

Impact of Multimedia Education on Women's knowledge and Practices regarding Polycystic Ovarian Syndrome

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Abstract

Background: Polycystic ovarian syndrome (PCOS) is considered one of the common endocrine disorders that increases in adolescent girls in addition to young women and affects about 5%-10% of women worldwide during their reproductive years. It is characterized by menstrual irregularity and elevated serum androgens and is often accompanied by obesity and infertility. **Aim:** to evaluate the impact of multimedia education on women's knowledge and practices regarding polycystic ovarian syndrome. **Subjects and methods: Design:** A quasi-experimental design of one group "pre/post-test" was used to achieve the aim of the current study. **Setting:** the study was applied at the outpatient gynecology and obstetrics clinic at Sohag University Hospital. **Sample:** A purposive sample included 100 women diagnosed with PCOS. **Instruments of data collection:** Four instruments were used; 1) Structured interviewing questionnaire, 2) Women's knowledge assessment sheet, 3) menstrual feature assessment tool, 4) Women's practices assessment tool. **Results:** According to the findings of the current study, menstrual irregularity, menstrual bleeding, amenorrhea, and oligomenorrhea all showed statistically significant improvements ($P= 0.005$; $P=0.001$; $P=0.012$; $P= 0.04$). There was a highly significant difference between the women's knowledge of polycystic ovarian syndrome before and after receiving multimedia education. Additionally, the practices of the women significantly improved following the implementation of multimedia education compared to before implementation. **Conclusion:** Based on the results of the current study; all research hypothesis could be accepted. **Recommendations:** Providing educational programs about the main items of PCOS and its negative effects on reproductive health using different interactive educational modalities.

Keywords: Multimedia education, Polycystic ovarian syndrome, Women's knowledge and practices.

Introduction

About 6-20% of females of reproductive age have polycystic ovarian syndrome (PCOS), a prevalent endocrine and metabolic disorder (Siddiqui et al., 2022). However, PCOS is typically characterized by characteristics of polycystic ovaries, clinical or biochemical hyperandrogenism, and irregular ovulation. According to Kriedt et al. (2019), obesity and insulin resistance are usually linked to it. Obesity worsens all of the clinical signs of polycystic ovary syndrome (PCOS), a relatively prevalent endocrine condition that affects 8% to 13% of women during the reproductive period (Lim, et al., 2019). Hirsutism, irregular menses, prolonged

anovulation, and infertility are all prevalent clinical symptoms of PCOS (Ibrahim et al., 2017 Palomba et al. 2017).

The prevalence of PCOS varies depending on the diagnostic criteria used and the lack of a common definition. According to 116 million women (3.4%) worldwide, PCOS is predicted to be affected by WorldHealth Organization 2020 (Zenetel, 2022). Using multiple diagnostic criteria, a recent systematic analysis found that among the 27 surveys that were included, the mean prevalence of PCOS was 21.27% (Deswal et al., 2020). According to Alraddadi et al.'s 2018 study of 719 Saudi Arabian women, PCOS was present in 32.5% of them, while 54.9% of them had irregular periods. Additionally, the prevalence of PCOS among Kashmir women was 28.9% by NIH standards and

34.3% by AE-PCOS standards (**Ganie et al., 2020**).

The exact cause of PCOS is still unknown, but several hypotheses have been put forth that suggest that the pathophysiology of the condition is caused by a combination of hyperandrogenism and/or insulin resistance, environmental and genetic factors that lead to hormone disturbances, as well as other factors like ovarian dysfunction, obesity, and abnormalities in the hypothalamus and pituitary (**Batool et al., 2018**).

Additionally, PCOS therapy frequently entails both medication and lifestyle adjustments. The first-line treatment for PCOS is lifestyle changes. So, as a key component of the management of women with PCOS, various guidelines suggest exercise therapy and a calorie-restricted diet (**Sherman et al., 2019**). Because of this, educational programs can help women with PCOS understand their disease better and fulfill their expressed requirements when making lifestyle changes, such as increasing exercises (**Mani et al., 2018**).

The expansion of the use of contemporary educational techniques is a result of the development of information technology, which has enhanced the flexibility of the student and the teacher and offered feedback in the virtual environment. Multimedia in the context of computers refers to the use of audio and video modalities (fixed and moving) to convey a message with a specific purpose as well as the use of multimedia tools like infographics, short videos, audio and video effects, etc. to convey the desired concepts (**Jahandideh et al., 2019**).

Additionally, multimedia is a structure that interacts with the viewer by fusing written, audio, and visual elements with different kinds of videos. There is a form of two-way interaction between the creator and the audience as a result of the audience's varied engagement with these concepts (**Hashemi et al., 2019**). Text, graphics, sound, animation, and video pictures are all included in multimedia content that is sent to the user via a computer or other electronic device. Multimedia, or the simultaneous influence of

two or more media on a person to accomplish a particular purpose, is the information transfer through multimedia for message delivery. An educational multimedia message is written and visual communication that promotes active learning (**Mayer, 2020**).

One of the advantages of multimedia learning is the possibility of teaching from any place and at any time. It enables people to quickly get the information they need. Additionally, it lowers or gets rid of a lot of educational obstacles. Other benefits include its quickness, scope, ease of publication, volume and variety of material, quick access, and coverage of a wide range of audiences. This kind of educational approach is thorough and based on people's unique requirements, interests, and abilities. Additionally, it encourages students' enthusiasm for active involvement and promotes self-directed learning (**Badiei et al., 2018**).

Despite being overworked or facing challenging circumstances at home or work, the learner can continue their studies and yet have time to interpret, comprehend, and reply (**Khodaparast et al., 2018**). A fully interactive and user-friendly learning environment, the ability to repeat educational materials, lower costs associated with their reproduction and publication, and the ability to use numerous and dispersed contacts regardless of time and location are the main benefits of using educational software, podcasts, and multimedia. Multimedia resources for education include audio podcasts, educational video clips, instructional software, clips, educational motions, and flies showcasing them. Various researches have shown the effectiveness of employing multimedia in educational interventions (**Rabiei et al., 2017**).

It has been claimed that more knowledge of the condition improved the management of PCOS's unfavorable effects. Following a clinical research investigation, Colwell and colleagues revealed that women with PCOS felt empowered regarding disease information and were motivated to adhere to preventive strategies. According to a study conducted in Saudi Arabia (**Alotaibi & Shaman, 2020**), participants in an awareness campaign using social media had a greater understanding of the topic at hand. Literature on disease awareness, risk assessment, and attitudes concerning PCOS among Pakistani women is lacking. According to a few research, the majority of Pakistani women lack basic knowledge about the disease and are more likely to

develop PCOS (Rizvi et al., 2018).

An individual's comprehension of their disease could be greatly improved by greater female awareness of PCOS. This might create doors for early intervention that would boost the likelihood of success (Hillman & Dale, 2018).

Counseling and education from nurses can benefit PCOS-afflicted women. Support patients who are struggling with low self-esteem as a result of PCOS's physical expression. To avoid long-term health issues, educate the patient about the syndrome and the risk factors that go along with it. Encourage the patient to adopt healthier habits. To assist the patient in developing this coping ability, refer them to nearby support groups (Colwell et al., 2020).

Significance of the study:

Egyptians' rising obesity rates are largely attributed to their way of life, which includes sedentary lifestyles and unhealthy eating habits like consuming widely available junk food and fast food (Alotaibi & Shaman, 2020). Around 63% of Egyptians aged 20 or older are reported to have sedentary lifestyles. Insulin resistance, type 2 diabetes mellitus, and infertility are all serious risks for women with PCOS. Clinical manifestations of hyperandrogenism in women include hirsutism, acne, androgenic alopecia, as well as higher levels of testosterone (Rasool et al., 2019).

In addition, a study conducted in Egypt by Sanad (2014) found that there were 14 percent of fertile women and 37.5 percent of infertile women with PCOS among the 1450 women surveyed. Among infertile women with PCOS, ovulatory dysfunction, hirsutism, and PCO were all observed in 73.3%, 60.4%, and 79.4% of cases, respectively. The prevalence of PCOS varies depending on the diagnostic criteria used and the lack of a common definition. According to 116 million women (3.4%) worldwide, PCOS is predicted to be affected by WorldHealth Organization 2020 (Zengetal, 2022).

Previous studies have shown the advantages of an educational program for women with PCOS. To prevent diseases, women with PCOS are a vulnerable group in society and require more care and education. From reviewing available body of knowledge, it was found that there is an urgent need to support researches that explore the potential use of multimedia health technologies, which have demonstrated promising results in managing other diseases of a similar nature. There is a lack of research on how health professionals are raising awareness about PCOS management. Young patients who develop PCOS may experience stress as a result of the disease's early onset, which could potentially have an impact on their health and way of life. As a result, it is crucial and required to educate PCOS patients on the condition and self-management techniques (AlSinan & Shaman, 2017).

Consequently, the researchers conducted this study to evaluate the impact of multimedia education on women's knowledge and practices regarding polycystic ovarian syndrome.

Aim of the study:

This study aimed to evaluate the impact of multimedia education on women's knowledge and practices regarding polycystic ovarian syndrome through:

- Assessing women's knowledge regarding polycystic ovarian syndrome.
- Assessing women's practices regarding polycystic ovarian syndrome.
- Designing and implementing multimedia education according to health needs of women with PCOS
- Determine the impact of multimedia education on women's knowledge and practices regarding polycystic ovarian syndrome.

Research hypotheses:

After the application of multimedia education, women are expected to have a satisfactory knowledge about polycystic ovarian syndrome.

After the application of multimedia education, women are expected to have an adequate practice regarding polycystic ovarian syndrome.

After the application of multimedia education, women are expected to experience an improvement in menstrual features.

Subjects and Methods:**Research design:**

A quasi-experimental design of one group "pre/post-test" was used to achieve the aim of the current study. It is used for establishing the cause-effect relationship between the independent and dependent variables.

Setting:

The study was applied at the outpatient gynecology and obstetrics clinic at Sohag University Hospital. This setting was selected due to the high flow rate of patients in the selected setting, and it serves the biggest region of the population.

Sample:

A purposive sample included 100 women diagnosed with PCOS who were recruited from the gynecology and obstetrics outpatient clinics at Sohag University Hospital along a period of 6 months. Women were selected according to the following inclusion criteria: women diagnosed with PCOS using Rotterdam and consensus criteria (2003), at childbearing period, educated, able to use mobile and willing to participate in the study.

The exclusion criteria were:

- Unwillingness to participate
- Women who received hormonal therapy or ovulation induction.
- History of chronic diseases such as heart disease, endocrine disorder, and acute respiratory disease

Instruments of data collection:

Four instruments were utilized to collect data for the current study and were developed by the researchers after extensive available literature review (Kim, & Lee, 2022; Dos Santos, et al., 2020; Colwell et al., 2020 & Shele et al., 2020). Instruments II, III and IV were translated into Arabic as at the evaluation phase the women were asked to fill in them through Google form.

Instrument I: - Structured Interviewing Questionnaire. It was developed by the researcher, submitted to validity, reliability tests and includes three parts:

First part: women's data such as age, residence, educational level, occupation, family history of the PCOS, and physical measurements such as height, weight and body mass index. **Second part:** It included data related to obstetric history.

Instrument II: - Women's knowledge assessment sheet: It was used to assess women's knowledge regarding PCOS such as definition, causes, signs and symptoms risk factors, complications, treatment and source of knowledge.

Scoring system:

The model key answer was used to check the women's knowledge using a scoring system, and the following score range was given to each response:

1- Correct = 2 points.

2- Incorrect = 1 point.

* Level of knowledge: -

> 60% = Satisfactory level.

< 60% = Unsatisfactory level.

Instrument III:- Women's menstrual feature assessment tool: This instrument was adopted from (Ibrahim et al., 2018), and included menstrual data and characteristics regularity and forms of irregularity common with PCOS such as oligomenorrhea (interval more than 35 days), amenorrhea (no menstruation more than 6 months), irregular bleeding that starts and stops intermittently.

Instrument IV:- Women's practices assessment tool:

It was designed by the researchers to assess women's lifestyle habits and practices. It was submitted to validity and reliability tests. It encompassed four parts: -

Part 1: The purpose of this section was to evaluate the women's eating behaviors, including food types consumed, frequency of meals and meal components. Part 2: The purpose of this section was to evaluate the women's physical activity, including the frequency and type of exercise.

Part 3: This section was devoted to evaluate how often and how much the women watch TV and use computers during their free time.

Part 4: The purpose of this section was to evaluate the women's sleep habits, including napping and daily sleep hours.

Scoring system:

The model key answer was used to check the women's practices using a scoring system, and the following score range was given to each response:

- Correct = 2 points

- Incorrect = 1 point.
- * Level of practice: -
 - > 60% = Adequate level.
 - < 60% = Inadequate level.

Validity and Reliability of the Instruments:

A jury composed of three experts in gynecology and obstetrics nursing and two experts in community health nursing evaluated the adopted instrument and also the generated instruments' content validity; no modifications were made. To assess the instruments' internal reliability, Cronbach's Alpha was employed. (Cronbach's alpha=0.89), which showed a strong, substantial positive correlation between the items of the instruments.

Ethical consideration

Ethical approval was obtained from the ethical committee of the Nursing Faculty, Sohag University. To carry out the proposed study, official approval from the administrative staff of the gynecology and obstetrics outpatient clinics at Sohag University Hospitals was acquired. The enrolled women signed a written consent after being informed of the study's purpose, nature, assured that there were no health risks or dangers to research participants. Every woman was made aware that taking part in the study was entirely voluntary and that anyone might leave at any moment and for any reason.

Pilot Study:

Ten percent of the entire sample was used in the pilot study to test the instruments clarity and turnaround times; no adjustments were made based on the pilot results. The pilot study sample was therefore included in the whole sample.

Fieldwork

Data were collected throughout 6 months (starting from the beginning of July 2023 to the beginning of December 2023). All ethical consideration was followed before data collection started. The data were collected through four phases: preparatory, assessment,

implementation and evaluation phase.

1) Preparatory Phase:

The researchers reviewed the current advanced and past relevant literature by using the available local and international books, magazines, periodicals, and computer search, then designed and prepared instrument for data collection. The researcher designed the multimedia education kit to be in its final form based on the guidelines of the Ministry of Health. The researchers schedule the time plan for field work and data collection.

The multimedia program included contents covering both knowledge and practices: brief information on the anatomy and physiology of the female reproductive system as well as PCOS (definition, incidence, aetiologies, clinical symptoms, diagnosis, complications, medical therapy, management and effect on fertility). **Eating behaviors**, including food types consumed, frequency of meals and meal components. Advices on how to maintain a healthy diet, a high-fiber, low-sugar diet, cutting back on the intake of refined carbs (sugars and starches), and switching to complex carbohydrates (fruits and vegetables). Increasing consumption of fruits, vegetables, a sufficient amount of protein, foods high in polyunsaturated fatty acids, while reducing consumption of processed and fatty meals additionally, separating meals into three main meals and three snacks throughout the day. **Physical activity**, including the importance and types of exercises, benefits, scheduling exercise routine for at least 3 times/week for 30 min. **Sleep habits**, including sleep hygiene, napping and adequate daily sleep hours and meditation techniques.

2) Assessment phase:

Before beginning the multimedia education, the researchers started selecting and interviewing woman who met the inclusion criteria, introduced themselves to all of them, explained the purpose of the current study, described the nature of the study and got her approval for participation by signing the written consent. Communication and contact information were obtained for conducting the remaining activities and phases of the study. At first, data were gathered three days/per week, by interviewing each woman individually in a special room in gynecology clinics. The researchers collected and evaluated the necessary information

using the study instruments (I, II, III and IV). Each interview lasted about 20 to 25 to fill in the instruments.

3) Implementation phase:

In this phase, the researcher conducted the multimedia education program for women for improving their knowledge and modifying their practice along six weeks during through ten sessions (each session lasts about one hour). The sessions were carried out through mobile application (Zoom) as such application give an interactive, user-friendly interface and allow the manipulation of multimedia resources.

The multimedia educational program was carried out using different attractive multimedia modalities like PowerPoint presentation given during the session, broadcasting short films for midwifery and gynecologist experts, motion graphics, audio and video clips, short texts, educational graphics and the last ten minutes of the sessions were devoted to open discussion from attendees. for A series of short messages and reminders conveying short health tips were sent to the communication group along the study period to assure adherence to healthy practices.

4-Evaluation phase:

Using the same instruments used in the pre-test, at this phase the impact of the multimedia education on women's knowledge and practices was assessed. A follow-up test was administered three months after the intervention to assess knowledge, practices, BMI, and menstrual index as a reflective parameter about disease condition. Participants were given access to the instruments through Google forms.

Statistical Analysis:

A statistical package for social sciences (SPSS Version 23.00) was used to code and enter the gathered data. Quality control was done during the coding and data entry stages. While means and standard deviations were used to describe continuous quantitative variables, frequencies, and percentages were employed

to describe categorical variables. The row and column variables were assumed to be independent, and the Chi-square (χ^2) test was employed to compare qualitative category data without disclosing the strength or direction of the link. Comparing qualitative variables was done using the chi-square, T-test, and F-test. Statistical significance was determined when the P-value was less than 0.05 and the difference was $p < 0.001$.

Results

Table 1: Illustrated the age range of the studied women which was (20-35) years with a mean of 27.6 ± 3.37 , 39% of the women were highly educated. Four-fifths of the studied women were housewives, and 75% of them lived in urban areas.

Results of (**table 2**) showed that 45% of the studied women were primigravida. Concerning parity, half of women were nulliparous. More than one-third of women had a history of abortion.

Figure (1): Showed that (61%) of the studied women have a family history of PCOS.

Table (3) Showed that the studied women weight was ≥ 90 kg with a mean of (86.7 ± 6.09) in their first assessment, as compared to a mean of (80.3 ± 9.8) at the evaluation phase, with a highly statistically significant difference at ($P = 0.001$). Regarding BMI 78.3% of the women were with a mean score of (32.7 ± 2.6) in their first assessment, as compared to a mean score of (28.9 ± 2.7) after the application of multimedia education, with a highly statistically significant difference at ($P = 0.001$).

Figure (2) Illustrated that there were statistically significant differences regarding oligomenorrhea, amenorrhea, bleeding with menstruation, and menstrual irregularity before compared to after the multimedia education, ($\chi^2 = 7.45$, $P = 0.004$; $\chi^2 = 14.33$, $P = 0.001$; $\chi^2 = 8.56$, $P = 0.011$; $\chi^2 = 1.66$, $P = 0.05$) respectively.

Table (4): Portrayed that there were highly significant differences and thus an improvement in all aspects of women's knowledge about PCOS before compared to after the application of multimedia education ($P < 0.001$).

Figure (3) Demonstrated that 95% of

women had an unsatisfactory knowledge level regarding PCOS before the education compared to (93.0%) with a satisfactory level after the application of multimedia education. A highly significant difference was found between women's total knowledge level pre and post-multimedia education application ($P < 0.001$).

Figure (4) Showed that there was a highly significant difference between women's practice level before compared to after the education application ($P < 0.001$).

Table (5): Demonstrated that a there

was a positive correlation between total knowledge and practices ($P \leq 0.001$).

Based on the results shown at table 4 and figure 3 the first hypothesis could be proved as women had a satisfactory knowledge about polycystic ovarian syndrome after the intervention compared to before. Based on the results shown at table 3 and figure 4 the second hypothesis could be proved as women had an adequate practice regarding polycystic ovarian syndrome. Based on the results shown at figure 2 the third hypothesis could be proved as women experienced an improvement in menstrual features.

Table (1): Socio-demographic data of the studied women (N=100).

Items	Studied sample. (N = 100)	
	N	%
Age:	Mean \pm SD	27.6 \pm 3.37
Age group: (20-35)		
20- < 30	65	65
30- \leq 35	35	35
Level of education:		
Read and write.	0	0
Primary level	7	7
Preparatory level	15	15
Secondary level	35	35
University level	39	39
Postgraduate level	4	4
Occupation		
Working	20	20
Housewife	80	80
Residence:		
Urban	75	75
Rural	25	25

Table (2): The obstetric history of studied women

Items	Freq.	%
Gravidity		
Nulligravida	21	33
Primigravida	24	45
Second Gravida	15	22
Parity		
Nulliparous	50	50
Primiparous	41	41
Multipara	9	9
Number of abortion		
No abortion	73	73
One/ Two	37	37

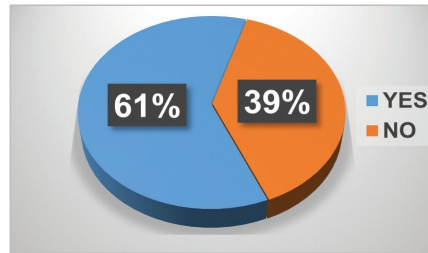


Figure (1): The studied women's distribution regarding family history of PCOS.

Table (3): The studied women's body mass index before and after the multimedia education (N=100).

Items	Before- multimedia education application (N = 100)	After multimedia education application (N = 100)	T	P
Weight				
Mean ± SD	86.7± 6.09	80.3±9.8	25.34	0.001
Body mass index (BMI)				
Mean ± SD	32.7±2.6	28.9±2.7	20.56	0.001

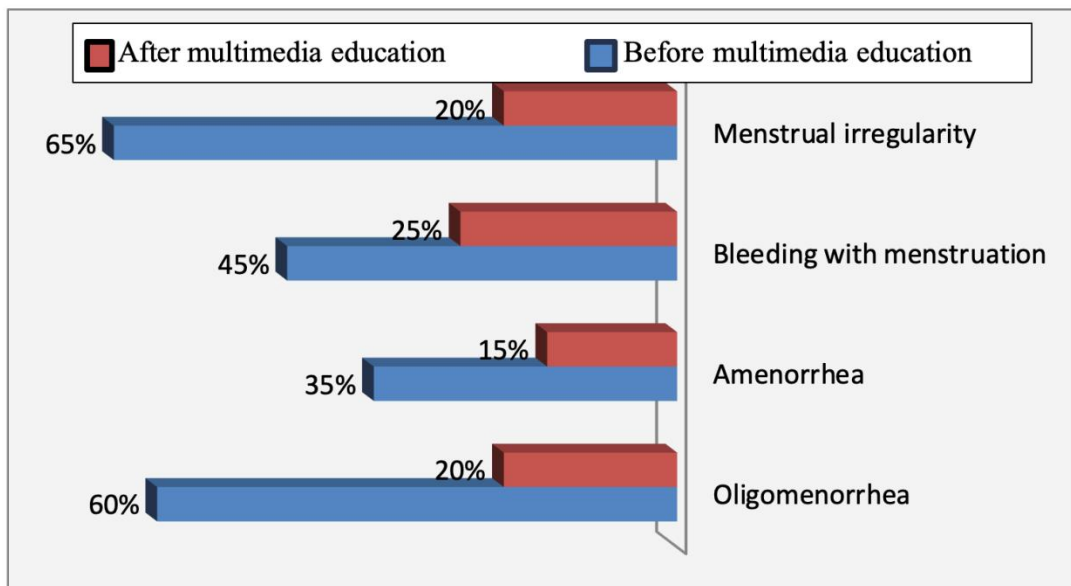


Figure (2): The menstrual characteristics of studied women before compared to after the multimedia education (N=100)

Table (4): Knowledge of studied women about PCOS before compared to after the multimedia education (N=100)

Women' knowledge	Before- multimedia education application (N = 100)		After multimedia education application (N = 100)		X2	P-value
	No	%	No	%		
Definition of PCOS						
• Incorrect.	60	60	0	0.0		
• Correct.	40	40	100	100	156.44	0.001
Causes of PCOS					134.67	0.001
• Incorrect.	70	70	3	3		
• Correct.	30	30	97	97		
Signs and symptoms of PCOS						
• Incorrect	65	65	7	7	127.89	0.001
• Correct	35	35	93	93		
Risk factors of PCOS					77.55	0.001
• Incorrect.	55	55	10	10		
• Correct	45	45	90	90		
Complications of PCOS					69.33	0.001
• Incorrect.	62	62	6	6		
• Correct	37	37	94	94		
Treatment of PCOS					92.22	0.001
• Incorrect.	73	73	10	10		
• Correct	27	27	90	90		

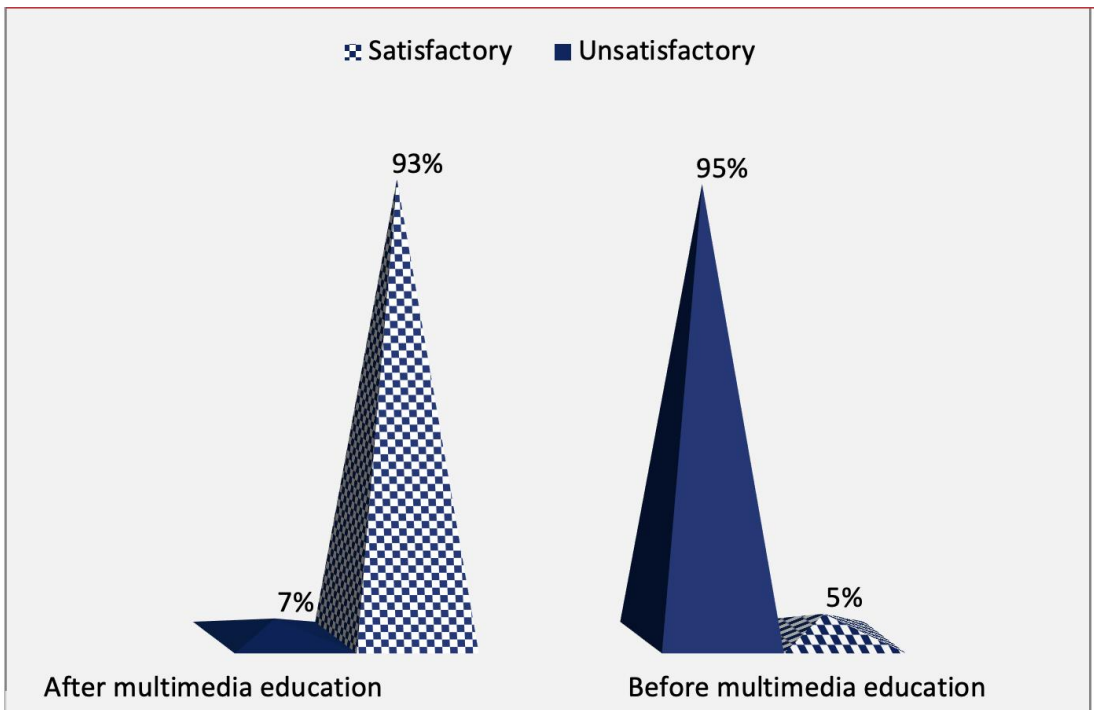


Figure (3): Total knowledge level of the studied women before compared to after the multimedia education (N=100)

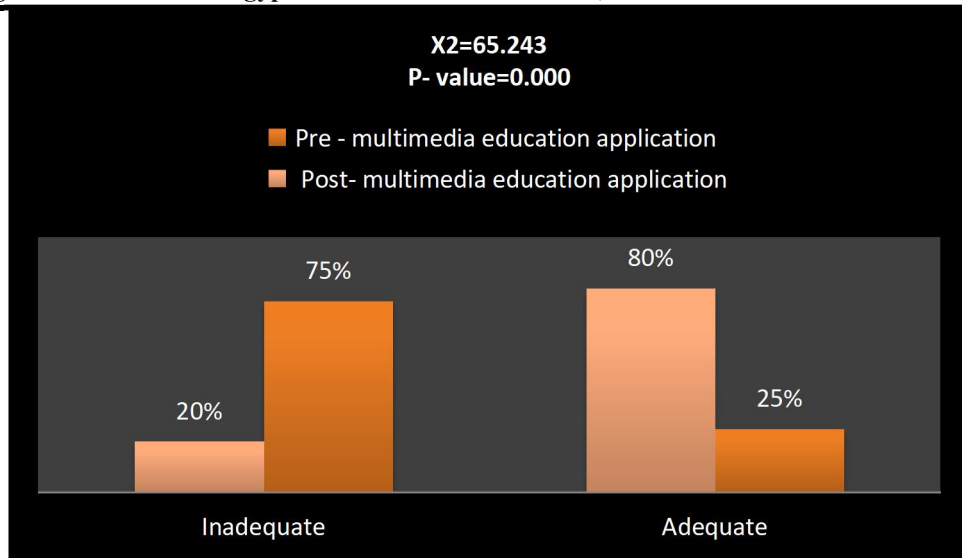


Figure (4): Total practices level of the studied women before compared to after the multimedia education (N=100)

Table (5): Correlation coefficient between knowledge and practices of the studied women's(N = 100)

Variables	Total knowledge score			
	Before- multimedia education application (N = 100)		After multimedia education application (N = 100)	
	R	P	R	P
Total practices score	0.517	0.000**	0.723	0.000**

(**) Correlation is highly significant at the <0.001

Discussion

Discussion:

In women of reproductive age, polycystic ovarian syndrome (PCOS) is one of the most prevalent endocrine conditions. Ovulation abnormalities, polycystic ovaries and clinical with or without biochemical hyperandrogenism are the hallmarks of this condition. The clinical and hormonal characteristics are also present (Abdolahian et al., 2020).

According to Naderpoor et al. (2019), polycystic ovarian syndrome is a prevalent endocrine condition that affects women who are of reproductive age. It can cause several health issues in women, including those related to the reproductive

system (such as infertility, pregnancy problems, miscarriage, and obesity), the metabolic system (such as type 2 diabetes, obesity, and insulin resistance) and the psychological system (such as anxiety and depression) (Teede et al., 2020).

The current study findings will be discussed in the following order: general characteristics of studied women, findings related to the first study hypothesis (knowledge), findings related to the second study hypothesis (practices) and findings related to the third hypothesis (menstrual features).

Studied women were all at their reproductive age and educated which are main inclusion criteria for the study. Similar sample was selected to study different reproductive problems and issues like the study of

Ramadan & Said (2018) who studied the effect of an educational intervention for infertile women regarding natural fertility methods and sexual skills for improving sexual function. Such age group and educational profile is suitable for modifying many practices and attitudes.

There was a reported family history of PCOS, history of abortion some women experienced nulliparity. Such data are considered normal and expected as there is a chromosomal factors for this condition, women diagnosed with PCOS may experience infertility and with pregnancy they may experience abortion due to poor ovum quality. These findings are consistent with **Avery JC, Braunack-Mayer AJ. (2017)** who studied the information needs of women diagnosed with polycystic ovarian syndrome and reported similar study sample characteristics.

As for the findings related to the first study hypothesis (knowledge); the current study findings showed that there was a significant difference and thus an improvement in all areas of women's PCOS knowledge before compared to after application of multimedia education. This result reflects the effectiveness of multimedia education application.

This result is in line with those of **Sowmya & Fernandes (2018)**, studied "Effectiveness of structured teaching program on knowledge of polycystic ovarian syndrome among adolescent girls" and found that knowledge scores of PCOS varied significantly among adolescent females following a systematic teaching program on the subject. Similarly, **Mani, et al. (2018)** studied the effectiveness of structured education programs in women with polycystic ovary syndrome and reported that the education program improved participants' illness perception, emotions, and general mental well-being. Moreover; **Lobom (2018)** studied priorities in polycystic ovary syndrome and reported knowledge improvement as the first priority.

The result was further support by **Colwell et al.'s (2020)** published a study titled "Women's Perceptions of Polycystic

Ovary Syndrome Following Participation in a Clinical Research Study" and claimed that women with PCOS felt more knowledgeable and motivated to use preventive health methods after taking part in a clinical research study. Participants with PCOS experienced physical and psychological improvements as a result of learning about how PCOS affects their short- and long-term health, and they also increased their interaction with healthcare professionals.

Regarding the findings related to the second study hypothesis (practices); the current study evaluated practices in the form of weight, BMI and the total practice level. The current study findings showed an improvement in all evaluated parameters as women experienced a decreased weight, BMI and an increased practice scores after the multimedia education compared to before. This result might be attributable to adherence to the disseminated practices outlined in the multimedia education program, which directly affected anthropometric measurements. The findings are consistent with the most recent international evidence-based recommendations for the treatment of PCOS patients, which outline that a healthy lifestyle that includes eating well and exercising regularly can help patients lose weight and experience symptomatic relief.

Healthy practices should be used as the first line of treatment for controlling PCOS in women because it is superior to medication-based therapy (**Patterson, 2017**). For all PCOS patients, a lifestyle management approach is advised, with a focus on controlled eating patterns with increased fiber and regular cardiovascular exercise to control weight. Along with lifestyle changes, improving body composition, cardiorespiratory fitness, and insulin resistance are all benefits (**Scott et al., 2017**).

These findings are consistent with **Kareem et al. (2014)** reported that consistent aerobic exercises educated through an educational program improve abdominal fat distribution and reduces body weight in obese women with polycystic ovaries. Additionally, these findings are in line with research conducted by **Marzouk et al. (2015)**, who examined the influence of a lifestyle modification program on menstrual irregularity in overweight or obese women with polycystic ovarian syndrome and came to the conclusion

that there had been a significant improvement in body mass index following the intervention.

The results are consistent with a study by **Pitchai et al. (2016)** who investigated the knowledge of lifestyle adjustment in Indian women diagnosed with polycystic ovarian syndrome. They published that the majority of the studied sample changed their diet predominantly in terms of food composition after the intervention thus experienced weight regulation. In the same line, **Szczuko, et al.'s (2017)** qualitatively assessed diet components of women with PCOS as one of the major factors contributing to the disease in Poland and published results supporting the current findings as they found that weight and BMI were significantly decreased. They discovered that the correct diet and maintenance of proper nutritional status should be the basis of the therapy for women with PCOS.

Moreover, **Lim, et al.'s (2019)** who studied lifestyle changes in women with polycystic ovary syndrome and found that women who implemented the lifestyle intervention had considerably lower BMIs and body weights than those who did not. This finding is consistent with research finding by **Almukhtar, (2019)**, who examined how a polycystic ovarian syndrome education program affected adolescent female students' knowledge of the condition in Iraq. His findings showed a significant improvement in the student's body mass index and weight. Physical activity is seen as crucial for PCOS women, but research shows that combining exercise with a low-carb diet can significantly boost weight loss. **Blackshaw et al., (2019)** studied the likelihood of PCOS complications after educational intervention and found that weight loss, greater physical activity, and a change in nutrition are combined.

Similarly; **Siam et al. (2020)** found that among women with PCOS who followed an exercise regimen for 12 weeks, their BMI and fat mass dramatically decreased. These findings are consistent with a study by **Abdolahian, et al. (2020)**, examined the

impact of lifestyle changes on the anthropometric, clinical, and biochemical parameters of a sample of Iranian women with PCOS. They found that exercise interventions were linked to significant changes in weight and BMI.

The current study's findings showed that among a statistically significant positive association between overall knowledge and practice was found. According to the researchers, it validated their research premise and showed that greater knowledge is frequently linked to better practices.

Regarding the findings related to the third hypothesis (menstrual features), the findings of the current study demonstrated that menstrual abnormalities in women, including oligomenorrhea, amenorrhea, bleeding during menstruation, and irregular menstruation, improved after the application of multimedia education and due to practice changes.

These results are consistent with a meta-analysis by **Marzouk & Ahmed (2015)**, which found that PCOS patients who underwent lifestyle adjustments experienced more regular menstrual cycles than those who did not. Additionally, **Silvestris, et al. (2018)** studied "Obesity is a disruptor of female fertility. Reproductive Biology and Endocrinology" and concluded that obese women who take part in weight loss programs and make lifestyle modifications increase their odds of becoming pregnant by reestablishing menstrual cyclicality and ovulation. The current results also consistent with the study of **Abdolahian, et al. (2020)**, which found that exercise therapies and lifestyle adjustments for PCOS individuals significantly altered menstrual periods and hormonal outcomes.

While there is a contradiction by **Samadi et al.'s (2019)** who studied "Evaluation of changes in levels of hyperandrogenism, hirsutism, and menstrual regulation after a period of aquatic high-intensity interval training in women with polycystic ovary syndrome" and indicated that oligomenorrhea was getting worse, there has been no change in amenorrhea or irregular menstruation. The contradiction may result from variations in the anthropometrics of the female participants.

Conclusion:

Based on the results of the current study; all research hypothesis could be accepted. The first hypothesis could be proved as women had a satisfactory knowledge about polycystic ovarian syndrome after the intervention compared to before. The second hypothesis could be also proved as women had an adequate practice regarding polycystic ovarian syndrome. Moreover; third hypothesis could be proved as women experienced an improvement in menstrual features after the intervention compared to before.

Recommendations:

In light of the current study findings, the following recommendations are suggested:

- It's crucial to implement a polycystic ovarian syndrome screening program among young women to prevent the long-term health issues connected to the condition.
- Providing educational programs about the main items of PCOS and its negative effects on reproductive health using different interactive educational modalities.
- Further researches are required to evaluate the impact of this study on a large sample for generalizability issues.

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