polycystic ovarian syndrome (PCOS) is a complex endocrine disorder that affects women worldwide, including Jordanian females.¹ Polycystic ovarian syndrome (PCOS) is a common metabolic and endocrine condition that affects females of reproductive age. The existence and severity of three primary symptoms identify the disease: irregular menstruation, hyperandrogenism, and polycystic ovarian morphology.² It is advised that the modified Rotterdam criteria be used, according to which PCOS can be diagnosed if any two of the following conditions are present: (1) clinical or biochemical hyperandrogenism, (2) oligo-anovulation, and (3) polycystic appearing-ovarian morphology on ultrasound, with the elimination of other relevant illnesses. Unfortunately, despite the PCOS

commonness and its health consequences, evaluating the level of awareness among Jordanian females has received only very little attention.³

Women with PCOS may have irregular or unpredictable menstrual cycles. The accompanying higher levels of androgen hormones, such as testosterone, may cause skin problems like acne, excessive hair growth in various parts of the female body, and also baldness.⁴ Weight management is another common trait that is associated with PCOS, particularly around the abdomen.⁵ However, not all women with PCOS are overweight. It is also noticeable that these patients may develop a progressive state of insulin resistance which is a condition where the body's cells become less responsive to this hormone. Consequently, this can lead to an increased risk of developing persistent type-2 diabetes.⁶

In Jordan, a country known for its rich cultural heritage and traditional values, consultations, and discussions surrounding the reproductive system and its health often remain covered with silence and secrecy.⁷ This cultural situation, coupled with limited access to the related necessary education and healthcare resources, formulates a major barrier against raising awareness about PCOS.⁸ As a result, many Jordanian females remain unaware of the associated signs, symptoms, and potential complications, which may significantly impact their general well-being and quality of life.⁹

Understanding the factors that contribute to the lack of awareness surrounding PCOS among Jordanian females is indispensable to addressing this knowledge gap effectively.¹⁰ By shedding light on this issue, it can become possible to develop efficient educational programs, develop culturally-sensitive awareness campaigns, and empower women with the necessary information to make informed decisions about their health.^{11,12} Therefore, the main target of this research is to explore the general level of awareness of PCOS among Jordanian females, to examine specific factors that may contribute to the current state of knowledge, and ultimately to identify potential strategies for improvement. Practically, this research was directed toward women from different age groups and socio-economic backgrounds. Ultimately, the findings of this study will contribute to the development of evidence-based interventions and policies that lay the foundation for a healthier future for women in Jordan.¹³

2. Methods

This study adopted a cross-sectional design¹⁴ in the assessment of the awareness related to PCOS among Jordanian females. Data was collected through an online survey questionnaire. The study period was 3 months, extending from January-2023 to March-2023. A convenient sampling method was used to recruit female participants aged >18 years and residing in Jordan. The successful sample size (fully answered questionnaires) was found to be 105

participants, based on the available resources. The inclusion criteria of the study were females that accepted completing the informed consent before answering the questionnaire. The questionnaire was designed in English and Arabic to gather information on demographic characteristics, including marital status, education level, and monthly income. It also included questions related to the participants' previous knowledge of PCOS, sources of knowledge, and their level of awareness about the signs, symptoms, and potential complications that are commonly associated with PCOS.

The online survey questionnaire was hosted on a secure platform, and the link to the questionnaire was shared through various social media platforms, online communities, and relevant women's groups in Jordan. Participants were required to access the questionnaire link and provide their responses electronically. The questionnaire included both multiple-choice and open-ended questions to gather quantitative and qualitative data. Ethical approval was obtained from the relevant institutional review board to guarantee the protection of participants' rights and privacy. The participants were informed about the purpose of the study, their voluntary participation, and the secrecy of their data. Informed consent was obtained from each participant before they began answering the survey. The collected data were processed and analyzed using the standard appropriate statistical methods. Descriptive statistics, such as frequencies and percentages, were used to summarize the participants' demographic characteristics and their level of awareness regarding PCOS. The data were analyzed using statistical software, such as SPSS (statistical package for the social sciences).

3. Results and Discussion

Demographic details

The total number of participants in this online survey was 105 Jordanian females. The response rate of the study for those who accepted to participate voluntarily was 100%. The participants' demographic characteristics are summarized in Table 1. The mean

age of the participants was 31.4 years (SD = 7.2), with the majority falling within the 26-35 age group (45.7%). Regarding marital status, the larger portion of the participants represented married females (47.6%), followed by single females (21.9%), and lastly, the divorced or widowed (5.7%). In terms of the educational level, the majority of participants had

completed a university degree (32.4%), 31.4% had completed high school, 20% had completed middle school, and 2.9% had completed primary school. Regarding income (per month), the majority of participants reported an income of less than 500 JD (54.3%).

Table 1. The demographic details of the participants.

Education level	% (n)	Marital status	% (n)	Monthly income	% (n)
Primary school	2.9% (3)	Single	21.9% (23)	<500	54.3% (57)
Middle school	20% (21)	Married	47.6% (50)	500-1000	28.6% (30)
High school	31.4% (33)	Divorced	24.8% (26)	>1000	17.1% (18)
University	32.4% (34)	Widow	5.7% (6)	-	-
Higher education	13.3% (14)	-	-	-	-

The previous knowledge of PCOS

When asked about their previous knowledge of PCOS, 73.3 % (77) of the participants reported having heard of the condition, while 26.7% (28) were not familiar with it at all. The respondents who answered "Yes" to the familiarity with PCOS (77 participants, Table 2) were asked to select their source of knowledge and information about PCOS from the following options: someone they know, reading books or health

magazines, do not know, diagnosed with PCOS, internet, and doctors. Out of the 77 respondents who had previous knowledge of PCOS, 11.4% (12) learned about it from someone they know, 28.6% (30) learned about it from reading books or health magazines, 20% (21) were unsure of their source of knowledge, 16.2% (17) were diagnosed with PCOS, 18.1% (19) learned about it from the internet, and 5.7% (6) learned about it from doctors.

Table 2. The distribution of information sources about PCOS.

Sources	% (n)	Sources	% (n)
Book or health magazine	28.6% (22)	Diagnosed	15.6% (12)
Other	19.5% (15)	Family or friend	11.7% (9)
Internet	18.2% (14)	Doctor	6.5% (5)

Knowledge of potential symptoms

The participants were asked about their knowledge of the common symptoms of PCOS (Table 3). Most of the respondents correctly identified irregular menstrual periods as a symptom of PCOS. However, awareness of other symptoms was lower, with nearly half of the females aware that facial acne, excessive hair growth (hirsutism), reduced fertility, weight gain, frontal hair loss, insulin resistance, and hypertension are potential symptoms. Approximately three-fifths of the participants are aware of pelvic pain, early puberty, and psychological disturbances. On the other hand, nearly two-fifths of the participants are aware

that PCOS may lead to abortion.

Knowledge of potentially persistent complications

Being educated about five illnesses that may arise as a result of PCOS is presented in Table 4. The analysis shows that nearly two-thirds of the respondents had in mind type-2 diabetes and anxiety as subsequent complications. Following is their awareness of heart problems and psychological disturbances. The least among them is their background in breast and uterus cancer. Overall, the data illustrate a low awareness level of these five complications (57.2%).

Table 3. The familiarity with the potentially associated PCOS symptoms.

Potential symptom	% (n)	Potential symptom	% (n)
Irregular menstrual cycle		Pelvic pain	
Yes	88.6% (93)	Yes	60% (63)
No	11.4% (12)	No	40% (42)
Facial acne		Abortion	
Yes	54.3% (57)	Yes	41% (43)
No	45.7% (48)	No	59% (62)
Hirsutism		Early puberty	
Yes	50.5% (53)	Yes	56.2% (59)
No	49.5% (52)	No	43.8% (46)
Reduced fertility		Insulin resistance	
Yes	54.3% (57)	Yes	47.6% (50)
No	45.7% (48)	No	52.4% (55)
Weight gain		Hypertension	
Yes	47.6% (50)	Yes	52.4% (55)
No	52.4% (55)	No	47.6% (50)
Frontal hair loss		Psychological disturbances	
Yes	53.3% (56)	Yes	58.1% (61)
No	46.7% (49)	No	41.9% (44)

Table 4. The familiarity with the PCOS persistent complications.

Complication	% (n)	Complication	% (n)
Type-2 diabetes		Anxiety	
Yes	68.6% (72)	Yes	66.7% (70)
No	31.4% (33)	No	33.3% (35)
Cardiovascular diseases		Psychological disturbances	
Yes	56.2% (59)	Yes	52.4% (55)
No	43.8% (46)	No	47.6% (50)
Breast and uterus cancer			
Yes	41.9% (44)		
No	58.1% (61)		

Knowledge of a healthy lifestyle

Around two-thirds of the participants knew about exercise, weight loss, and using contraceptives as general good practices in a healthy lifestyle (Table 5). A slightly higher percentage refers to eating vegetables

and fruits as part of a healthy dietary regimen. Nearly three-fourths of them had a higher potential intuitiveness toward protein-rich food. The overall perception of a supportive balanced, and healthy lifestyle is satisfactory (63.2%).

Table 5. The percent and number degree of awareness of healthy lifestyle practices.

Practice	Yes	No
Doing exercise	61% (64)	39% (41)
Weight loss	58.1% (61)	41.9% (44)
Use of contraceptives	56.2% (59)	43.8% (46)
Eat vegetables and fruits	65.7% (69)	34.3% (36)
Eat protein-rich food	75.2% (79)	24.8% (26)

Specific hormonal balance is essential in males and females, and disorders may have unpleasant short-term and long-term consequences. Related to females and in the framework of this effort, the PCOS illness is a consequence of such abnormalities that may affect females mainly above 18 years old. The severity of its development escalates with the increased degree of hormonal imbalance. It is characterized by many biochemical and physiological abnormalities of the ovaries. Both genetic and environmental factors are responsible for the development of PCOS.¹⁵ Despite being a prevalent endocrine disorder affecting a significant number of females, the studies indicate that there is a general lack of awareness in females regarding the possible symptoms and complications of PCOS, which can have ruthless impacts on health outcomes and, associatively, the economic and social aspects.

The diagnosis at the very beginning is not among the common medical practices, while a lucky female may discover it by chance and, at best, during the intermediate stage unless there is an apparent family history (genetic factor). What may carry on the case to a late stage is its nature being a silent disease. Another important factor is the psychology of the female, mostly denial. However, the accumulated medical works of literature have allowed refining a group of common symptoms that are not difficult to identify but would refer, at best, to the intermediate stage. Awareness of these symptoms by the public, including the closely related male (partner, brother, father), would surely be of great advantage.

In this study, we tried to assess the available knowledge regarding the existence of PCOS, its transient accompanying symptoms, and the potential persistent complications. Initially, a more detailed and comprehensive questionnaire was prepared and administered, but unfortunately, it received an unfulfilling response, and the initial sample size was too small to be considered for further analysis. Therefore, it was necessary to shrink it to a more practical yet, informative manner that achieved 105 fully-completed responses. The analysis shows that

77% of the completed questionnaires were filled by females who earned at least a high school diploma which may infer that the level of education is an important factor in this interactive process, especially in the general drive toward learning more about the disease.

The basic knowledge of PCOS existence is the leading-edge criterion in this study. The incidence of PCOS varies across different populations and studies. A study by Marzieh Saei Ghare Naz et al. showed that PCOS affects approximately 5-10% of women of reproductive age worldwide.¹⁵ However, the prevalence can vary depending on the used study criteria, the studied population, and the procedures of evaluation. The awareness of polycystic ovarian syndrome (PCOS) among Jordanian females is a critical aspect of women's healthcare in the country. A study conducted by Abu-Taha et al.¹⁶ in the Jordanian population shows that females have insufficient knowledge about the existence of PCOS. However, in our study, 73.3% of women have been found to be aware of the diseases. The results of this study are very similar to another study conducted among the Lebanese population¹⁷, which showed that 75% of the sample females were aware of the disease and their major source of knowledge about the disease was the written resources (books, etc.) or the internet. In our study, books, magazines, other (unspecified), and then the internet were the main sources of information, which gives us an idea that the written resources still represent valuable means of self-teaching in Jordanian society.

Unfortunately, only 6% of the sample females received genuine knowledge about the disease from a doctor or gynaecologist. This result indicates that society needs more active educational campaigns from the medical service sectors. We believe that this source of information would have an intriguing impact. It would allow individuals to become aware of the specific details of the various health conditions and their associated symptoms, risk factors, and complications. It would fulfill the individual's desires and provide a deeper understanding regarding the nature of the disease, its occurrence, and its impact on health and

well-being. This knowledge can encourage individuals to seek timely medical advice and make cognizant decisions about their health.

Irregular menstrual cycle, facial acne, and hirsutism are relatively easy-to-identify symptoms over a short time; they can be identified by the individuals by simple direct observation. On the other hand, other symptoms may be less noticeable, may need a medical examination, or may develop over a longer period like reduced fertility¹⁸, weight gain, frontal hair loss, pelvic pain, unexpected abortion and its repetition, early puberty, the insulin resistance, hypertension, and psychological disturbances.¹⁹⁻²¹ Despite the high awareness of PCOS existence (73.3%) among the 105 females, the average background information about the twelve symptoms is not very satisfying (55.3%, Table 3). This indicates that approximately half the population in Jordan can't connect these symptoms to this specific disease as a suspect. A similar result of 57.2% has been obtained concerning their knowledge of the five potentially persistent complications that are associated with PCOS; type-2 diabetes, cardiovascular disease, breast and uterus cancer, anxiety, and psychological disorders. This confirms that carefully planned programs are needed and must be initiated.

Specifically, we shall point to the irregular menstrual cycle, which is a very important sign of the disease because it can be easily identified without the necessity of an irritating medical procedure. In our study, 88.6% of the females were aware of it, a result that is significantly higher than the findings of Jakhar et al.²² in their study concerning the Indian population, where only 10.05% of the studied females were aware that the menstrual irregularity or the missed periods are signs of PCOS.

As with the irregular menstrual cycle, hirsutism is also an easily identifiable symptom. It is a condition characterized by excessive hair growth in women in areas typically associated with male patterns of hair growth, such as the face, chest, back, and abdomen. In our study, the awareness percentage of this symptom is 50.5%. This percentage is higher than that

found in an earlier study of the Saudi population²³, where only 31.7% of the females had been educated about it.

The development of insulin resistance and the resulting elevated fasting blood glucose levels are of particular importance. PCOS is strongly associated with insulin resistance, which can lead to the development of metabolic syndrome, which is a cluster of conditions including high blood pressure, high blood glucose levels, abnormal cholesterol levels, and excess abdominal fat. Insulin resistance can also increase the risk of developing type-2 diabetes. In our study, only half of the females could connect insulin resistance to PCOS. This is another strong motivation to carry on wide spreading educational efforts.

The sample respondents demonstrated a satisfactory overall perception of the supportive balanced healthy lifestyle (63.2%). Adopting a healthy and well-adjusted diet can help regulate blood sugar levels, manage insulin resistance, and support weight management. A diet rich in whole grains, fruits, vegetables, lean proteins, and healthy fats and limited in processed foods, sugary snacks, and high-glycemic-index carbohydrates is generally recommended. Additionally, reducing calorie intake to achieve and maintain a healthy weight can be beneficial, specifically in PCOS management and as a general health regimen.

Especially sounding, lifestyle modification to include exercising is increasing among the general population. In our study, 61% of the females believed that exercising helps in disease management. This result is in coherence with the survey result of Haq N et al.²⁴ in the Pakistani population. Engaging in regular physical activity has various benefits for PCOS. Exercising helps in improving insulin sensitivity, assists with weight management, reduces stress, and promotes overall cardiovascular health.

4. Conclusion

The study underscores the importance of addressing the limited awareness of PCOS among Jordanian females. By implementing targeted

awareness initiatives and involving healthcare providers, it is possible to empower women with the knowledge and resources needed to effectively manage PCOS and improve their reproductive and overall health. This will provide a more comprehensive understanding of the challenges and opportunities for improving PCOS awareness in the Jordanian environment. We believe that this is so important and deserves continuing attention and further investigations.

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