



## PERCEPTION OF FEMALE UNIVERSITY STUDENTS TOWARD POLYCYSTIC OVARIAN SYNDROME

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### ABSTRACT

**Background** Lack of knowledge regarding polycystic ovarian syndrome and poor lifestyle choices are considered to be the major factor leading to polycystic ovarian syndrome. **Aim:** The study aimed to evaluate perception of the female university students toward polycystic ovarian syndrome **Design:** A Quasi-experimental research design was utilized. **Setting:** This study was conducted at faculty of Engineering-Fayoum University. **Sample:** A Convenient sample include 100 female university students **Tools:** A structured interviewing questionnaire and female university students assessment sheet toward knowledge and attitude regarding polycystic ovarian syndrome **Results:** the majority of studied female university students had satisfactory level of total knowledge regarding polycystic ovarian syndrome after educational session with a highly statistical significant difference pre/post educational session implementation and more than half of the studied female university students had a negative attitude before educational session. **Conclusion:** there was highly statistically significant with positive correlation between total knowledge and total attitude scores pre/post educational session implementation and follow up. **Recommendation:** Implementing an educational program about risk factors and preventive measures of polycystic ovarian syndrome among female university students.

**Key words:** Attitude, Knowledge, Female university students, Polycystic Ovarian Syndrome

### INTRODUCTION

Polycystic ovary syndrome (PCOS) is the most common endocrinopathy and systemic metabolic disorder among young women who are seeking infertility treatment. The symptoms include a disturbed menstrual cycle and ovulation, infertility, acne, or hirsutism due to hyperandrogenism. At the same time, metabolic changes towards obesity, insulin resistance, an increased risk of type 2 diabetes mellitus, dyslipidemia, and metabolic syndrome are also present. Young women are frequently linked to an increased risk of cardiovascular diseases, endometrial cancer, and mental and immune disorders (Kicińska, et al., 2023).

The exact cause of PCOS is not yet known, studies have shown the role of genetic and environmental factors, such as unhealthy lifestyles that lead to obesity and insulin resistance, as well as their interactions in the development of this syndrome. However, new evidence suggests a key role for proinflammatory and inflammatory mediators in the pathophysiology of PCOS, which appears to be independent of obesity and other factors.<sup>6</sup> So that, reports of women in both obese and normal weight groups indicate high levels of circulating serum tumor necrosis factor (TNF)- $\alpha$ , C-reactive protein (CRP), monocytes, lymphocytes, and the penetration of

inflammation into ovarian tissue (**Zirak Sharkesh, et al., 2022**).

Lack of awareness about physical symptoms of polycystic ovary syndrome cause high illness perception, and maladaptive use of coping strategies. The female students with lower educational background, cause high illness perception significantly cause psychological distress. Illness perception affect the thinking pattern of female students linked with passive coping strategies which were adopted to overcome stress. Emotion focused coping and avoidant coping are considered maladaptive and short term effective. Female students suffer from depression, anxiety, body-dissatisfaction, fear of rejection, social isolation to severe mental health problems due to inefficient coping strategies. (**Qurat-Ul-Ain, 2023**)

Nurses can have a positive impact on females with PCOS through counseling and education. This can also provide support for females dealing with negative self-image secondary to the physical manifestation of PCOS. This kind of education helps female understand the syndrome and its associated risk factors to prevent long-term health problems. It encourages females to make positive lifestyle changes makes community referrals to local support groups to help females build their coping skills. (**Hussein, et al, 2022**)

### **Significance of the study:**

According to the National Institute of Health (NIH) criteria, PCOS affects between 6 and 10% of women worldwide. World Health Organization (WHO) estimated that PCOS has affected 116 million women (3.4%) worldwide in 2012 [64]. In a

combination of the different criteria of PCOS diagnosis, the prevalence in Chinese, Caucasians, Middle Eastern and Black women are 5.6%, 5.5%, 6.1–16% and 6.1% respectively. In the USA, a large study from 2003 to 2008, consisting of over 12 million privately insured women in the age group 18–45 revealed a prevalence of 47.5% in the southern USA, 23% in North Central USA, 18.7% in West, and 10.3% in the East (**Dhar, et al., 2022**).

PCOS affects 6.6% of Egyptian teenage girls, and 12.6% of teenage girls are at high risk Prevalence of PCOs in Young Adult Unmarried Females Attending Zagazig University hospital (outpatient clinics of gynecology and dermatology) was 55.6% among all presented females, oligomenorrhea, acne, and hirsutism were the most common complaint (**Maghraby, et al., 2022**).

According to the Rotterdam criteria, Egypt had a PCOS prevalence of between 14.5% and 37.5%. This incidence is more prevalent in populations that are at higher risk for the metabolic syndrome and insulin resistance. Strong data suggest that women with PCOS may benefit from early diagnosis and treatment for a variety of conditions also develop type II diabetes and cardiovascular disease (**Abdelghani, et al., 2023**).

### **AIM OF THE STUDY**

The aim of this study was to evaluate perception of the female university students toward polycystic ovarian syndrome through the following objectives:

- 1- Assess knowledge of the female university students regarding polycystic ovarian syndrome.

- 2- Assess attitude of the female university students regarding polycystic ovarian syndrome.
- 3- Implement educational session regarding polycystic ovarian syndrome.
- 4- Evaluate the effect of educational session of the female university students regarding polycystic ovarian syndrome.

### **Research hypothesis**

Perception of the female university students toward polycystic ovarian syndrome will be improved

### **Operational definition:**

Perception means knowledge and attitude of female university students toward polycystic ovarian syndrome.

### **SUBJECT AND METHODS**

The subjects and methods for this study were portrayed under the following four main items:

- I- Technical Items.
- II- Operational Items.
- III- Administrative Items .
- IV- Statistical Items.

#### **I- Technical Items:**

The technical design included research design, setting, subject and tools for data collection.

#### **Research Design:**

A quasi-experimental research design (pre – posttest-follow up) one group was utilized for conducting this study. Quasi-experimental research design was carried out in healthcare to evaluate the effectiveness of interventions designed and implemented through participatory action research (PAR) processes in improving clinical coordination between care levels in each country (Vázquez et al., 2022).

#### **Setting:**

The study was conducted at Faculty of Engineering - Fayoum University. As the building is in the shape of the letter "U" and the students were distributed into three sections (electricity, architecture, mechanics) where students from the Electricity Department receive theoretical lectures in the auditoriums of the first floor, while the Department of Architecture is in the auditoriums of the fourth floor and mechanics in the auditoriums of the third floor, while the practical part is in the building of engineering laboratories. The total number of students is 300 students divided 200 males and 100 females were distributed on three specialties.

#### **Sample:**

#### **Type of the sample:**

Convenient sample was used in the current study.

#### **Sample Size:**

The sample size included 100 female university student of second year studied to faculty of Engineering-Fayoum University within Three months from July 2022 to September 2022.

#### **Tools for data collection:**

Three tools were used to collect data for this study:-

#### **Tool I: A structured Interview questionnaire:-**

A structured interview questionnaire; it was developed by the researcher after review the literature (Zaitoun et al., 2023), (Muhaidat et al., 2023), (Hussin & Abd Kadir2020). , (Ismayilova & Yaya 2022). , (Jakhar et al.,2022)., (Jabeen et al., 2022), (Mohamed Reda et al., 2022) and (Kurdi et al., 2021), and was designed in open-end questions and wrote in Arabic form to avoid misunderstanding. It consisted of two parts.

**Part (1): Personal characteristics of the female university students:**

This part composed of (7) questions used to collect data related to age, residence, and level of mother and father education, marital status.

**Part (2): Health assessment sheet:**

-This part composed of three sections:-

**Section (1): Anthropometric measurement:** This section composed of (4) questions aimed to collect data related to health history in terms of weight, height, body mass index and waist circumference.

**Section (2): Menstrual history:**

This section used to collect data composed of (5) questions related to menstruation in terms of the age of menarche, length, duration, rhythm and amount of the menstrual blood.

**Section (3): Medical, surgical &family history of female university student:**

This section used to collect data composed of (3) question such as: medical history of suffering from any chronic disease, past surgery and family history.

**Tool II: Female University Students Knowledge assessment sheet toward Polycystic Ovarian Syndrome:**

It was designed by the researcher based on literature review (**Al Souheil, et, al, 2022**) to assess female university student's knowledge toward polycystic ovarian syndrome. It designed in closed-end questions and wrote in Arabic form included 43 questions to assess female student's knowledge regarding polycystic ovarian syndrome such as: definition, causes, diagnosis, symptoms, complications, risks and management.

**Knowledge scoring system**

For knowledge score using (correct complete=2, correct incomplete=1 and incorrect=0) the total score of knowledge was 86 point. Score of less than (<61) 60% was unsatisfactory and the score equal or more than (61-86) 60% was satisfactory (**Reda, et al., 2022**).

**Tool III: Female University Students attitude assessment sheet toward Polycystic Ovarian Syndrome:**

It was designed by the researcher based on literature review (**Albezrah, et al., 2019**) to assess the attitude of female university students regarding polycystic ovarian syndrome, the sheet contain 20 questions and was designed in closed-end questions and wrote in Arabic form covers lifestyle such as: (weight reduction, diet& exercise)

**Scoring system:**

For attitude score using (agree=3, sometimes=2 and Disagree=1) the total score of attitude was 60 point. Score of less than (<42) 60% was negative and the score more than or equal (42- 60) 60% was positive ( **Reda, et al., 2022**).

**Validity:**

Revision of the tools for clarity, relevance, comprehensiveness, understanding and applicability was done by panel of three expertise's in maternal and newborn health nursing department at Helwan University to measure the content validity of the tools and the necessary modifications were done accordingly (such as arrange and add questions in personal characteristics and knowledge, changes and reformulate sentences in attitude.

**Reliability:**

Cronbach's Alpha was used to measure the internal consistency of the tools used in this study.

### Alpha Cronbach Reliability Analysis of the used tool

Tools	Alpha Cronbach
Knowledge Tool	0.856
Attitude Tool	0.822

### Ethical considerations:

An official permission to conduct the proposed study was obtained from the faculty of Nursing Helwan University. The researcher clarified the aim of the study to the students included in the study to gain their confidence and trust. The researcher obtained oral consent from female university students. The researcher assured maintaining anonymity and confidentiality of female's student data. The students were informed that they are allowed to choose to participate or not in the study and that, they have the right to withdraw from the study at any time.

### II- Operational items:

#### Preparatory phase:

It includes reviewing of past, current, national and international related literature and theoretical knowledge of various aspect of the study using books, articles, internet and magazines to develop tools for data collection. The researcher constructed and prepared the different data collection tools.

#### Pilot study:

The pilot study was carried on 10% (10 of female university student) under study based on sample criteria, it has been conducted to test the applicability, clarity of questions and understand ability of the tool. All female students who are shared on the pilot study were included in the sample.

#### Field work:

The study was carried out through four phases preparatory, implementation, follow-up and evaluation phase.

- **Preparatory phase:**

The researcher reviewed the current advanced and past relevant literature related by using the available local and international books, magazines and computer search then designed and prepared tools for data collection

- **Implementation phase:**

The study conducted from the beginning of July2022to September 2022.at the beginning of the interview, the researcher greeted the every student, introduced her for them and explained the purpose of the current study; the researcher distributed identification students with PCOS tool for all students and analyzed it to exclude students with PCOS

The researcher took the student included in the study who suffers from PCOS in another session. So that they are plays a role through their experiences with the disease. Oral approval of the student was obtained after explaining the purpose of the study. Then distributes all tool of research to all female students the year as (pre-test). The average time needed for the completion of each questionnaire was (30-50) minutes.

The study group was divided into subgroup (12) groups. The 8 groups of them contain 8 students and the 4 groups of them contain 9 students. The researcher has implemented 5 educational sessions for each group (5 days\weeks), according to the students schedule.

In the first session, the researcher was distributed the booklet for the students then explained PCOS to student by media (PowerPoint) based on their needs and baseline data obtained from pre-test. Content of this booklet (introduction, definition of ovary, function of ovaries, definition of PCOS, causes, diagnosis, treatment,

complication and prevention of polycystic ovarian syndrome)

After the final session, the post- test was conducted by using the same tool used in the pre-test. The researcher was repeated the post-test immediately of the conduction first post-test. The researcher has applied the follow-up after two months. The same fieldwork steps were applied to all subgroups.

- **Follow –up phase:**

It took two months feedback and background for students after receiving the educational session, the researcher followed up with students for assuring they followed the lifestyle modification.

- **Evaluation phase:-**was started post educational session to evaluate the response students with PCOS on lifestyle by using the same questionnaire used before the implementation of educational session. In the two months, the follow-up test was conducted.

### III-Administrative Items:

## RESULTS

**Table (1): Distribution of the studied females university students according to the personal characteristics (n=100)**

Personal characteristics	N	%
<b>Age</b>		
18-20	77	77
21-23	23	23
<b>Mean ± SD</b>	20.47±2.15	
<b>Residence</b>		
Rural	61	61
Urban	39	39
<b>Mother education level</b>		
Illiterate	48	48
Primary	3	3
Secondary	20	20
University	29	29
<b>Father education level</b>		
Illiterate	18	18
Primary	12	12
Secondary	9	9
University	61	61
<b>Marital status</b>		
Single	86	86
Married	14	14

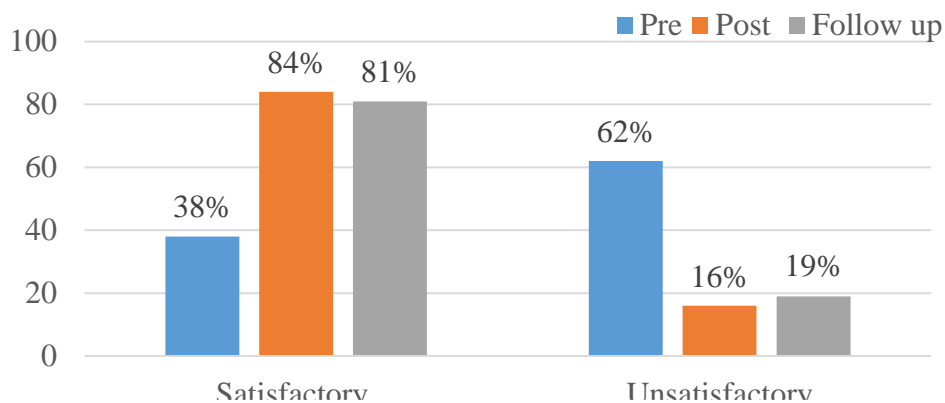
**Table (1)** demonstrated that more than three quarters of studied female university students (77%) was aged from (18-20) year old with mean  $\pm$  SD (20.47 $\pm$ 2.15). Regarding of residence this table showed that, two-third of them (61%) were from rural. As regard level of father education this table illustrated those two-thirds (61%) were university compared to level of mother education. Regard to the marital status this table illustrated that, the majority of the (86%) were single.

**Table (2): Percentage distribution of studied females university students according to their items knowledge about PCO pre, post educational sessions implementation& follow up (n=100)**

Items of knowledge	Pre- educational session				Immediately post- educational session				Follow up two months				P1		P2	
	Satisfactor y		Unsatisfactor y		Satisfactor y		Unsatisfactor y		Satisfactor y		Unsatisfactor y		X <sup>2</sup>	P-value	X <sup>2</sup>	P-value
	N	%	N	%	N	%	N	%	N	%	N	%				
Definition polycystic ovarian syndrome	36	36	64	64	82	82	18	18	80	80	20	20	43.737	<0.001*	0.130	0.718
Causes of PCO	35	35	65	65	85	85	15	15	83	83	17	17	52.083	<0.001*	0.149	0.700
Diagnosis PCOS	37	37	63	63	80	80	20	20	78	78	22	22	38.081	<0.001*	0.121	0.728
Symptoms of PCOS	39	39	61	61	86	86	14	14	85	85	15	15	47.125	<0.001*	0.040	0.841
Complications of PCOS	42	42	58	58	87	87	13	13	84	84	16	16	44.219	<0.001*	0.363	0.547
Risks of PCOS	38	38	62	62	84	84	16	16	81	81	19	19	44.472	<0.001*	0.312	0.577
Management of PCOS	40	40	60	60	83	83	17	17	80	80	20	20	39.046	<0.001*	0.298	0.585

P1= pre& post, P2= post & follow up \*A high statistical significant difference (p<=0.001)

**Table (2)** demonstrated that more than two-thirds (64%, 65%, 63%) of studied females university students answers unsatisfactory about definition polycystic and causes and diagnosis of PCOS respectively pre educational sessions implementation while (82%, 85%, 80%) of them were answers satisfactory respectively post educational sessions implementation with a highly statistical significant difference pre/ post educational sessions implementation when (p value= 0.001), finally was (80%, 83%, 78%) of them were answers satisfactory respectively (follow up) with a no statistical significant difference post/ Follow up educational sessions implementation with (p value <0.05).



**Figure (1):** Percentage distribution of studied female's university students according to their total knowledge pre, post & follow up educational session implementation.

**Figure (1)** illustrates that two third of studied females university students (62%) had answers unsatisfactory pre educational sessions implementation compered to post educational sessions. The majority of them (84%) had answers satisfactory with a highly statistical significant difference pre/post educational sessions implementation. When p value <0.001 also the majority of them (81%) answers were satisfactory follow up with a no statistical difference post/follow up educational sessions implementation with p value <0.05.



**Table (3): Percentage distribution of studied females university students according their attitude regarding lose weight to reduce PCO pre, post educational sessions implementation & follow up (N=100)**

	Pre- educational session						Immediately post- educational session						Follow up(two months)						P1		P2	
	Agree		To sometimes		Disagree		Agree		To sometimes		Disagree		Agree		To sometimes		Disagree		X <sup>2</sup>	P-value	X <sup>2</sup>	P-value
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%				
Weight reduction is effective in treating polycystic ovary syndrome.	38	38	6	6	56	56	90	90	8	8	2	2	90	90	6	6	4	4	71.687	<0.001*	0.952	0.621
Losing weight improve ovulation to reduce polycystic ovary syndrome.	34	34	10	10	56	56	87	87	12	12	1	1	87	87	11	11	2	2	76.467	<0.001*	0.377	0.828
Losing weight improves the psychological state to reduce polycystic ovary syndrome.	32	32	14	14	54	54	84	84	10	10	6	6	84	84	7	7	9	9	62.377	<0.001*	1.129	0.569
Weight loss has side effects to reduce polycystic ovary syndrome.	34	34	14	14	52	52	84	84	13	13	3	3	84	84	12	12	4	4	64.878	<0.001*	0.183	0.913
Using diet to lose weight to reduce polycystic ovary syndrome.	22	22	20	20	58	58	87	87	9	9	4	4	87	87	7	7	6	6	89.966	<0.001*	0.650	0.723
Using medications to lose weight to reduce polycystic ovary syndrome.	32	32	14	14	54	54	89	89	10	10	1	1	89	89	9	9	2	2	78.591	<0.001*	0.386	0.824
The methods used to reduce weight effective for pregnancy.	18	18	16	16	66	66	90	90	8	8	2	2	90	90	6	6	4	4	110.902	<0.001*	0.952	0.621
The methods used to reduce weight effective in regulating the menstrual cycle.	24	24	18	18	58	58	87	87	9	9	4	4	87	87	5	5	8	8	85.789	<0.001*	2.476	0.290
The methods used to reduce weight effective in improving the psychological state.	24	24	26	26	50	50	85	85	9	9	6	6	85	85	9	9	6	6	76.966	<0.001*	0.000	1.000

P1= pre & post, P2= post & follow up \*A high statistical significant difference ( $p < 0.001$ )

**Table (3)** demonstrated that more than half (56%, 58%, 54%) of studied females university students answers disagree about Weight reduction is effective in treating polycystic ovary syndrome and Using diet to lose weight to reduce polycystic ovary syndrome and Using medications to lose weight to reduce polycystic ovary syndrome respectively pre educational sessions implementation.

While (90%, 87%, 89%) of them was their answers agree respectively post educational sessions implementation with a highly statistical significant difference pre/ post educational sessions implementation. When ( $p$  value= 0.001), finally was (90%, 87%, 89%) of them their answers agree respectively (follow up).

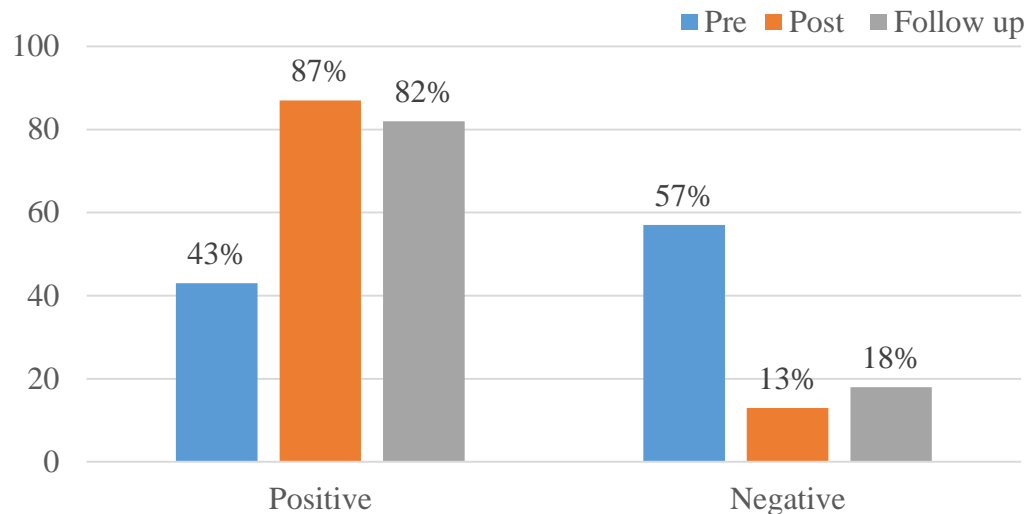
**Table (4): Percentage distribution of studied females university students according their attitude regarding exercise & diet to reduce PCO pre, post educational sessions implementation & follow up (N=100)**

	Pre- educational session						Immediately post- educational session						Follow up(two months)						P1		P2	
	Agree		To sometimes		Disagree		Agree		To sometimes		Disagree		Agree		To sometimes		Disagree		X <sup>2</sup>	P-value	X <sup>2</sup>	P-value
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%				
Regular exercise to reduce PCOS	6	6	30	30	64	64	89	89	7	7	4	4	89	89	4	4	7	7	139.754	<0.001*	1.636	0.441
Using exercise to lose weight to reduce polycystic ovary syndrome.	26	26	24	24	50	50	85	85	12	12	3	3	85	85	10	10	5	5	77.040	<0.001*	0.682	0.711
An integrated diet is planned by a doctor.	34	34	12	12	54	54	84	84	14	14	2	2	84	84	11	11	5	5	69.626	<0.001*	1.646	0.439
An integrated diet is planned by friends.	42	42	8	8	50	50	83	83	12	12	5	5	83	83	9	9	8	8	51.066	<0.001*	1.121	0.571
An integrated diet is planned by the media.	12	12	20	20	<b>68</b>	<b>68</b>	<b>87</b>	<b>87</b>	12	12	1	1	<b>87</b>	<b>87</b>	10	10	3	3	123.876	<0.001*	1.182	0.554
One of the types of sports that do to reduce polycystic ovary syndrome is walking.	32	32	10	10	58	58	84	84	9	9	7	7	84	84	8	8	8	8	63.378	<0.001*	0.125	0.939
One of the types of sports that do to reduce polycystic ovary syndrome is running.	28	28	16	16	56	56	85	85	10	10	5	5	85	85	5	5	10	10	72.776	<0.001*	3.333	0.189
One of the types of sports that do to reduce polycystic ovary syndrome is swimming.	30	30	12	12	58	58	86	86	12	12	2	2	86	86	6	6	8	8	79.301	<0.001*	5.600	0.061
In the morning, exercise to reduce polycystic ovary syndrome.	16	16	14	14	70	70	83	83	12	12	5	5	83	83	11	11	6	6	101.831	<0.001*	0.134	0.935
In the afternoon, exercise to reduce polycystic ovary syndrome.	24	24	14	14	62	62	87	87	10	10	3	3	87	87	8	8	5	5	89.977	<0.001*	0.722	0.697
In the evening, exercise to reduce polycystic ovary syndrome.	22	22	12	12	<b>66</b>	<b>66</b>	<b>83</b>	<b>83</b>	13	13	4	4	<b>83</b>	<b>83</b>	9	9	8	8	90.392	<0.001*	2.061	0.357

P1= pre& post, P2= post & follow up \*A high statistical significant difference (p<=0.001)

**Table(4)** demonstrated that more than two-thirds (68%, 64%, 66%) of studied females university students answers disagree about An integrated diet is planned by the media and Regular exercise to reduce PCOS and In the evening, you exercise to reduce polycystic ovary syndrome respectively pre educational session implementation. While (87%, 89%, 83%) of them was their answers agree respectively post

educational sessions implementation. With a highly statistical significant difference pre/ post educational sessions implementation. When (p value= 0.001), finally was (87%, 89%, 83%) of them their answers agree respectively follow up educational sessions implementation.



**Figure (2)** Percentage distribution of the studied females university students according to the total attitude about polycystic ovarian syndrome pre, post & follow up educational sessions implementation (n=100)

**Figure (2)** illustrates that more half of studied females university students (57%) had a negative attitude pre educational sessions implementation compared to the majority (87%, 82%) of them had a positive attitude respectively, the minority of them had a negative attitude (13%, 18%) respectively post/follow up educational sessions implementation.

**Table (5): Correlation between Total knowledge and Total attitude scores pre, post and follow up**

Total attitude score	Total knowledge score	
	r	P-value
Pre- educational session	0.682	<0.001*
Immediately post- educational session	0.615	<0.001*

Follow up (two months)	0.438	<0.001*
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\*A high statistical significant difference ( $p < 0.001$ )

**Table (5):** demonstrated that highly statistically significant with positive correlation between total knowledge and total attitude scores pre, post educational sessions implementation and follow up when p-value <0.001\*.

**Table (6): Relation between socio demographic characteristics of female's university student and their knowledge**

	Total knowledge																	
	Pre educational session						Immediately post educational session						follow up(two months)					
	Satisfactory		Unsatisfactory		Chi-square		Satisfactory		Unsatisfactory		Chi-square		Satisfactory		Unsatisfactory		Chi-square	
	N	%	N	%	X <sup>2</sup>	P-value	N	%	N	%	X <sup>2</sup>	P-value	N	%	N	%	X <sup>2</sup>	P-value
<b>Age</b>																		
18-20	27	35.1	50	64.9	1.224	0.269	65	84.4	12	15.6	0.043	0.836	62	80.5	15	19.5	0.050	0.823
21-23	11	47.8	12	52.2			19	82.6	4	17.4			19	82.6	4	17.4		
<b>Residence</b>																		
Rural	12	19.7	49	80.3	22.300	<0.001*	45	73.8	16	26.2	12.178	<0.001*	43	70.5	18	29.5	11.222	<0.001*
Urban	26	66.7	13	33.3			39	100.0	0	0.0			38	97.4	1	2.6		
<b>Mother education level</b>																		
Illiterate	4	8.3	44	91.7	57.221	<0.001*	32	66.7	16	33.3	20.635	<0.001*	31	64.6	17	35.4	18.156	<0.001*
Primary	0	0.0	3	100.0			3	100.0	0	0.0			2	66.7	1	33.3		
Secondary	7	35.0	13	65.0			20	100.0	0	0.0			19	95.0	1	5.0		
University	27	93.1	2	6.9			29	100.0	0	0.0			29	100.0	0	0.0		
<b>Father education level</b>																		
Illiterate	2	11.1	16	88.9	9.704	0.021*	5	27.8	13	72.2	56.391	<0.001*	4	22.2	14	77.8	52.998	<0.001*
Primary	3	25.0	9	75.0			9	75.0	3	25.0			9	75.0	3	25.0		
Secondary	3	33.3	6	66.7			9	100.0	0	0.0			8	88.9	1	11.1		
University	30	49.2	31	50.8			61	100.0	0	0.0			60	98.4	1	1.6		
<b>Marital status</b>																		
Single	34	39.5	52	60.5	0.614	0.433	75	87.2	11	12.8	4.708	0.030*	73	84.9	13	15.1	6.020	0.014*
Married	4	28.6	10	71.4			9	64.3	5	35.7			8	57.1	6	42.9		

\*A high statistical significant difference

**Table (6):** demonstrated that highly statistical significant difference between total knowledge pre with residence and mother education level when p-value  $<0.001^*$ . While there was just statistically significant difference between total knowledge and father education level when p-value  $<0.05^*$ .

- High statistically significant difference between total knowledge post with residence, mother and father education level when p-value  $<0.001^*$ . While there was just statistically significant difference between total knowledge and marital status when p-value  $<0.05^*$ .
- High statistically significant difference between total knowledge follow up with residence, mother and father education level when p-value  $<0.001^*$ . While there was just statistically significant difference between total knowledge and marital status when p-value  $<0.05^*$

## **DISCUSSION**

Polycystic ovarian syndrome (PCOS) is known as one of the most frequent endocrine diseases in females worldwide. However, this term does not completely capture the diversity of clinical signs associated with this syndrome e.g., menstrual irregularity and clinical features of androgen excess, which are though commonplace in females with PCOS, they are not included under the definition of PCOS, limited to polycystic ovarian morphology (PCOM) (**Belenkaia et al., 2019**).

PCOS causes physical and psychological issues which are responsible for causing disturbances in daily life of females. In terms of physical aspects, this disease is characterized by unwanted hair growth on face, chin, neck area and baldness. The overall impact is difficulty or inability in formation of eggs, cysts in ovaries and irregularity in periods. Females with PCOS are more prone to endometrial and ovarian cancer, late menopause, type 2 diabetes mellitus, hypertension, lipid disorders, cardiovascular disease PCOS may cause mental health problems like worry, low mood, aggression, difficulty in concentration, lack of social interest and physiological issues like inability to take a sound sleep, headache and body pain (**Bhambhu et al., 2022**).

So, the aim of the current study was to assess knowledge & attitude of female university students regarding polycystic ovarian syndrome, implement and evaluate the effect of educational session of them.

Regard, personal characteristics, the finding of the current study revealed that, three quarters of the studied female

university students were aged 18-20 years with mean SD  $20.47 \pm 2.15$ . As regards marital status the majority of them were single. This result was in the same line with (**Omagbemi et al., 2020**). In Nigeria who conducted a study about Current Knowledge and Perceptions of Women about Polycystic Ovarian Syndrome who stated that, the majority of women under study their age ranged 15-25 years. Also the majority of them were single. From the researcher's point of view, the majority of female students in current study were unmarried where married women may attend more meetings with gynecologists and be more likely involved in conversations about reproductive issues than unmarried women. However, those visits did not boost unmarried females' sexual and reproductive health knowledge.

The current study revealed that, more than two-thirds live at rural areas, nearly one third of mother education were university and more than two thirds of father education also were university. these results disagreed with a study performed by (**Umaisa et al., 2021**). In India Shree Guru Gobind Singh Tricentenary University, Gurugram (Haryana) who conducted study about Effectiveness of Planned Teaching Program Regarding Polycystic Ovarian Disease in Terms of Knowledge and Attitude among Students of SGT University study reported that more than one-third of the of participant's mothers were graduation. Only one fifth (20%) of the participant's fathers were graduation.

From the researcher point of view, this finding may be due to the association between low of educational mother level and exposure to polycystic ovarian syndrome. Also, this shed the light on the

importance of strengthening the rural areas with proper health care services in order to fulfill their residence needs of effective and efficient health services.

Furthermore, as regards to the studied female university students' total knowledge about PCOS, it was observed that all of them had low level of knowledge about PCOS before implementation of the educational session, while and majority of them had high level of knowledge immediately after and two thirds three month after the educational session; with a statistically significant differences ( $p < 0.001$ ). This enhancement replicates the effect of the implementation of educational session. The progress of total knowledge's score may be attributed to wide varieties of educational methods used by the researchers as booklet, group discussion, audiovisual materials, lectures, and videos.

These results contrasted with the findings of the current study (**El-Adham, & Shehata, 2022**). In Tanta Egypt carried out a study entitled " Effect of Educational Guidelines on Knowledge, Self-Protective Behavior and Quality of Life of Female Nursing Students regarding Polycystic Ovary Syndrome. This result clarified that the majority of the participants had sufficient total knowledge about PCOS.

From the researchers' point of view, this may be due to the different socio-demographic criteria of studied female students and the nature of the study; this reflects the positive effect of educational sessions on modifying knowledge of those students.

Concerning total attitude toward polycystic ovarian syndrome the results of the present study showed that more

than half of the female university students had negative attitude toward polycystic ovarian syndrome before educational session. These results came in harmony with (**Mohamed Reda et al., 2022**). In Benha who conducted a study about Knowledge and Attitude of Late Adolescent Girls regarding Polycystic Ovarian Syndrome. That reported that nearly half of female students had negative attitude toward polycystic ovarian syndrome.

From the researcher point of view, this result may be due to unsatisfactory knowledge of female university students leads to negative attitude toward PCOS.

Regarding to Correlation between Total knowledge and Total attitude scores pre, post and follow up, the present study illustrated that highly statistically significant with positive correlation between total knowledge and total attitude scores pre, post educational session activation and follow up

As well, these study results disagree with (**Devi & Susila, 2022**). In Rohilkhand College and School of Nursing, Bareilly shown that r value was -0.268 with p value 0.001 who conducted study about assess the level of knowledge and attitude regarding polycystic ovarian syndrome (pcos) among nursing students indicated that there was a weak negative relationship between knowledge and attitude score. However, the value  $r = -0.268$  indicates the little negative relationship between these 2 variables.

From the investigator's point of view, it might be due to the female students having inadequate knowledge and negative attitude about polycystic ovarian syndrome before educational session which could effect on life style and lead to decreasing awareness.

Regarding the relation between socio demographic characteristics of Female University Students and their knowledge the current study presented that, there was highly statistically significant difference between total knowledge and socio demographic characteristics (residence, mother education level) pre implementation phases. While there was just statistical significant difference between total knowledge and father education level and high statistically significant difference between total knowledge with (residence, mother and father education level) post implementation phases when. While there was just statistically significant difference between total knowledge and marital status.

This result is disharmony by (**Salama & Elbana, 2019**). In Benha who conducted study about Effect of self-instructional module on awareness of polycystic ovarian syndrome among adolescent students who reported that there was no statistically significant relation between total knowledge score and socio demographic characteristics (age, occupation, type of the family, residence, previous family history) at both pre and post implementation phases. While there was highly statistical significant relation between total knowledge score and mother education at pre implementation phase.

Another study conducted by **Mohamed Reda , Amira Ahmed Hassa,el.al.** Who conducted study about Knowledge and Attitude of Late Adolescent Girls regarding Polycystic Ovarian Syndrome shown harmony with the present study which shows that there was a highly statistical significant relation between late adolescent girls' level of knowledge about polycystic ovarian syndrome and demographic

characteristics (age, educational class, residence, mother's education, mother's job, and father's education) (**Reda et al., 2022**).

From the investigator's point of view, a lower educational level of mother leads to a decrease in the total knowledge of those female students.

## **CONCLUSION**

**Based on the results of the present study, the following can be concluded:**

The result of the current study supported by hypothesis .There was highly statistically significant with positive correlation between total knowledge and total attitude scores pre/post educational session implementation and follow up

## **RECOMMENDATIONS**

**Based upon findings of the current study, the following recommendations were suggested:**

- An intensive educational program should be implemented to increase female university student' knowledge regarding polycystic ovarian syndrome.
- Improve attitude of female university student' regarding polycystic ovarian syndrome.

## **Recommendation for further researches:**

- Assess lifestyle of female university students with polycystic ovarian syndrome.
- Replication of the study on a large sample for generalizing the finding.

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