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Original Article

Knowledge and Self - Reported Practices of Nursing Students Regarding the Polycystic Ovarian Syndrome

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ABSTRACT

Background: Polycystic ovarian syndrome (PCOs)is one of the most endocrine disorders of females in reproductive age that is accompanied with undesirable metabolic, reproductive, endocrine, and psychological manifestations. **The aim of this study** is to assess knowledge and self-reported practices of nursing students regarding polycystic ovarian syndrome. **Method:** A descriptive cross-sectional study design was utilized to accomplish this study. A purposive sample of 420female nursing students in the first level, Faculty of Nursing. Three tools were developed by the researcher for collecting the data of this study as the following: socio-demographic and economic characteristics of nursing students, knowledge, and self-reported practices of nursing students regarding polycystic ovarian syndrome. **Results** indicated that 87.4% and 89.5% of nursing students had poor knowledge and self-reported practices regarding polycystic ovarian syndrome respectively. The researcher concludes that almost all nursing students have poor level of knowledge and self-reported practices regarding polycystic ovarian syndrome respectively. Finally, the researcher recommended a continuous health education program regarding polycystic ovarian syndrome of nursing students.

Keywords: Knowledge, Polycystic Ovarian Syndrome, Practices, Nursing, Students.

Introduction

Polycystic ovarian syndrome (PCOs) is a common disorder that is associated with negative metabolic, reproductive, endocrine, and psychological consequences among women in reproductive age **(Hajam, Kumar, Thakur, & Rai,2023).** It is defined as a group of connected reproductive disorders, including persistent anovulation, elevated androgen production, disrupted gonadotrophin secretion, and polycystic ovarian morphology **(Dapas, & Dunaif , 2022).**

World Health Organization (WHO, 2023) estimated that 8–13% of women affected with PCOS, and up to 70% of them undiagnosed. In the Middle East, the prevalence of PCOS rose by 37.90% **(Al Maamari, Al Hashmi, Al Abri, Al Ghaithi, & Al Sinan, 2023)**. In Egypt, the prevalence of polycystic ovarian syndrome among Egyptian adolescent girls is 6.6% and those who are at high risk were 12.6%. Thus, it is necessary to give attention to the importance of early diagnosis for this syndrome among this age group (Ibrahim et al., 2017). Prevalence of PCOS in young adult unmarried females attending outpatient clinics of gynecology and dermatology at Zagazig University hospital was 55.6% among all presented females**.(Siam et al., 2020).**

The exact cause of PCO_S is unknown, but there are many risk factors such as the patient's family history (genetic), her change in lifestyle, lack of daily routine exercise, changes in dietary habits, loss of work-life balance, exposure to mobile phone radiations, and the most important of all is stress. Stress levels in humans are increasing day by day and, thus, it has now developed as one of the primary causes of PCOD, which can ultimately lead to a rise in blood pressure (hypertension), diabetes mellitus (most commonly Type-2 diabetes), increased risk of uterine cancer and many cardiovascular diseases (Minocha, 2020).

Clinical features of PCOs include clinical hyperandrogenism in the form of hirsutism, acne, or alopecia. Menstrual irregularity encompasses primary or secondary amenorrhea, oligomenorrhea, irregular periods, and heavy menstrual bleeding. Clinical tests show polycystic ovarian morphology on ultrasound, and or metabolic derangement on blood testing, including insulin resistance, glucose intolerance, obesity, and dyslipidemia. There can be a marked heterogenicity in its clinical presentation **(Deans, 2019).**

PCOS is main cause of infertility and is linked to several clinical complications such as irregular menstruation, diabetes, cardiovascular disease, and psychological disorders like anxiety and depression, these threatening complications can result in eating disorders, mood disorders, marital and social problems, and sexual dysfunction **(AbuTaha, Daghash, Daghash, & Abu Farha,**

2020). Therefore, screening of PCOs can offer the chance for early identification of risk factor, healthy lifestyle promotion, and early intervention is very necessary to stop the development of PCOs disorder in the future(El Sayed, El Sayed, & Michael, 2020).

PCOS still has no known treatment. The main goals of treatment are to address the symptoms of androgen excess, irregular menstruation, and related metabolic abnormalities. Treatment plans often include changing one's lifestyle to lose weight, using hormonal contraceptives to control menstruation and suppress testosterone, using antiandrogens as an adjuvant to treat hirsutism, and using insulin-sensitizing medications. **(Huddleston et al., 2020).**

University students should be aware of PCOS during their first academic year, because they are susceptible to an increase in body weight due to a decline in dietary quality. (Douglas, 2021).Community nursing students are essential members in providing direct health education, increasing knowledge, and helping to make lifestyle changes that lower risk of developing polycystic ovarian syndrome complications (Salama, & Elbana, 2019).Furthermore, there was a critical need for conducting assessment of knowledge and self-reported practices of nursing students about the polycystic ovarian syndrome.

Aim of the Study

To assess knowledge and self-reported practices of nursing students regarding the polycystic ovarian syndrome

Method

Design

A descriptive cross-sectional study design was utilized to accomplish this study.

Setting

This study conducted at Faculty of Nursing, Mansoura University, Egypt. Faculty of Nursing, Mansoura University was established to graduate qualified nursing specialists for the labor market in various health institutions in Dakahlia Governorate. The Faculty of Nursing was accredited by the National Authority for Quality Assurance and Accreditation in August 2014 and obtained the accreditation certificate to meet the national standards and renewed the accreditation certificate in October 2020.The college has introduced new post graduate programs such as :master's degree in infection prevention and control and evidence-based health care practice.

Participants

Participants of the present study included nursing students under the following inclusion and exclusion criteria.

Inclusion criteria. First level female nursing students their aged between 17-20 years and unmarried and accepted to participate in this study.

Exclusion criteria. First level female nursing students, who already diagnosed and on treatment for polycystic ovarian syndrome.

Sampling technique

The researcher used convenient sampling technique to select all participants 420from the above-mentioned settings, in which the number of female nursing students that registered in the first level second semester of the 2022-2023 academic year were 467 female students from the total of 1003 student after excluding male students, the total required number were 420students after including10% for pilot study that constitute 47 female students.

Tools of the study

The researcher collected data using two tools after reviewing the related literature.

Tool I. Self-Administered Structured questionnaire to Assess Female Student's demographic and Socioeconomic Characteristics. This questionnaire was used to assess characteristics of the female students such as: age, location of residence, and students' family income.

Tool II. Students' Knowledge Self-administered Structured Questionnaire. The researcher used this tool to assess knowledge of nursing students' regarding polycystic ovarian syndrome (definition, criteria, risk factors and complications) (Abraham Gnanadass et al.,2021) This questionnaire was composed of 50 questions that were classified into 8 categories. One mark was awarded for each correct answer as the following.

1. General knowledge of ovary (7items=7 marks).
2. Definition of polycystic ovarian syndrome (5 items = 5 marks).
3. Risk factor (4 items).
4. Most common Sign/symptom (7 items = 7 marks).
5. Diagnosis (7 items= 7 marks).
6. Prevention (6 items = 6 marks).
7. Treatment (7 items= 7 marks).

8. Complication (7 items= 7 marks).

The total score of knowledge ranged from zero to 50 marks. According to the researcher's cut-off point, the knowledge level categorized into three levels.

Poor = scores less than 60% of total scores (less than 30 marks).

Fair = scores 60% to less than 75% of total scores (30 to less than38 marks).

Good = scores more than 75% of total scores (38 to 50 marks) .

Tool (III): Students' Self-Reported Practices Contributing to Polycystic Ovarian Syndrome Self-administered Structured Questionnaire. This questionnaire was used to assess the self-reported practices of students that contribute to poly cystic ovarian cysts such as (fast food preference, soft drinks preference and consumption frequency, physical activity). This questionnaire was classified into three categories. All these categories were composed of 35 questions. The Likert scale was used in all questions required a response on five points Likert-rating scale with a four continuum (always=4, often=3, sometimes=2, rarely=1, and never=0) for proper practice and reversed score for improper practice. The tool was composed of three categories as the following:

1. Dietary habits (24 items = 84 marks).
2. Exercise pattern (7 items =28 marks).
3. Body weight maintenance (4 items =16 marks).

Scoring System: The total score of the self-reported practices ranged from (0 to128 marks) and was summed up for each member. According to the researcher's cut of point, the self-reported practice was consisted of two categories as:

- Improper practices = scores less than 60% of total scores (less than 77 marks).
- Proper practices = scores from 60 % and more of total scores (77 to 128 marks).

Phases of the Study

Preparation phase.

Administrative stage.An official letter was submitted from the community health nursing department and the vice dean of postgraduate studies and research to the vice dean of education and students' affairs, Faculty of Nursing, Mansoura University, and got permission to conduct the study after explanation of the study aim.

Ethical consideration. The researcher obtained the ethical approval from the Research Ethics Committee of Faculty of Nursing, Mansoura University, and obtained oral consent from the participants. The researcher introduced herself and a simple explanation about the aim of the study was provided to them. The researcher assured the participants that participation in the study is voluntary, and the collected data was treated confidentially and used only for the study. Participants were informed that they had the right to withdraw from the study at any time. The results were used as a component of the necessary research. As well as for further publications and education.

Literature Review. Review of the national and international literature regarding polycystic ovarian syndrome. Retrieved from scientifically published articles, internet searches, and textbooks. This review was a guide for developing study tools.

Tool Development .The researcher developed the tools (I,II& III) of this study after reviewing the recent and relevant literature.

Validity of the Study tools. A jury that involves seven experts in the field of community health nursing, community and public health of Faculty of Medicine ,and woman health tested content validity of the developed tools and the required modification will be carried out.

Face Validity. Face validity of the developed tools was tested by conducting a pilot study that was carried out on (10%) of the study sample (47 students) who had been included with the studied sample to evaluate the clarity, reliability, applicability of the study tools, and to estimate the approximate time required for data collection. The modifications were made based on pilot results, so some questions were omitted while others were rephrased.

The Tool's Reliability. The reliability of the developed tools was tested by using Cronbach's Alpha test and the value of the reliability of study tool of knowledge was .٩ and .8 for self reported practice and knowledge respectively.

2-Implementation phase.

Preliminary assessment.

The preliminary data collection started from April 2023 to the end of May 2023on the days of attending rotation in their courses in the Faculty (sunday, monday, and Thursday). This included a preliminary assessment of students'socio-demographics, knowledge and an analysis of the

collected data.The researcher started by introducing herself to the students and a brief explanation of the objective of the study was given to them, and written informed consent was obtained. The researcher used data collection tools (I,II&III).

Statistical Analysis.Data was sorted, coded, organized, categorized, and then transferred into specially designed formats. Data was analyzed using Statistical Package for Social Science (SPSS) version 21/International Business Machines/IBM. Com, U.S.A and were presented by simple frequency tables. Mean and standard deviation for continuous variables and percentages for categorical variables.

Limitations of the Study

Some obstacles faced the researcher during carrying out the study represented in:

- To the best of the researcher's knowledge, study population in the published articles in the subject of polycystic ovarian syndrome were restricted on first levels of students, other studies all levels, the researcher argued these studies in discussion part.

Results

Table1 shows that 49.8 % of the studied students aged from 19 to less than 20 years with a mean age of 2.49 ± (.5) years. Concerning residence, 81% of them their residence was rural .and 62.4% of them their family type was extended. Students' educational level of the mother and educational level of the father 56.7%, 53.3% were secondary respectively.75.7% of students 'occupation of mothers were housewives, and 50.5 % of students' occupation of fathers had private work. As regards students' family income 82.14 %of the students' family income was enough, and 42.9% of students had information regarding polycystic ovarian.

Figure1 clarifies that 42.9% of nursing students' source of information regarding polycystic ovarian syndrome were social media.

Table 2 indicates that 38.8%,85.0%,84.0%,and 88.1%of the students had a poor score level of knowledge general knowledge of ovary, definition of polycystic ovarian syndrome, risk factor, and most common Sign/symptom with a mean score of 1.96±(.859), 1.17±(.431), 1.23±(.572),and1.17±(.504) marks respectively.

Table 3 clarifies that 97.4%, 57.4%, 93.3 %,and 91.0%of the students had a poor score level of knowledge diagnosis , Prevention , treatment ,and Complication of polycystic ovarian syndrome, with a mean score of 1.04±(.246), 1.80±(.952), 1.11±(.429),and 1.14± (.470) marks respectively. and 87.4% of total knowledge score of studied had poor knowledge regarding polycystic ovarian syndrome with a mean score of 1.13±(.352).

Table 4 represents that55.2% of students had improper nutritional habits score level of practices regarding polycystic ovarian syndrome with a mean of 1.45± (.498),regarding students' practices related to exercise 95.0% had improper practices with a mean of 11.05±(.218), and 81.4% of students' practices related to weight loss were improper practices with a mean of 1.19±(.389).

Figure 2 showed that 89.5% of total score` level of students' self - reported practices regarding polycystic ovarian syndrome were improper practices with a mean of 1.10±(.307).

Table 1**.** Students' Demographic and Socioeconomic Characteristics.

Items	**n (420) %**	
Age:		
17 < 18 years	4	1.0
18 ≤ 19years	416	99.0
Mean ± (SD)	**18.49± (.519)**	
Educational level of the mother		
Not read & write	11	2.6
Read & write	34	8.1
Primary	7	1.7
Preparatory	19	4.5
Secondary	238	56.7
University	111	26.4
Educational level of the father		
Not read & write	13	3.1
Read & write	29	6.9
Primary	7	1.7

Preparatory	15	3.6
Secondary	224	53.3
University	132	31.4
Occupation of the mother		
Housewife	318	75.7
Private work	16	3.8
Government employee	86	20.5
Occupation of the father		
Not work	14	3.3
Private work	212	50.5
Government employee	173	41.2
Farmer	21	5.0
Residence		
Rural	340	81.0
Urban	80	19.0
Students' family income		
Not enough	27	6.4
Enough	345	82.1
Enough and save	48	11.4
Family type		
Nuclear	158	37.6
Extended	262	62.4

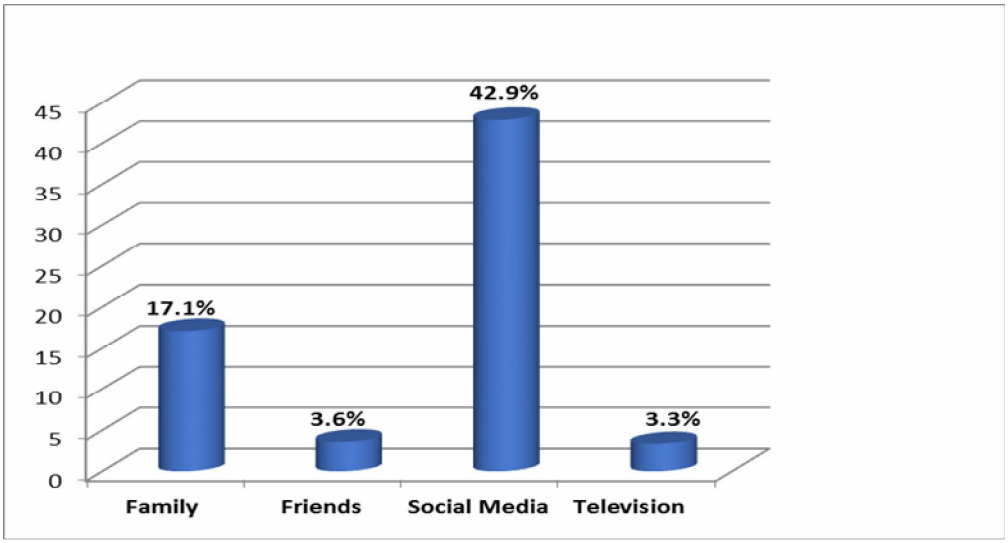

*Figure 1.*Nursing Students' Source of Knowledge Regarding Polycystic Ovarian Syndrome (n=420)

Table 2. *Nursing Students' Knowledge Level Score Regarding General Rnowledge of Ovary, Definition of Polycystic Ovarian Syndrome, Risk Factor, and Most Common Sign/Symptom (N=420).*

Knowledge Items	Score levels						
	Poor		Fair		Good		Mean± (SD)
	n	%	n	%	n	%	
General knowledge of ovary (7 items)	163	38.8	110	26.2	147	35.0	1.96±(.859)
Definition of polycystic ovarian syndrome(5 items)	357	85.0	54	12.9	9	2.1	1.17±(.431)
Risk factor (4items)	353	84.0	36	8.6	31	7.4	1.23±(.572)
Most common Sign/symptom (7items)	370	88.1	27	6.4	23	5.5	1.17±(.504)

Note. Poor. *Scores less than 60% of total scores mark from (less than 30 marks)*

Fair. *Scores 60% to less than 80% of total scores mark from (30 to less than 38 marks)*

Good. *Scores 75% and more of total scores mark from (38 to 50 marks)*

Table 3. Nursing Students' knowledge level Score regarding diagnosis, prevention, treatment, and complication of polycystic ovarian syndrome. (N=420).

Knowledge Items	Poor		Fair		Good		Mean± (SD)
	N	%	N	%	N	%	
Diagnosis (7 items)	**409**	**97.4**	**6**	**1.4**	**5**	**1.2**	**1.04±(.246)**
Prevention (6 items)	**241**	**57.4**	**23**	**5.5**	**156**	**37.1**	**1.80±(.952)**
treatment (7 items)	**392**	**93.3**	**10**	**2.4**	**18**	**4.3**	**1.11±(.429)**
Complication (7 items)	**382**	**91.0**	**17**	**4.0**	**21**	**5.0**	**1.14± (.470)**
Total knowledge score (50 tems)	**367**	**87.4**	**51**	**12.1**	**2**	**.5**	**1.13±(.352)**

Note. Poor. *Scores less than 60% of total scores mark from (less than 30 marks)*

Fair. *Scores 60% to less than 80% of total scores mark from (30 to less than 38 marks)*

Good. *Scores 75% and more of total scores mark from (38 to 50 marks)*

Table 4.Nursing Students' self-reported practice level score regarding polycystic ovarian syndrome (N=420).

Practice Items	Improper		Proper		Mean± (SD)
	N	%	N	%	
Nutritional habits(21 items)	232	55.2	188	44.8	1.45±(.498)
Student's practices related to exercise (7items)	399	95.0	21	5.0	1.05±(.218)
Student's practices related to weight loss(4 items)	342	81.4	78	18.6	1.19±(.389)

Note. Improper practices*. Scores less than 60% of total scores mark.*

proper practices. *Scores 60% or more than of total scores mark*

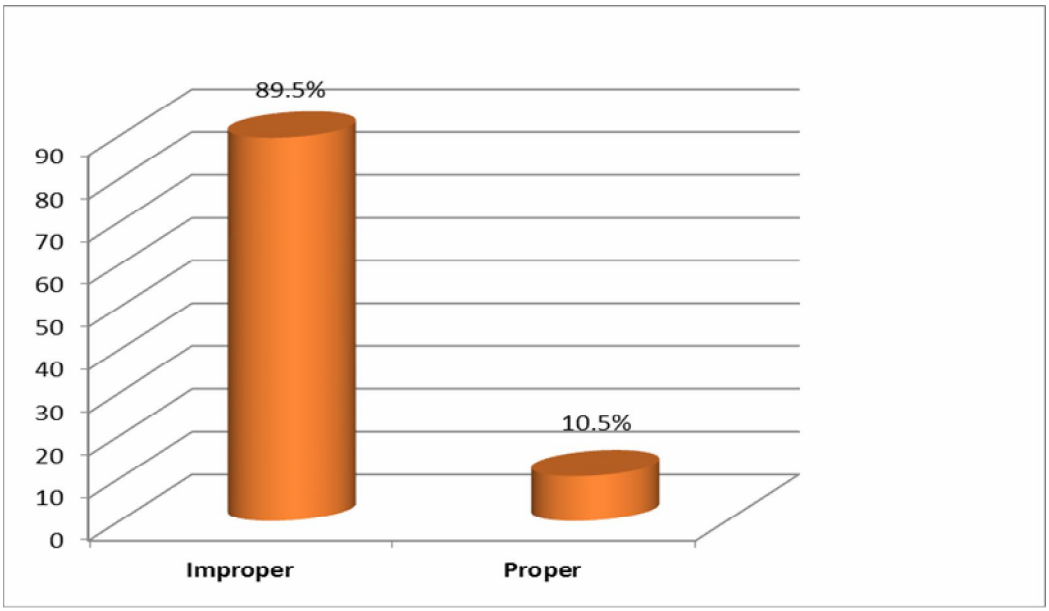

Figure 2.Total Score` Level of Students' Self - Reported Practices Regarding Polycystic Ovarian Syndrome (N=420).

Discussion

The most prevalent endocrine condition affecting women of reproductive age is polycystic ovarian syndrome (PCOs) (Mohan et al., 2023). It reflects a diverse illness that raises the possibility of becoming type 2 diabetes, dyslipidemia, heart diseases, and endometrial carcinoma, besides those psychological complications that represent a significant socioeconomic burden to health care (Sydora et al.,2023).Genetic, behavioral, and environmental factors play important role in the onset of PCOS(Rani, & Chandna, 2023),such as family history, sedentary lifestyle, poor diet, obesity, and stress (Ali, Mohamed, Mohamed, & Hussein, 2023).

PCOS begins in the adolescent period, and progresses gradually into adulthood (Pramodh,2020). during university years , the students acquire knowledge better than the other years of their life, because of higher awareness Levels through this time(Alshdaifat ,et al,2021), so it should increase awareness of the adolescents about the prevalence of PCOS to help in early detection and management (Abdelnaem, et al,2023).

The result of the present study revealed that about half of nursing students report that social media are the source of knowledge about polycystic ovarian syndrome. This result agreed with Abdelnaem et al ., (2023)findings, who evaluated the effect of health education program on students' knowledge about PCOs at Minia university dorms and reported that; the major source of knowledge about polycystic ovarian syndrome was social media.

Conversely, this finding disagrees with Thabet, Alsharif, Garoot, Almutairi and **Kutbi (2021)** findings, who assessed the level of awareness of nursing student regarding Polycystic ovary syndrome in King Abdulaziz University and presented that student acquired their information about PCOs from academic learning this is difference due to our study was conducted on first level who didn't' study gynecology in the first year.

Concerning the students' general knowledge of ovary, the current study presented that more than one third of students had poor knowledge regarding general knowledge of ovary. This result is similar to the result of AlSinan, and Shaman (2017) who identified the level of awareness about PCOS among the females in Saudi Arabia and presented that they had poor knowledge about basic physiology of the reproductive system of the females.

According to nursing students' knowledge about risk factors of PCOS, the results of the current study indicated that the majority of the nursing students had poor knowledge about risk factors of PCOS. This result in the same line with Bekhatroh et al (2023)findings, who evaluated the impact of multimedia education on women's knowledge and practices regarding polycystic ovarian syndrome, in Egypt and presented that the

females had inadequate knowledge regarding risk factor of PCOS.

Concerning the results of nursing students' knowledge about most common sign and symptom of polycystic ovarian syndrome, the current study illustrated that the majority of students had poor knowledge about most common signs and symptoms of polycystic ovarian syndrome. This result similar to **Bekhatroh et al (2023)** findings, who evaluated the impact of multimedia education on female's knowledge and practices regarding polycystic ovarian syndrome, in Egypt and presented the females had inadequate level of knowledge regarding Sign/symptom of PCOS.

On contrary, these results disagreed with Sasikala, Shanmugham, Varghese, and Saravanan (2021)findings, who evaluated the knowledge and awareness of nursing students about PCOS ,in South India and revealed that the majority of nursing students were aware of symptoms of PCOS this difference due to the current study was conduct without any educational session about PCOS .

Furthermore, the current study results showed that more than half of the students had poor knowledge about prevention of PCOs. These results in accordance with Kaundal, Renjhen, Kumari,**and Kumari (2023**)findings, who assessed the knowledge among reproductive-age females (15-44 years) regarding PCOs , in India and found that they had poor knowledge regarding prevention of PCOS.

In relation to nursing students' total knowledge level scores, the result of the present study illustrated that the majority of the students had a poor level of knowledge regarding polycystic ovarian syndrome. This result agreed with Abraham, Pathak , Kharol, and Chaturvedi (2022) who assessed the level of knowledge regarding polycystic ovarian syndrome among fourth year nursing students, they reported poor knowledge level of polycystic ovarian syndrome. In accordance with Rao, Broughton, and LeMieux (2020)findings, who assessed the knowledge and source of information about PCOS among young women in Texas Woman's University, in which they reported that females had poor knowledge about PCOS.

Conversely, the current study disagreed with an Indian study conducted by Patil, Jammalamadaka, Hindodi, and Patel (2023) which declared that the students had good knowledge of polycystic ovarian syndrome. As well, a study carried out by Maghraby, Ahmed, Ahmed, and Hassan (2020)findings, who assessed the levels of knowledge for female nursing students regarding polycystic ovarian syndrome, at south valley university and reported that they had good knowledge about the polycystic ovarian syndrome this might be due to target group in this study in four different level in the faculty of nursing but target group in the current study in the first level only and did not study gynecology yet.

With regards to self-reported practices about nutritional habits, the result of the current study showed that more than half of the students had improper nutritional practices in relation to PCOs. This result similar to Ibrahim, Hamed Gad, and Salim (2020) findings, who assessed knowledge about polycystic ovarian syndrome among nursing students, in Egypt and revealed that the studied females had improper nutritional practices as (fast food , refined carbohydrates as white bread, sugary beverages).

Regarding self-reported practices about exercise, the result of the present study illustrated that most of the students had improper self-reported practices related exercises in relation to PCOs. This result agreed with Al Maamari et al (2023) findings, who examined the relationship between participants' lifestyle choices and PCOS awareness among female university Students, in Oman and showed that they did n't be sufficiently physically active.

The current study results different with Hemavathi, and **Malathi (2022)** who assessed the effect of lifestyle modification regimen on polycystic ovary syndrome among adolescent girls, in India and presented that they had moderately favorable physical activity this difference due to nutritional peer effect in the first of university that depend mainly on the fast food.

According to nursing students' self-reported practices related to weight loss, the result of the present study showed that the majority of nursing students had improper practices regarding weight loss. This result is similar to the results of Moran, Brown, McNaughton, Joham and Teede (2017) who examined weight management practices in females without PCOS and revealed that they had improper weight management practices.

Regarding nursing students' total self-reported practices levels scores related to polycystic ovarian syndrome, the finding of the present study revealed that majority of the students have improper self-reported practices of polycystic ovarian syndrome. This finding is in agreement with the finding of a study in Emirati by Pramodh (2020) who assessed the knowledge and awareness

of PCOS among female students and illustrated that the female students had poor practices.

The current study in contrary with Goh et al (2022) finding, who determined knowledge and health-related practices of PCOS among females in Klang Valley, Malaysia and revealed that the majority of the females showed good health-related practices this is difference due to female nursing students are busier with their academic work , which take much of time and effort that preventing them from performing regular physical activity.

Conclusion

The majority of nursing students of first level have poor level of knowledge and self – reported practices regarding polycystic ovarian syndrome.

Recommendations

- Continuous health education program regarding polycystic ovarian syndrome to improve the knowledge and subjective practices of the nursing students 'first level.
- Simple educational pamphlets about polycystic ovarian syndrome should be provided for all nursing students' first level at Faculty of Nursing.

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