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Awareness of Females regarding Polycystic Ovarian Syndrome at Outpatient Clinics in Minya Health Insurance Hospital

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Abstract:

Background: Polycystic Ovary Syndrome (PCOS) is a hormonal disorder common among females of reproductive age. The most clinical symptoms are irregular periods infrequent, irregular or prolonged menstrual cycles, excess facial and body hair, and occasionally severe acne. **Aim:** This study aimed to assess awareness of females regarding polycystic ovarian syndrome at health insurance hospital in Minya governorate. **Study design:** Descriptive research design was used in this study. **Sample:** Purposive sample include 100 females with polycystic ovary syndrome. **Setting:** It was conducted at obstetric & gynecological outpatient clinics at health insurance hospital in Minya governorate. **Tools:** One tool included five parts: First part: Demographic characteristics of female, Second part: Medical history of female, Third **part:** Females' knowledge, Fourth part: Females' reported practices and Fifth part: Females' attitude about polycystic ovary syndrome**. Results:** Less than half of the studied females had poor knowledge, nearly one third of the studied females had unsatisfactory reported practices, and more than half of the studied females had negative attitude. **Conclusion:** Less than half of the studied females had poor total knowledge, most of them had unsatisfactory total reported practices and more than half of them had negative attitude. There a relation between studied females' knowledge, and reported practices towards studied females regarding polycystic ovary syndrome. There is statistically significant relation between studied females' demographic data and their knowledge, reported practices and attitude for studied females regarding polycystic ovary syndrome. **Recommendations**: Design health education program for increasing awareness of females about knowledge, practices and attitude regarding polycystic ovary syndrome.

Key words: *Awareness, Females, Health Insurance Hospital, Minya and Polycystic Ovarian Syndrome.*

Introduction:

Polycystic Ovary Syndrome (PCOS) is a common hormonal disorder affecting females of reproductive age, characterized by irregular menstrual cycles, elevated levels of male hormones (androgens), and polycystic ovaries, the condition can lead to various health complications. Females with PCOS may experience symptoms as excessive hair growth, acne, and obesity. The exact causes of PCOS in females are not fully understood, but several factors are believed to contribute to its development ***(Jiang et al., 2024).***

The major endocrinopathy of PCOS among reproductive-aged female, is not yet perceived as an important health problem in the world. It affects 4 %–20 % of female (nearly of 2.9 million at reproductive age), it is estimated that between five to 10 percent of United States (US) female of childbearing age have PCOS, one of the most common hormonal endocrine disorders among female of reproductive age ***(Jain et al., 2024).***

Diagnosing of PCOS in females involves a combination of clinical assessments, medical history evaluations, and diagnostic tests. Healthcare providers typically look for key indicators as irregular menstrual cycles, signs of elevated androgen levels (like excessive hair growth or acne), and the presence of polycystic ovaries on an ultrasound. Blood tests are often conducted to measure hormone levels, including androgens, insulin, and other related hormones. Treatment typically focuses on managing symptoms and may include lifestyle changes, medications, and in some cases,

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surgery. Early diagnosis and treatment can help mitigate the long-term health effects of PCOS ***(Haddad-Filho et al., 2023).***

Females with PCOS can face a range of complications that affect both their physical and mental health. One of the primary concerns is infertility, as PCOS can interfere with ovulation. Additionally, females with PCOS are at an increased risk for developing metabolic syndrome, which includes type 2 diabetes, hypertension, and elevated cholesterol levels, all of which contribute to a higher risk of cardiovascular diseases ***(Kicińska et al., 2023).***

Awareness and understand of PCOS symptoms, which enable females to seek timely medical advice. Educating females about the potential health risks associated with PCOS, including infertility, type 2 diabetes, and cardiovascular diseases, underscores the importance of proactive healthcare. Knowledge empowers females to adopt healthier lifestyles, seek appropriate treatments, and make informed decisions about reproductive health. Public health initiatives, educational programs, and accessible healthcare services play vital roles in enhancing females' knowledge of PCOS and promoting overall well-being ***(Wu et al., 2024).***

Adopting for managing PCOS a holistic approach that includes lifestyle modifications, medical treatments, and regular monitoring. A balanced diet rich in whole foods, lean proteins, and low in refined sugars can help manage weight and insulin levels, crucial for mitigating PCOS symptoms. Regular physical activity, as aerobic exercise and strength training, further aids in weight management and improves insulin sensitivity. Medical treatments may include hormonal contraceptives to regulate menstrual cycles and medications like metformin to address insulin resistance. Regular check-ups with healthcare providers ensure timely adjustments to treatment plans based on symptom changes and health status ***(Zhan et al., 2023).***

The attitude of females towards PCOS is often characterized by a mix of frustration, determination, and resilience. Upon diagnosis, many females initially feel overwhelmed by the symptoms and the potential impact on their fertility, physical appearance, and overall health. However, as females gain more understanding of the condition through education and support networks, their attitude often shifts towards proactive management and self-advocacy. Females who are well-informed about PCOS tend to adopt healthier lifestyles, seek medical treatments, and engage in support groups to share experiences and strategies ***(Rizvi et al., 2023).***

Community Health Nurses (CHN) plays a pivotal role in supporting females with PCOS by providing comprehensive care, education, and advocacy. These nurses act as vital sources of information, educating females about PCOS symptoms, potential complications, and the importance of early diagnosis and treatment ***(Palomba, 2024).*** Nurses' offers personalized advice on lifestyle modifications, including diet and exercise, to help manage symptoms and reduce the risk of associated health issues like diabetes and cardiovascular diseases. CHN facilitate access to healthcare services, assisting females in navigating the healthcare system and ensuring females receive appropriate medical attention and follow-up care. By organizing support groups and community outreach programs, females provide emotional and social support, helping females cope with the psychological impacts of PCOS ***(Gomaa et al., 2023).***

Significance of the study

Polycystic Ovarian Syndrome (PCOS) effects upward of 10% of reproductive-aged female, estimated at over 200 million females worldwide. PCOS is thought to be increasing in incidence in both developing and developed nations as a result of lifestyle-related changes in diet quality, reduced physical activity, ubiquitous environmental Endocrine-Disrupting Chemicals (EDC), and altered light exposures, sleep disturbance, heightened levels of stress and other environmental factors ***(Salari et al., 2024).*** These factors, and the high prevalence of PCOS, suggest that there could be an evolutionary basis for the syndrome. In Egypt, a PCOS prevalence of between 14.5 % and 37.5 %. PCOS can cause symptoms as hirsutism, acne, and obesity, which may lead to social stigma and discrimination. This can affect female's self-esteem and social interactions ***(Elsadek et al., 2024).***

Community health nurses play important role to increase awareness about PCOS, helping females understand the importance of early intervention and consistent management. These nurses conduct screenings and assessments to identify symptoms and risk factors, facilitating early diagnosis and personalized care plans. Nurses collaborate with other healthcare professionals, as dietitians and endocrinologists, to ensure a multidisciplinary approach to treatment. Community health nurses play a crucial role in addressing barriers to care by helping females access resources, as affordable medications and healthcare services. Nurses support females in managing the emotional and psychological aspects of PCOS through counseling and connecting them with support groups ***(Memon et al., 2024).***

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Aim of the study

This study aimed to assess awareness of females regarding polycystic ovarian syndrome at health insurance hospital in Minya governorate through the following:

1. Assessing females' knowledge regarding polycystic ovarian syndrome.
2. Appraising females' reported practices toward polycystic ovarian syndrome.
3. Evaluating females' attitude toward polycystic ovarian syndrome.

Research question:

1- What is the females' knowledge regarding polycystic ovarian syndrome?
2- What is the females' reported practices regarding polycystic ovarian syndrome?
3- What is the females' attitude regarding polycystic ovarian syndrome?
4- Is there a relation between females' knowledge, reported practices, attitude and their demographic characteristics?

Research design:

A descriptive research design was applied to achieve the aim of the study.

Study Setting:

This study was conducted at Obstetric & Gynecological Outpatient clinics at the Health Insurance Hospital in Minya governorate.

Sample type:

Purposive sample was used in this study.

Sampling:

The study conducted in obstetric & gynecological outpatient clinics at the health insurance hospital in Minya governorate, used to choose 100 females' total number of females in one year begin, of August 2020 to end of July 2021 were 250 females with polycystic ovarian syndrome.

Sample size was calculated by the following equation:

n= N (1+N x (e)) ***(Adam, 2020).***

n= sample size
N= Population size =250
E= (, 00025) level of perception
n=250(1+250) x (, 00025) = 100 it is actual size of sample were outpatient clinics at the Health Insurance Hospital in Minya governorate.

Inclusion Criteria:

1- Females aged from 15 - 45 years،
2-Having polycystic ovarian syndrome،
3- Able to read and write and accept to participate in the study.

Tool for data collection:

Data was collected using the one tool as the following:

Tool (I): Interview questionnaire

A Structure interview questionnaire developed by researchers' after reviewing the national and international related literature and approved by supervision. It was written in Arabic language and consists of five parts as the following:

Part (I): Demographic characteristics of females consisted of 6 items as: age, marital status, level of education, occupation.

Part (II): Medical history: It divided to 2 sub-items:

1st Past medical history for females consisted of 6 closed ended question as: suffer from a menstrual disorder, date of the last menstrual period, have a history of certain diseases, if the answer is yes, what is the disease, have a family history of polycystic ovary syndrome.

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2nd Current health status for females consisted of 11 closed ended question as: suffer from pelvic pain before the start of period or after it ends, suffer from interrupted or irregular menstrual cycles, suffer from hair growth in the facial areas and on the body in general.

Part (III): Knowledge of females about poly cystic ovarian syndrome: It consisted of 4 sub items:

A- Females' knowledge about polycystic ovarian syndrome included 6 closed ended questions as: meaning of polycystic ovarian syndrome, polycystic ovary syndrome occurs with age, causes of polycystic ovary syndrome.

B- Females' knowledge about treatment of polycystic ovarian syndrome included 8 closed ended questions as: pharmacological treatment used to reduce the symptoms of polycystic ovary syndrome, birth control pills are used to reduce the risk of cancer, clomiphene is used to treat type 2 diabetes.

C- Females' knowledge about complication & effects of polycystic ovarian syndrome included 11 closed ended questions as: early complications of polycystic ovary syndrome, long-term complications of polycystic ovary syndrome, heart disease and strokes are complications of PCOS caused by, difficulty and interruption of breathing during sleep are complications of PCOS caused by.

D- Females' knowledge about diet & exercises for polycystic ovarian syndrome included 9 closed ended questions as: foods that reduce symptoms of polycystic ovary syndrome, foods that increase the symptoms of polycystic ovary syndrome, cigarette smoking increases the symptoms of polycystic ovary syndrome, intake alcohol increases the symptoms of PCOS.

Scoring system, it included 34 questions; the answer score 1 point for correct answer and complete, and 0 point for incorrect answer. The total scores of females 34 points knowledge regarding polycystic ovarian syndrome divided into three levels as the following:

• Poor knowledge < 50 % (< 17 score)
• Average knowledge 50 -70 % (17: 24 score)
• Good knowledge > 75% (> 24 score).

Part (IV): Reported practices of females with poly cystic ovarian syndrome: It consisted of 7 sub items:

A- Females' reported practices regarding aerobic exercise included 4 closed ended questions as: make sure bladder is empty, then sit or lie down, tighten pelvic floor muscles. Hold firmly and count 3 to 5 seconds.

B- Females' reported practices regarding jogging exercise included 6 closed ended questions as: prepare for 10-15 minutes of slow running, mix periods. Run for two minutes at high intervals.

C- Females' reported practices regarding high intensity interval exercise included 5 closed ended questions as: space the feet and knees at an appropriate distance, place the legs outward and do not change the direction of their movement.

D- Females' reported practices regarding core strength exercise included 6 closed ended questions as: stand with feet apart from each other, hold a light medicine ball in front of in both hands, and squat down, move back and keep your knees over ankles, lowering the ball to the floor.

E- Female's reported practices regarding cardio exercise included 5 closed ended questions as: star shaped jump, two sets of 15 to 24 times, stand up straight, place hands at sides, and bend knees slightly.

F- Female's reported practices regarding diets intake for polycystic ovarian syndrome included 20 closed ended questions as: eat oatmeal, eat vegetables, eat nuts, eat buckwheat, eat kale, eat spinach.

G- Female's reported practices regarding diets avoided for polycystic ovarian syndrome included 15 closed ended questions as: avoid eating salt, avoid eating milk and dairy products, avoid eating soy products, avoid eating cakes, avoid eating sweets, avoid eating red meat, avoid eating sausage.

Scoring system, it included 61 questions; 1 point for done, and zero point to not done answer. The total scores of females 61 points reported practices about polycystic ovarian syndrome classified into two levels:

- **Satisfactory practices ≥ 60 % (≥ 37 point).**
- **Unsatisfactory practices < 60 % (< 37 point).**

Part (V): Attitude of females with poly cystic ovarian syndrome. It included 18 closed ended questions as: think that having symptoms of PCOS without treatment can cause serious health problems, think that polycystic ovary syndrome can cause me to be infertile, feel that having polycystic ovary syndrome can cause gestational diabetes.

Scoring system: the total score of females 18 questions females' attitude about PCOS classified into two levels: The answers scored as 2 points for agree answer, 1 point for not specified answer and zero point to disagree answer. The total scores of females 36 points for attitude about PCOS classified into two levels:

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- **Positive attitude ≥ 60 % (≥ 27 points).**
- **Negative attitude < 60 % (< 27 points).**

Operational Item:

It included preparatory phase, content validity and reliability, pilot study and field work.

A. Preparatory phase:

Prepare the study tool based on related literature review and develop the study tool and test its content validity and reliability.

Pilot study:

A pilot study conducted on 10 % of the females equal 10 females under study to assess the feasibility, practicability, clarity and objectivity of the tools. Based on the results, no modification was done. Females in the pilot study were included in the main study sample because no modifications were done.

Tool validity and Reliability:

A) Content Validity:

The revision of the tool for clarity, relevance, comprehensiveness, understanding and applicability was done by a panel of five experts all of them from Faculty of Nursing from Community Health department to to review the relevance of the tools for clarity, relevance, comprehensiveness, understanding and applicability.

B) Tool Reliability:

Reliability was applied for testing the internal consistency of the tool, by administration of the same tool to the same subjects under similar conditions two times. Answers from the repeated testing were compared (Test- re- test reliability was 0.89 for knowledge), Cronbach's Alpha reliability was 0.880 for reported practices and Cronbach's Alpha reliability was 0.887 for attitude.

Ethical consideration:

An official permission to conduct the proposed study obtained from the Scientific Research Ethics Committee Faculty of Nursing Helwan University. Participation in the study is voluntary and subjects were given complete full information about the study and their role before signing the informed consent. The ethical considerations included explaining the purpose and nature of the study, stating the possibility to withdraw at any time, confidentiality of the information where it was not be accessed by any other party without taking permission of the participants. Ethics, values, culture and beliefs respected.

Field work:

- An official letter issued from the dean of Faculty of Nursing Helwan University, and females in obstetric & gynecological outpatient clinics at the health insurance hospital in Minya governorate including the aim of the study to obtain permission after establishing a trustful relationship, each subject interviewed individually by the researchers to explain the study purpose.
- Actual field work carried out in the period from first of October 2022 up ended to March 2023 years, two days per week Tuesday and Thursday from 9 am -1pm and interview females in obstetric & gynecological outpatient clinics at the Health Insurance Hospital in Minya governorate. Study collected through structure face to face interview and the entire tool filled by the researchers.
- The researchers' utilized one tool, was need 20 -30 minutes and meeting the females two days per week (Tuesday-Thursday) from 9am - 1pm.
- The researchers' taken 4-5 females each week consists, total number of females = 100 females.

III) Administrative Item:

After explanation of the study aim and objectives, an approval to carry out this study was obtained from Dean of Faculty of Nursing, Helwan University and official permission was obtained from the director of obstetric & gynecological Outpatient clinics at the Health Insurance Hospital in Minya governorate.

IV) Statistical Item:

Upon completion of data collection, data computed and analyzed using Statistical Package for the Social Science (SPSS), version 24 for analysis. The P value set at 0.05. Descriptive statistics tests as numbers, percentage, mean

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standard deviation (± SD), was used to describe the results. Appropriate inferential statistics such as "F" test or "t" test used as well.

- Degrees of Significance of the results were:
- Non-significant (NS) if p > 0. 05.
- Significant (S) if p < 0.05.
- Highly significant (HS) if p < 0.01.

Results:

Table (1): Frequency Distribution of the Studied Females regarding their Demographic Characteristics (N=100).

Item	No.	%
Age		
15 -25 years	31	31.0
26 - 35 years	49	49.0
36 - 45 years	20	20.0
Mean ± SD	**32.4 ± 1.8 years**	
Marital status		
Single	40	40.0
Married	34	34.0
Divorced	10	10.0
Widow	16	16.0
Level of education		
Read and write	20	20.0
Middle education	30	30.0
Postgraduate	50	50.0
Occupation		
Employee	40	40.0
Student	31	31.0
Housewife	29	29.0
Monthly Income		
Sufficient basic needs only	75	75.0
Not sufficient for basic needs	22	22.0
Sufficient for basic needs and savings	3	3.0

Table (1): Shows that, the mean age of studied females was 32.4 ± 1.8 years & 40.0 % of studied females was single. Also, 50.0 %of the studied females had postgraduate in education level. Additionally, 40.0 % of the studied females' employees, and 75.0 % of the studied females' monthly income is sufficient basic needs only.

Table (2): Frequency Distribution the Past and Current History of the Studied Females (N=100).

Item	No.	%
Past history		
Suffer from a menstrual disorder		
Yes	85	85.0
No	15	15.0
Date of the last menstrual period		
From 3 to > 6 months	75	75.0
More than 6 months	25	25.0
Have a history of certain diseases		

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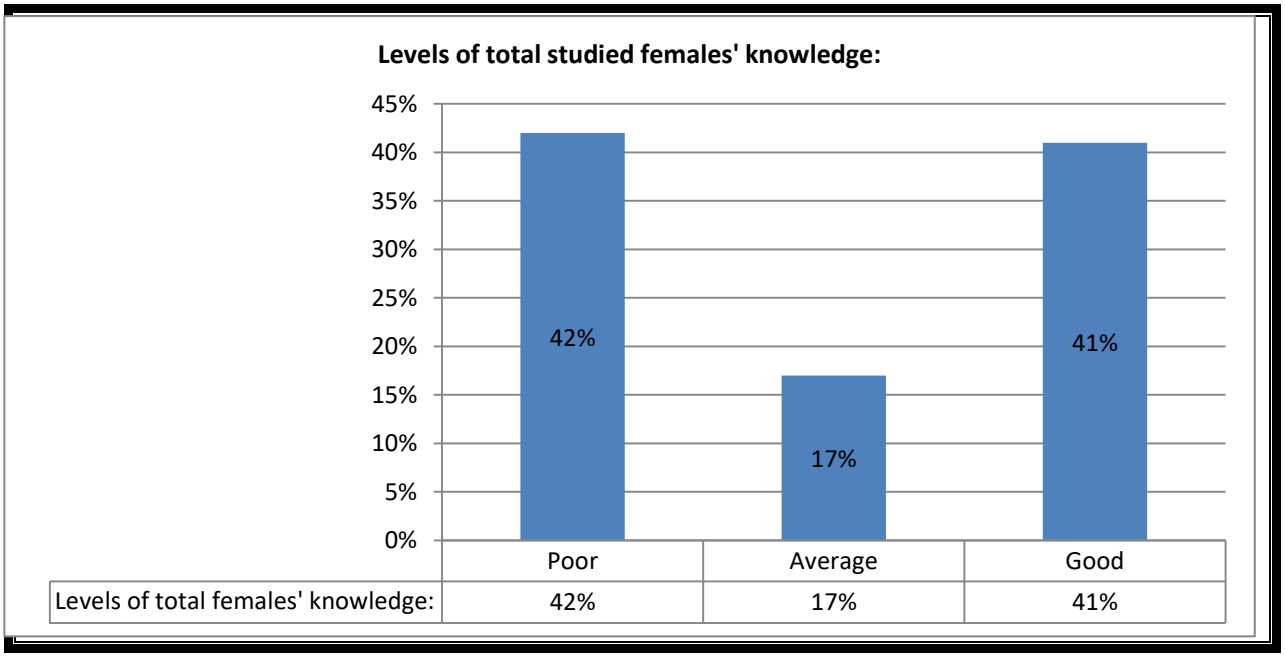
Yes	60	60.0
No	40	40.0
If the answer is yes, what is the disease? (No=60)		
Hypertension	20	33.3
Diabetes Mellitus	35	58.3
Heart disease	5	8.4
Have a family history of polycystic ovary syndrome		
Yes	67	67.0
No	33	33.0
Current history		
Suffer from pelvic pain before the start of period or after it ends		
Yes	70	70.0
Sometimes	20	20.0
No	10	10.0
Suffer from interrupted or irregular menstrual cycles		
Yes	85	85.0
Sometimes	10	10.0
No	5	5.0
Suffer from excess weight, especially around the abdominal area		
Yes	90	90.0
No	10	10.0

Table (2): Demonstrates that, 85.0 % of studied females suffer from a menstrual disorder and 75.0 % of them date of the last menstrual period from 3 to > 6 months. While, 70.0 % of them suffer from pelvic pain before the start of period or after it ends and 90.0 % of them suffer from excess weight, especially around the abdominal area.



χ2= 33.00 P= 0.104

Figure (1): Percentage Distribution of Total Studied Females' Knowledge regarding Polycystic Ovarian Syndrome (n= 100).

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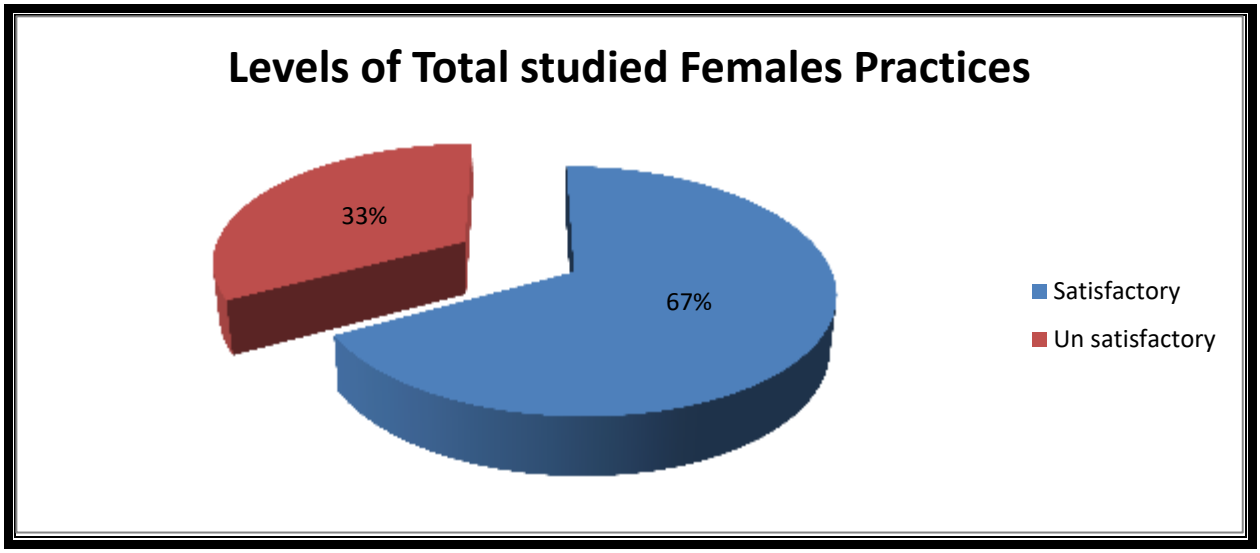
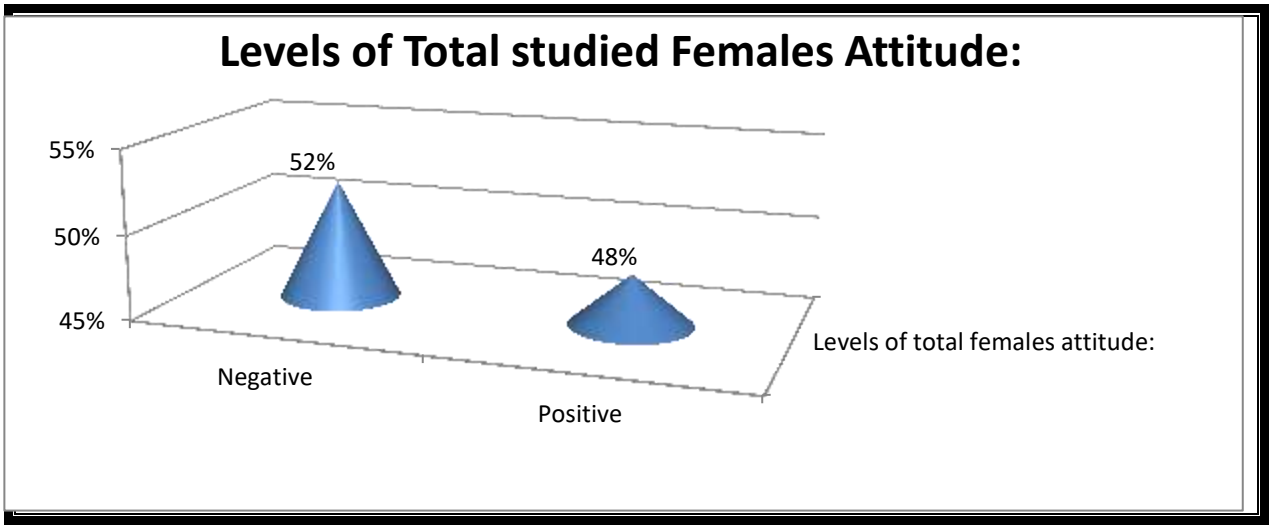
Figure (1): Presents that, 41 % of the studied females had good, 42 % of them poor knowledge level and 17 % of them had average knowledge level regarding polycystic ovarian syndrome with mean ± SD 21.92 ± 7.45.



χ2= 30.00 P= 0.000

Figure (2): Percentage Distribution of Studied Female's Total Reported Practices regarding Polycystic Ovarian Syndrome (n= 100).

Figure (2): Presents that, 67 % of the studied females had satisfactory and 33 % of them unsatisfactory regarding polycystic ovarian syndrome with Mean ± SD 40.36 ± 11.38.



χ2= 27.84 P= 0.000

Figure (3): Percentage Distribution of Studied Female's Attitude regarding Polycystic Ovarian Syndrome (n=100)

Figure (3): Illustrates that, 52 % of the studied females had negative attitude and 48 % of them had positive attitude regarding polycystic ovarian syndrome with mean± SD 10.33 ± 2.05.

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Table (3): Relation between Total Studied Females' Knowledge and their Demographic Characteristics (n= 100).

Demographic characteristics	Studied Female's knowledge						χ^2	P
	Poor level (n=42)		Average level (n=17)		Good level (n=41)			
	No.	%	No.	%	No.	%		
Age								
15 -25 years	30	71.4	1	5.9	0	0.0	8.21	0.000
26 - 35 years	10	23.8	10	58.8	29	70.7		
36 - 45 years	2	4.8	6	35.3	12	29.3		
Marital status								
Single	30	71.4	10	58.8	0	0.0	7.74	0.02
Married	10	23.8	7	41.2	17	41.5		
Divorced	0	0.0	0	0.0	10	24.4		
Widow	2	4.8	0	0.0	14	34.1		
Level of education								
Read and write	30	71.4	0	0.0	10	24.4	4.50	0.105
Middle education	12	28.6	17	100.0	22	53.7		
Postgraduate	0	0.0	0	0.0	9	21.9		
Occupation								
Employee	20	47.6	17	100.0	3	7.3	7.22	0.125
Student	10	23.8	0	0.0	21	51.2		
Housewife	12	28.6	0	0.0	17	41.5		
Monthly Income								
Sufficient basic needs only	40	95.2	10	58.8	25	61.0	34.35	0.000
Not sufficient for basic needs	2	4.8	7	41.2	13	31.7		
Sufficient for basic needs and savings	0	0.0	0	0.0	3	7.3		

Table (3): Reveals that, there was highly statistically significant relation between the studied females' total knowledge level, their age and level of education and there was a statistically significant relation between the studied females' total knowledge level and their occupation. While, there was no statistically significant relation between the studied females' total knowledge level and their marital status, and monthly income.

Table (4): Relation between Total Studied Females' Reported Practices and their Demographic Characteristics (n= 100).

Demographic characteristics	Studied Female's reported practices				χ^2	P
	Unsatisfactory (n=33)		Satisfactory (n=67)			
	No.	%	No.	%		
Age						
15 -25 years	30	71.4	1	5.9	8.21	0.000
26 - 35 years	1	23.8	48	58.8		
36 - 45 years	2	4.8	18	35.3		

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Marital status						
Single	30	71.4	10	14.9	7.74	0.02
Married	1	23.8	33	49.3		
Divorced	0	0.0	10	14.9		
Widow	2	4.8	14	20.9		
Level of education						
Read and write	30	71.4	10	14.9	4.50	0.105
Middle education	3	28.6	47	70.1		
Postgraduate	0	0.0	9	13.4		
Occupation						
Employee	20	47.6	20	29.9	7.22	0.125
Student	10	23.8	22	32.8		
Housewife	3	28.6	25	37.3		
Monthly Income						
Sufficient basic needs only	31	95.2	44	65.7	34.35	0.000
Not sufficient for basic needs	2	4.8	20	29.9		
Sufficient for basic needs and savings	0	0.0	3	4.4		

Table (4): Reveals that, there was highly statistically significant relation between the studied females' total reported practices level, their age and level of education and there was a statistically significant relation between the studied females' total reported practices level and their occupation. While, there was no statistically significant relation between the studied females' total reported practices level and their marital status, and monthly income.

Table (5): Relation between Total Studied Females' Attitude and their Demographic Characteristics (n= 100).

Demographic characteristics	**Studied Female's Attitude**				**χ^2**	**P**
	Negative (n=52)		**Positive (n=48)**			
	No.	**%**	**No.**	**%**		
Age						
15 -25 years	30	71.4	1	5.9	8.21	0.000
26 - 35 years	20	23.8	29	58.8		
36 - 45 years	2	4.8	18	35.3		
Marital status						
Single	30	71.4	10	14.9	7.74	0.02
Married	20	23.8	14	49.3		
Divorced	0	0.0	10	14.9		
Widow	2	4.8	14	20.9		
Level of education						
Read and write	30	71.4	10	14.9	4.50	0.105
Middle education	22	28.6	28	70.1		
Postgraduate	0	0.0	9	13.4		

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Occupation						
Employee	20	47.6	20	29.9	7.22	0.125
Student	29	23.8	3	32.8		
Housewife	3	28.6	25	37.3		
Monthly Income						
Sufficient basic needs only	31	95.2	44	91.7	34.35	0.000
Not sufficient for basic needs	21	4.8	1	2.1		
Sufficient for basic needs and savings	0	0.0	3	6.2		

Table (5): Reveals that, there was highly statistically significant relation between the studied females' total attitude level, their age and level of education and there was a statistically significant relation between the studied females' total attitude level and their occupation. While, there was no statistically significant relation between the studied females' total attitude level and their marital status, and monthly income.

Discussion:

Polycystic ovary syndrome (PCOS) is one of the most common heterogeneous conditions of the endocrine reproductive system in female of childbearing age. Hyperandrogenism and oligomenorrhea are the two core characteristics of PCOS, a complicated and multifaceted illness. The condition is linked to several major side effects, which include type 2 diabetes, early atherosclerosis, infertility, and endometrial cancer ***(Wang et al., 2024).***

The present study finding concerning females' age, less than half of studied females had aged from 26 to 35 years, this finding was in agreement with **Rashad et al., (2024)** who conducted published study at Middle East entitled as "The impact of long non-coding RNA H19 on metabolic features and reproductive phenotypes of Egyptian females with polycystic ovary syndrome" who reported that, 48.1 % of studied subjects were aged from 26 to 35 years. From researcher's point view, this might be due to this age range encompasses a significant portion of a female's reproductive years. Hormonal changes and imbalances are more noticeable and can lead to the symptoms associated with PCOS. Lifestyle factors as diet, physical activity, and body weight can influence the development and severity of PCOS symptoms. Females in their late 25s and early 35s often face lifestyle changes that can exacerbate these issues.

Concerning to female's level of education, less than half of studied female's education levels were postgraduate and more than one third of them were employee. This result was in accordance with **Yassin et al., (2024)** who conducted published study at Turkey entitled as " Comparative analysis of clinical symptoms and biochemical alterations in females with polycystic ovary syndrome: assessing the impact of type 1 diabetes versus non-diabetic controls", who reported that 50.1 % and 39.8 % of studied females's education levels were postgraduate or more and employee, respectively. From researchers' point view, this might be due to both postgraduate studies and professional employment can be highly demanding and stressful. Chronic stress can lead to hormonal imbalances, which can exacerbate PCOS symptoms. Many postgraduate students and employees have sedentary lifestyles, spending long hours studying or working at a desk. Lack of physical activity can contribute to weight gain and insulin resistance, which are associated with PCOS.

Regarding to female's monthly income of the present study revealed that more two third of studied female had sufficient basic needs only, this finding was in agreement with **Albahlol et al., (2023)** who conducted a published study at Kaduna State in Nigeria entitled in ″ Vitamin D receptor gene polymorphism and polycystic ovary syndrome susceptibility, Kaduna State, Nigeria. ″, who stated that 74.6 % of studied females monthly income were sufficient basic needs only. From researchers' point of view, this might be due to the cost of living, especially in urban areas where job opportunities are often concentrated, can be high. Housing, transportation, and childcare costs can consume a significant portion of their income. Even with higher education, females may find themselves in positions that do not fully utilize their skills and qualifications, leading to lower earnings.

Concerning to female's menstrual disorder, the present study finding revealed that more than two third of studied female's suffer from a menstrual disorder. This result was in accordance with **Raman et al., (2023)** who conducted published study at Southeast Asian country entitled as " Translation, cross-cultural adaptation and validation of the Health Belief Model Questionnaire for weight management behavior for use in a Southeast Asian country". They

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reported that, 78.2 % of studied females suffer from a menstrual disorder. From researcher point view, this might be due to females with PCOS typically have elevated levels of androgens, such as testosterone. These hormones can disrupt the regular ovulation process, leading to irregular menstrual cycles or even the absence of periods (amenorrhea).

Regarding to female's excess weight, especially around the abdominal area, the present study finding revealed that most of studied females had excess weight, especially around the abdominal area. This result was in accordance with **Conlon et al., (2024)** who conducted published study in Canada entitled as " Primary care provider behaviors, attitudes and beliefs in the diagnosis and management of polycystic ovary syndrome in adolescents". who reported that, 93.9 % of studied females had excess weight, especially around the abdominal area. From researcher point view, this might be due to PCOS is associated with an increased risk of metabolic syndrome, which includes insulin resistance, high blood pressure, abnormal lipid levels, and abdominal obesity. These factors collectively increase the risk of cardiovascular disease.

The following paragraphs answered research question Q1. What is the females' knowledge regarding polycystic ovarian syndrome?

Regarding the effective of the program on total knowledge studied females, the present study revealed that more than one third had poor in total knowledge and more than one third had good in total knowledge regarding PCOS this finding was supported with **Abdelrahman et al., (2024)** whose conducted published study in Egypt under title of " Impact of erythropoietin and myoinositol versus metformin on insulin resistance in a rat model of polycystic ovary syndrome " who reported that, 39.6 % of the studied female had poor in total knowledge and 40.5 % of the studied female had good in total knowledge. From researchers' point of view, this might be due to provide clear and accurate information about what PCOS is, its symptoms, and how it affects reproductive health, hormones, metabolism, and overall well-being that help to improve knowledge post educational program. Knowledge and resources to effectively manage their condition, make informed decisions about their health, and improve their overall quality of life.

The following paragraphs answered research question Q2. What is the females' reported practices regarding polycystic ovarian syndrome?

Concerning to the nearly two third had unsatisfactory in total reported practices and nearly one third had unsatisfactory in total reported practices studied females, this finding was supported with **Shehata et al., (2024)** whose conducted published study in Saudia Arabia under title of " Effect of whole-body vibration on insulin resistance in females with polycystic ovarian syndrome " who reported that, there 66.4 % had unsatisfactory in total reported practices and 33.9 % had unsatisfactory in total reported practices of studied females. From researchers' point of view, this might be due to engaging in regular exercise can improve insulin sensitivity and help manage blood sugar levels. This is particularly beneficial for females with PCOS who often experience insulin resistance. Practicing mindful eating and choosing nutrient-dense foods can help in maintaining a healthy weight. Weight loss, even modest, can significantly reduce PCOS symptoms.

The following paragraphs answered research question Q3. What is the females' attitude regarding polycystic ovarian syndrome?

Concerning to more than half had negative in total attitude and less than half had positive of the total attitude studied females, this finding was supported with **Teh, (2023)** whose conducted published study in Kajang under title of " Knowledge and attitude towards polycystic ovary syndrome among female undergraduate students in a private university in Kajang" who reported that, 51.8 % had negative in total attitude and 48.2 % had positive of the total attitude studied females. From researchers' point of view, this might be due to several challenging factors. The condition often brings a range of distressing symptoms, including irregular menstrual cycles, excessive hair growth, acne, weight gain, and fertility issues, which can significantly impact self-esteem and body image. The chronic nature of PCOS, with no known cure, can lead to feelings of frustration and helplessness as females may struggle with managing symptoms over a long period.

The following paragraphs answered research question Q4. Is there a relation between females' knowledge, reported practices, attitude and their demographic characteristics?

Regarding relationship between total knowledge and female's demographic characteristics, the present study showed significant relation between them and this finding was in agreement with **Asad et al., (2024)** who published study at Argentine under title "Polycystic ovary syndrome and mental health", who reported that, statically significant relation between total knowledge and demographic characteristics post apply health education program. In addition,

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this finding in accordance with **Khan et al., (2024),** who published study at Western Asia under title "Situation analysis of polycystic ovary syndrome in Western Asia" who reported significant relation between total knowledge level among the studied subjects and demographic characteristics. From researchers' point view, this might be when females are knowledgeable about their condition, they can communicate more effectively with healthcare providers. This leads to better collaboration, personalized treatment plans, and improved adherence to prescribed therapies.

Regarding to relation between studied female's demographic characteristics and their total reported practices, the current study revealed a highly statistically significant between studied female's age, sex, work place setting and experience their total practices scores. This result agrees with the study done by **Bohsas et al., (2024)** who conducted a study in Syria about "Prevalence and knowledge of polycystic ovary syndrome (PCOS) and health-related practices among women of Syria", they found that, a statistically significant relation between studied samples' age, level of education, sex, and their total reported practices scores. From the investigator point of view, PCOS manifests differently among individuals, and demographic factors such as age, socioeconomic status, ethnicity, and education can influence how women manage their condition. Understanding these relationships helps tailor interventions and recommendations to better fit different groups.

Concerning to relation between studied nurse's socio demographic characteristics and their total attitude, the current study revealed a highly statistically significant between studied females' age, work place setting, sex, marital status, years of experience and their total attitude scores. This result agrees with the study done by **Rizvi et al., (2024)** who conducted a study in Pakistani about "Knowledge, attitude, and perceptions about polycystic ovarian syndrome, and its determinants among Pakistani undergraduate students.", they found that, a statistically significant relation between studied samples' age, level of education, sex, and their total attitude scores. From the investigator point of view, demographic characteristics often influence access to healthcare and utilization of medical services. For instance, women from lower socioeconomic backgrounds might face barriers to accessing specialized care, affecting their management practices for PCOS.

Conclusion

Based on the results of the present study and research question the following conclusion includes:

Less than half of the studied females had poor total knowledge about polycystic ovarian syndrome, also most of them had unsatisfactory, total reported practices regarding PCOS, and more than half of the studied females had negative attitude regarding PCOS. There a relation between studied females' knowledge, reported practices, and attitude towards PCOS. There is statistically significant relation between studied females' demographic data and their knowledge, and reported practices for females regarding PCOS. The results of the current study answer the research questions.

Recommendations

In the light of the result of this study, the following recommendations were suggested:

1. Apply further research in large sample and other setting for generalization.
2. Design booklets for females which include all information about PCOS.
3. Create posters and banner then put in obstetric & gynecological that would help females to improve' knowledge practice and attitude about PCOS.
4. Encourage females to attain a workshop regarding PCOS to exchange knowledge, and practice under observation from community health nurse.

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