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Original Article

Awareness of Gynecologists About the Role of Physical Therapy in Management of Polycystic Ovarian Syndrome: A Cross-Sectional Study

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Abstract:

objectives: This study was intended to assess gynecologists' awareness of physical therapy's role in PCOS management**. Methods:** This cross-sectional study was carried out in Cairo's. A total of 399 gynecologists were enlisted in this study. To gather information on demographics, knowledge, and awareness regarding physical therapy's role in managing PCOS, a self-administered, closed-ended questionnaire was utilized. Following the participant's completion of the questionnaire, it was collected on the spot, and the collected spots were analyzed. **Results:** Almost half of the gynecologists [49.4%] answered "yes" to the fact that managing PCOS relies only on medical and surgical management. The overall average of gynecologists' knowledge about the physical therapy modalities to manage PCOS complaints was 50.6%. **Conclusion:** A significant proportion of obstetricians and gynecologists indicated that they were somewhat aware of the role that physiotherapy care could play in managing patients with PCOS and that they would consider referring patients in the future.

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1. Introduction

Among women of reproductive age, PCOS, sometimes referred to as Stein-Leventhal syndrome **[1],** is one of the most prevalent endocrine disorders. Reproductive, metabolic, and psychological characteristics of this complex illness influence the risks associated with both the early- and long-term syndrome in various ways **[2].**

Six to thirteen percent of women who are of reproductive age and six to eighteen percent of teenage girls have PCOS **[3].** In Egypt, PCOS prevalence is higher than 37% in Egyptian females who are secondary infertile, particularly in Upper Egypt **[4].** PCOS has a complicated and poorly understood etiology. Most experts believe that many factors, including heredity, are involved. Still, they also assume that hormonal disturbance results from elevated androgens and/or insulin levels, hypothesizing that insulin resistance is a contributing factor **[5].**

Infertility, menstrual irregularities, and hirsutism are among the clinical characteristics of PCOS. Furthermore, insulin resistance and android obesity are linked to PCOS **[6].**

PCOS raises the risk of depression, anxiety, and negative body image in addition to its negative consequences on health-related quality of life [HRQoL]. The development of appropriate therapies and the consideration of psychological concerns in all PCOS women were addressed in the recent consensus document examining women's health concerns related to PCOS **[7].**

PCOS women may have a higher risk of cardiovascular disease due to an increased prevalence of atherosclerosis, high blood pressure, hyperlipidemia, inflammation, and impaired endothelial function. They are also more likely to be obese and have type II diabetes mellitus. It raises the possibility of miscarriages, early births, neonatal problems, and abnormalities in the developing fetus **[5].**

The PCOS-related symptoms determine the way of its management. These could include infertility caused by ovulatory dysfunction, menstrual problems, or androgen-related manifestations that respond to medication, surgery, or physiotherapy **[8].**

Medical treatments are successful despite several adverse effects. For example, oral contraceptives negatively impact fertility, coagulability, glucose tolerance, digestive discomfort, hot flashes, and ovulation problems [9]. Surgical intervention is often required due to the deteriorating aggravation, and one of the surgical consequences is fertility. If the ovary sustains excessive damage during ovarian drilling surgery, a woman may experience early menopause. It may be difficult to conceive after the surgery if adhesions occur between the ovaries and fallopian tubes **[10].** Therefore, physical therapy is useful in such instances.

The Australian Polycystic Ovary Syndrome [PCOS] Guideline 2011 recommends lifestyle change as the first line of therapy. Lifestyle changes are crucial to the prevention and management of chronic diseases. In 2018, the first global evidence-based PCOS guidelines were developed, broadening the Australian guideline's scope and evidence base [**11].**

By reducing co-morbid psychiatric symptoms and eliminating long-term physical and mental consequences, PCOS therapy aims to improve HRQoL. Weight loss is crucial for managing PCOS because it lowers serum testosterone, improves ovulatory processes, and lowers insulin levels by about 5% **[12].** Physical therapy is crucial to the care of PCO since it lowers symptoms, avoids complications, and enhances lifestyle. Acupuncture, focused ultrasonography, electro/laser acupuncture, and exercise are examples of physiotherapy procedures **[13, 14].**

By assisting patients in adhering to lifestyle changes, a multidisciplinary team can help them reduce body adiposity and restore their metabolic and reproductive wellness **[13].** Physical therapists have the expertise to significantly influence the field of managing PCOS since they are skilled communicators **[15].**

To help patients with PCOS improve their QoL and seek physiotherapy assistance rather than complaining in silence, gynecologists should be aware of the crucial role that physical therapy plays in these conditions **[14].**

2. Materials and Methods:

Study participants and recruitment criteria:

This study was conducted entirely online. Three hundred ninety-nine gynecologists participated in the study; they were recruited from different private clinics and government hospitals in Cairo via online social media. Eligibility criteria required a minimum of three years of clinical experience and prior professional involvement with polycystic ovary syndrome [PCOS] cases. data collection was all carried out remotely using secure online platforms.

Methods:

A questionnaire was specially designed for the broad objective of determining the awareness and knowledge of gynecologists about the physiotherapy role in the management of PCOS.

Questionnaire development stages:

Formulating the questionnaire was held by the researcher after an extensive literature overview, and then it was tested for validity and reliability.

Questions were evaluated by a panel of experts for face and content validity, and according to their recommendations and feedback, appropriate adjustments [i.e., clarifying statements and reordering the questions to flow more easily] were made.

Knowledge was assessed by closed-ended questions, while there were three open-ended questions to determine the awareness of gynecologists about different therapy modalities in the management of PCOS.

The questionnaire form contains socio-demographic questions and asks about the years of practice and academic degree, which didn't need to go through the process of assessing validity and reliability. Thirteen questions are to be answered by all the gynecologists.

To our knowledge, this is the first questionnaire designed to determine the awareness and knowledge of gynecologists about physiotherapy's crucial role in the management of PCOS.

The newly developed questionnaire was formatted online and distributed electronically to a group comprised of international expert health professionals, and before responding to the online survey, each participant was asked to complete an online consent form. The researcher provided complete clarification about the study's aim and rationale, and instructed all targeted participants to complete all questionnaire items.

After the participants filled out the questionnaire, their responses were collected on the spot, and the collected spots were analyzed.

Statistical Analysis:

The subjects' characteristics and measurable data were presented using descriptive statistics, including the mean, standard deviation, frequencies, and percentages. The clarity index and expert proportion of clearance were utilized to test face validity. The index of content validity [CVI], scale content validity indices [S-CVI], and expert proportion of relevance were utilized to test the content validity. Test-retest reliability was measured using the Spearman correlation coefficient. A chi-squared test was utilized to examine the associations between gynecological awareness about the role of physiotherapists in PCOS, their professional level, and sex. All statistical tests were conducted with a significance level of $p < 0.05$. Version 25 of the statistical package for social sciences [SPSS] for Windows was employed to conduct all statistical analyses.

Data Analysis:

Calculation of sample size

The target population was gynecologists in Cairo. The survey questionnaire was conducted online. The target population of 5000 gynecologists was determined to obtain a 50% response distribution, a 5% margin of error, and a 95% confidence interval. 357 gynecologists were needed for the current study to represent the population, according to the Yamane formula.

Yamane formula: n= N/ [1+N [e] 2], where n signifies the sample size, N signifies the population under study, and e signifies the margin error [0.05] **[16].**

3. Results:

Validity of the questionnaire

The questionnaire's mean scale index of clarity was 100%, which is excellent. The ten experts had 100% clearance. The scale CVI [S-CVI] was 100%, indicating that the questionnaire had excellent content validity. The mean expert relevance proportion was 100%.

Reliability of the questionnaire

There was a perfect, significant correlation between the first and second measurements [r = 0.99]. The questionnaire had excellent test-retest reliability.

Subject characteristics

399 Egyptian gynecologists participated in this study. Participants ranged in age from 29 to 69 years old, with a mean ± SD of 41.93 ± 6.92 years. Of the participants, 258 [65%] were specialists, 71 [18%] were residents, and 70 [17%] were consultants. Of the subjects, 89 [22%] were men and 310 [78%] were women **Table [1].**

Gynecological awareness about the role of physiotherapists in PCOS

49.4% of respondents agreed that managing PCOS relies only on medical and surgical management, while 50.6% answered "no" and said that PCOS prevention is not limited to medical and surgical management alone. 67.4% of respondents consider physical therapists a part of a multidisciplinary medical team. Almost all respondents [99.2%] agreed that lifestyle changes are the first step in PCOS management, while less than half of respondents [41.6%] answered "yes" that lifestyle modification is a part of the physiotherapy role.

Only 36.8% of respondents answered "yes" that the role of physiotherapy is essential in managing PCOS cases, while a larger proportion of respondents, 252 [63.2%], answered "no" that the role of physiotherapy is not essential in managing PCOS cases.

Only 38.3% of respondents referred a PCOS case to a physical therapist. 98.5% of respondents agreed that the right time to refer a physiotherapist is pre-surgery, while only 1.5% consider it post-surgery **Table [2].**

Knowledge of gynecologists about the physical therapy modalities to manage PCOS complaints

The mean ± SD of gynecologists' knowledge about diet modification dietary and dietary plans, and exercise protocols were 8.50 ± 1.12 and 7.31 ± 1.58, respectively, which is high.

The mean ± SD of a gynecologist's knowledge about yoga therapy [6.19 ± 2.23] and pelvic floor exercise [5.79 ± 2.54] is moderate.

The knowledge of gynecologists about faradic stimulation, focused ultrasound therapy, acupuncture, acupressure, laser/electro-acupuncture, Osteopathic manual therapy, bee venom phonophoresis, Bulsed electromagnetic field, and cryolipolysis was low.

The overall average of gynecologists' knowledge about physiotherapy approaches to managing PCOS complaints was 3.72 ± 1.81, which is low **Table [3].**

Association between gynecological awareness about the role of physiotherapists in PCOS and professional level:

The percentage of residents who agreed that treating PCOS relied only on medical and surgical therapy increased significantly when compared to consultants and specialists [p = 0.02]. The percentage of specialists who agreed that lifestyle modification is the first step of treatment for PCOS was significantly higher than that of consultants and residents [p = 0.03]. The percentage of consultants who agreed that changing one's lifestyle is a part of physiotherapy's role was significantly higher than that of specialists and residents [p = 0.01]. When comparing consultants to specialists and residents, the percentage of PCOS cases referred to physical therapists increased significantly [p = 0.04]. The percentage of specialists who agreed that it is the right time to refer patients to a physiotherapist pre-surgery was significantly higher than that of consultants and residents [p = 0.001] **Table [4].**

Association between gynecological awareness about the role of physiotherapists in PCOS and the gynecologists' sex

The percentage of female gynecologists who agreed that a physical therapist is a member of a multidisciplinary medical team increased significantly when compared to the percentage of male gynecologists [p = 0.001]. Additionally,

the percentage of female gynecologists who agreed that lifestyle modification is the first step in the management of PCOS was significantly higher than that of male gynecologists [p = 0.01] **Table [5].**

Table [1]: General characteristics of subjects

	Mean ± SD	Minimum	Maximum
Age [years]	41.93 ± 6.92	29	69
Years of experience	10.67± 6.17	3	43
	N	%	
Academic level			
Consultant	70	17	
Specialist	258	65	
Resident	71	18	
Sex distribution			
Females	310	78	
Males	89	22	
Did you deal with PCOS cases?			
Yes	398	99.7	
No	1	0.3	
How many years dealing with PCOS cases			
1-3 years	131	33	
4-10 years	163	41	
More than 10 years.	105	26	

SD: Standard deviation

Table [2]: Gynecological awareness about the role of physiotherapists in PCOS

			YES		NO	
			N	%	N	%
Q3	Does managing PCOS rely only on medical and surgical management?		197	49.4	202	50.6
Q4	Do you agree that a physical therapist is part of a multidisciplinary medical team?		269	67.4	130	32.6
Q5	Do you consider lifestyle modification is the first line in PCOS management?		396	99.2	3	0.8
Q6	In your opinion, is lifestyle modification a part of the physiotherapy role?		166	41.6	233	58.4
Q7	Do you see the role of physiotherapy is essential in managing PCOS cases?		147	36.8	252	63.2
Q8	Have you ever referred a PCOS case to physical therapist?		153	38.3	246	61.7
Q9	How many times you referred a PCOS case to physical therapist?					
	More than 40 PCOS case	21:40 PCOS case	5:20 PCOS case		Less than 5 PCOS case	
	20 [5%]	39 [9.8%]	75 [18.8%]		19 [4.8%]	
Q 10	What is the right time to refer for physiotherapist?					
	Pre surgery		Post-surgery			
	393 [98.5%]		6 [1.5%]			

Table [3]: Gynecologists Knowledge about the physiotherapy approaches to manage PCOS complaints

	Gynecologists Knowledge about the physiotherapy approaches to manage PCOS complaints	Mean ±SD
Q11A	Diet modification dietary & dietary plans	**8.50 ± 1.12**
Q11B	Exercise protocols.	**7.31 ± 1.58**
Q11C	Faradic stimulation	**2.69 ± 2.11**
Q11D	Focused ultrasound therapy	**3.52 ± 2.41**
Q11E	Acupuncture, acupressure, laser acupuncture & electro acupuncture.	**1.17 ± 1.53**
Q11F	Yoga therapy	**6.19 ± 2.23**
Q11G	Osteopathic manual therapy.	**1.21 ± 1.35**
Q11H	Pelvic floor exercise	**5.79 ± 2.54**
Q11I	Bee venom phonophoresis	**0.61 ± 1.15**
Q11J	Pulsed electromagnetic field [BEMF].	**0.82 ± 1.16**
Q11K	Cryolipolysis	**3.07 ± 2.72**
	Average	**3.72 ± 1.81**

SD: Standard deviation

Table [4]: Association between gynecological awareness about the role of physiotherapists in PCOS and the professional level

		Response	Consultant	Specialist	Resident		
			N [%]	N [%]	N [%]	$\chi 2$ value	P-value
Q3	Does managing PCOS rely only on medical and surgical management?	YES	36 [51.4%]	116 [45%]	45 [63.4%]	7.7	0.02
		NO	34 [48.6%]	142 [55%]	26 [36.6%]		
Q4	Do you agree that a physical therapist is part of a multidisciplinary medical team?	YES	47 [67.1%]	173 [67.1%]	49 [69%]	0.1	٠.95
		NO	23 [32.9%]	85 [32.9%]	22 [31%]		
Q5	Do you consider lifestyle modification is the first line in PCOS management?	YES	68 [97.1%]	258 [100%]	70 [98.6%]	6.27	٠,٠3
		NO	2 [2.9%]	0 [%]	1 [1.4%]		
Q6	In your opinion, is lifestyle modification a part of the physiotherapy role?	YES	40 [57.1%]	100 [38.8%]	26 [36.6%]	8.54	0.01
		NO	30 [42.9%]	158 [61.2%]	45 [63.4%]		
Q7	Do you see the role of physiotherapy is essential in managing PCOS cases?	YES	33 [47.1%]	90 [34.9%]	24 [33.8%]	3.89	0.14
		NO	37 [52.9%]	168 [65.1%]	47 [66.2%]		
Q8	Have you ever referred a PCOS case to physical therapist?	YES	36 [51.4%]	93 [36%]	24 [33.8%]	6.26	0.04
		NO	34 [48.6%]	165 [64%]	47 [66.2%]		
Q9	How many times you referred a PCOS case to physical therapist?	Less than 40	26 [72.2%]	85 [91.4%]	22 [91.7%]	7.72	0.01
		More than 40	10 [27.8%]	8 [8.6%]	2 [8.3%]		
Q10	What is the right time to refer for physiotherapist?	Pre surgery	65 [92.9%]	258 [100%]	70 [98.6%]	18.97	٠,٠01
		Post surgery	5 [7.1%]	0 [0%]	1 [1.4%]		

$\chi 2$, Chi square value; p value, level of significance

Table [5]: Association between gynecological awareness about the role of physiotherapists in PCOS and the gynecologists' sex

		Response	Females	Males		
			N [%]	N [%]	χ2 value	P- value
Q3	Does managing PCOS rely only on medical and surgical management?	YES	146 [47.1%]	51 [57.3%]	2.88	0.09
		NO	164 [52.9%]	38 [42.7%]		
Q4	Do you agree that a physical therapist is part of a multidisciplinary medical team?	YES	232 [74.8%]	37 [41.6%]	34.83	٭.001
		NO	78 [25.2%]	52 [58.4%]		
Q5	Do you consider lifestyle modification is the first line in PCOS management?	YES	310 [100%]	86 [96.6%]	10.52	0.01
		NO	0 [0%]	3 [3.4%]		
Q6	In your opinion, is lifestyle modification a part of the physiotherapy role?	YES	128 [41.3%]	38 [42.7%]	0.05	0.81
		NO	182 [58.7%]	51 [57.3%]		
Q7	Do you see the role of physiotherapy is essential in managing PCOS cases?	YES	118 [38.1%]	29 [32.6%]	0.89	0.38
		NO	192 [61.9%]	60 [67.4%]		
Q8	Have you ever referred a PCOS case to physical therapist?	YES	119 [38.4%]	34 [38.2%]	0.001	0.97
		NO	191 [61.6%]	55 [61.8%]		
Q9	How many times you referred a PCOS case to physical therapist?	Less than 40	102 [85.7%]	31 [91.2%]	0.69	0.57
		More than 40	17 [14.3%]	3 [8.8%]		
Q10	What is the right time to refer for physiotherapist?	Pre surgery	307 [99%]	86 [96.9%]	2.69	0.12
		Post surgery	3 [1%]	3 [3.4%]		

χ2, Chi square value; p value, level of significance

4. Discussion:

PCOS is a prevalent illness that is characterized by insulin resistance that is independent of weight and is linked to metabolic syndrome [MS], which increases the risk of cardiovascular disease in addition to oncology risks [**17**]. Physical therapy plays a crucial role in managing PCOS by using a wide range of physical therapy techniques, modalities, or equipment. The objectives of physiotherapy management include symptom relief in addition to eliminating the development of ongoing problems [**13**]. The need for physical therapists as a preferred healthcare provider is rising in PCOS cases, so gynecologists need to be aware of the outcomes of physical therapy modalities in cases of polycystic ovary syndrome and encourage patients to seek physical therapy help instead of suffering in silence. By referring PCO cases to physical therapy, a physiotherapist can help patients address the multifaceted nature of the condition and improve their overall health [**14**]. So, this study was intended to measure the extent of knowledge among gynecologists about the role of physical therapy in the management of PCOS.

According to our results, 49.4% of respondents approved that managing PCOS relies only on medical and surgical management, while 50.6% answered "no".This agreed with Mahto et al. [**18**], whose prevalence of adequate knowledge was lower in their study. 17% of medical interns had adequate knowledge of physiotherapy practice. 97% of respondents agreed that physiotherapy helps lower pain; 64% knew about conditions that physiotherapy treats; 58% knew that physiotherapy treatment follows a specific therapeutic approach; and 27% knew that physical therapy incorporates prescribing exercises.

Concerning the knowledge that a physical therapist is a member of a multidisciplinary medical team, around 67% of gynecologists demonstrated an impressive degree of awareness and attitude.This was in line with Koranteng et al.'s

study [**19**], which found that obstetricians and gynecologists in this hospital-based study had a high awareness of the value of physical therapy in obstetrics [between 72 and 91%] in all domains of mother care, with postnatal care having the highest rate. Nonetheless, more than thirty percent of obstetricians and gynecologists disapproved of the concept that physiotherapists had been successful in their interpersonal interactions with other medical specialists. This result could be explained by the complaints regarding the irregular availability of physiotherapists during ward rounds. The doctors' opinions on the physical therapy practice make it evident that they have a negative view of the field's professional potential.

Furthermore, Goyekar et al. [**20**] suggested in their research that better interaction and consistent professional communication between physiotherapists and obstetricians/gynecologists should enhance the use of physiotherapy for women's health.Moreover, Khalid et al. [**21**] have verified that physiotherapy plays a crucial role in the delivery of health care by utilizing its proficiency in motion science and rehabilitation to improve the physical health and mobility of subjects across all age groups.Almost all respondents [about 99%] confirmed that lifestyle modification is the first line in PCOS management. More than half of respondents refused physiotherapy as an essential part of managing PCOS cases, nor that lifestyle modification is a part of the physiotherapy role.

This came in agreement with a study conducted in Ghana, which found that physiotherapists have excellent knowledge, attitudes, and practices for promoting wellness. The health promotion strategy in Ghana should incorporate physiotherapists, who specialize in prescribing exercises and physical activity, to enhance their integration into physiotherapy practice [**22**]. Regarding the referral of PCOS cases for physiotherapy, our results showed that 61% of the respondents did not refer a PCOS patient to a physical therapist, whereas 38% did. Only 5% referred more than forty PCOS patients; 9% referred twenty-one to forty PCOS cases; 18% referred five to twenty PCOS cases; and 4% referred less than forty PCOS cases to a physical therapist.In the future, our study results showed that a higher percentage [59%] of gynecologists will ignore the referral. According to this study, 57% of gynecologists believe that physiotherapist lacks the necessary knowledge to deal with PCOS patients, and 42% believe that physical therapy is not guaranteed to be effective in managing PCOS cases.

Consistent with the literature, Khalid et al. [**21**] demonstrated that medical interns lacked sufficient awareness and expertise about physical therapy, which could impede the efficient and prompt referral of patients. Various factors may contribute to inadequate awareness and comprehension, but it is crucial to educate future medical professionals about the diverse aspects of physiotherapy to enhance the healthcare system. Furthermore, it is imperative to consistently highlight the hospital's variety of physiotherapy facilities to other medical specialties to maximize use and promote early referrals for physiotherapy.

These results disagreed with Odunaiya et al.'s [**14**] study, in which 94% of the participants stated that they had recommended patients for physical therapy, whereas 6% had not. In 97% of the participants' hospitals of practice, a physiotherapy department was present; in 25% of cases, a physiotherapy clinic was located nearby; and 94% of the participants had close friends who were physiotherapists. These factors could account for the results.

Most respondents in this study confirmed that the right time to refer a physiotherapist is pre-surgery, while only 1% consider the right time to be post-surgery.

In the study by Koranteng et al. [**19**], obstetricians and gynecologists demonstrated a high level of awareness [between 72 and 91%] regarding the vital role that physiotherapy plays in obstetrics throughout all parts of maternal care, with postnatal care showing the greatest level of awareness. This was consistent with the fact that 68% of respondents were aware of postpartum exercise.

Gynecologists' knowledge about the physical therapy modalities to manage PCOS complaints, such as diet modification and exercise protocols, was the highest. These were followed by faradic stimulation, ultrasound therapy, acupuncture, yoga, osteopathic manual therapy, pelvic floor exercise, bee venom, electromagnetic field, and cryolipolysis.

This result generally corroborates the findings of earlier studies in this field that linked exercise regimens and dietary changes to PCO control. To enhance reproductive and cardiometabolic results, women should be encouraged to participate in at least 90 minutes of aerobic activity per week at a moderate intensity [60–70% VO2 max], according to the findings of the Harrison et al. systematic review [**23**]. All successful therapies led to weight loss; specifically, they closely link visceral fat and subcutaneous abdominal adipose tissue to insulin resistance. Exercise increases ovulation rates and may be more helpful in regaining reproductive function than calorie restriction. Restoring reproductive function through hormonal changes, such as lower androgens, is supported by improved insulin sensitivity.

Analysis of a different protocol proposed by Patten et al. [**24**] indicates that exercise at high intensity may have the biggest effects on insulin resistance, body composition, and cardiorespiratory performance. For PCOS women, exercising at least 120 minutes a week at a high intensity is necessary to achieve positive health outcomes; longer-term trials are needed to assess the effects of continuous exercise. Additionally, controlling blood sugar and weight can be facilitated by a nutritious diet that consists of whole grains, fruits, vegetables, and low- or fat-free dairy products.

The percentage of residents who agreed that treating PCOS relies only on medical and surgical management increased significantly compared to consultants and specialists in the relationship between academic level and gynecologist awareness.

Mahto et al. [**18**] found that only 24.5% of medical interns knew that the WHO classifies physiotherapists as independent practitioners, which is consistent with this finding. This description is also true for senior faculty members and prominent practicing physicians. Only 28% of respondents knew that physiotherapy prescribes exercises for any condition, and 58.5% claimed that physiotherapy adheres to a set assessment methodology. This is most likely also related to the country's regulatory organizations' awareness that we adhere to a hierarchy that places physiotherapists under other departments and prevents them from being independent. The impairment of physiotherapists' ability to provide high-quality care stems from their inability to make independent decisions.

There was a high awareness among specialists, compared with consultants and residents, that lifestyle change is the first step in PCOS management. Also, the best time to consult a physiotherapist is pre-surgery.

A descriptive survey of obstetricians and gynecologists from seven Nigerian hospitals refuted this. The findings indicate that, regarding years of experience, consultants typically have a higher level of knowledge about the physiotherapy role in obstetrics and gynecology than senior registrars. The study involved sixty-seven participants, comprising 26 consultants and 41 senior registrars. A higher percentage of consultants [73%] compared to senior registrars [46%] had a good knowledge of the physiotherapists' role in obstetric and gynecological practices, but their awareness of particular diseases that physiotherapists can treat was somewhat limited [**14**].

In contrast to specialists and residents, consultants referred a significantly higher number of PCOS referral cases to physical therapists in our study. Additionally, there is agreement that changing one's lifestyle is an element of physiotherapy function.

The consultants' long practice duration, wide range of clinical exposures, and experience all contribute to their high level of awareness regarding the importance of physiotherapy for women's health. A study conducted in Ethiopia revealed comparable results, attributing the degree of awareness to professional expertise and extended exposure to physiotherapy cases [**25**].

Regarding the association between knowledge about the physical therapy modalities to manage PCOS complaints and academic levels, there was a significant increase in knowledge among consultants compared with specialists about faradic stimulation, osteopathic manual therapy, bee venom phonophoresis, and pulsed electromagnetic field; however, there was an increase in knowledge among residents compared with specialist gynecologists about yoga therapy and cryolipolysis.

These results provide further support for the implication that patients can expect consistent advice and recommendations from gynecologists across different levels of expertise. While specialists may have broader expertise, res-

idents seem to be more up-to-date with certain emerging therapies. Patients who consult with residents may gain insight into newer treatment options such as yoga therapy and cryolipolysis [**20**].

There was a significant association between gynecologists' awareness and their sex. The percentage of female gynecologists who agreed that lifestyle modification is the primary line of treatment for PCOS and that physical therapists are members of multidisciplinary medical teams increased significantly.

While, there was a significant increase in knowledge among male gynecologists about osteopathic manual therapy as a modality tool.

This was confirmed by Kim et al. [**26**], who stated that effective communication and collaboration between physicians and physical therapists are essential for optimal patient outcomes. Female doctors may be more inclined to consider the latest research and evidence when making decisions, including referrals to physical therapy. In Nigeria, obstetricians and gynecologists often knew about physiotherapy treatments related to these specialties. Additionally, they exhibit a favorable disposition toward the participation of physiotherapists in treating patients with obstetric and gynecological disorders. Still, they don't know much about the benefits of physiotherapy services for particular conditions. The study suggested that improved communication between obstetricians, gynecologists, and physiotherapists through seminars, workshops, and grand rounds, as well as physiotherapy postings during basic medical training, could improve obstetricians' attitudes and knowledge regarding physiotherapists' involvement in patient care [**14**].

Strengths and limitations of the study:

This is the first study to assess Egyptian obstetricians and gynecologists' knowledge, attitudes, and use of physiotherapy in women's health. The results will provide baseline data for future research on the effects of physiotherapy on women's health. The study's large number of participants was another significant strength.

There are some limitations in this study. Initially, the majority of the questions in the study were closed-ended, which limited the doctors' perspectives and worries regarding the physiotherapy field. Obstetricians and gynecologists were unable to articulate their own experiences with physical therapy's role in women's health. The study's exclusion of other medical specialists who provide maternity care services, such as nurses and midwives, is also seen as a problem because it may have skewed responses from the doctors alone. Finally, all participants from one geographical location [Cairo governorate].

5. Conclusions:

From the obtained results, the majority of obstetricians and gynecologists had a moderate level of awareness about the role that physiotherapy services play in the management of patients with PCOS, and a relatively high percentage of them said that they would consider referring patients in the future. Overall, the consultants outperformed the resident doctors in the percentage of PCOS cases referred to physical therapists; however, residents had more awareness of including physical therapy in managing PCOS and had good knowledge about the new physical therapy modalities to manage PCOS. This implies that patients can expect consistent advice and recommendations from gynecologists across different levels of expertise.

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