



Original Research Article

KNOWLEDGE, AWARENESS AND PERCEPTION REGARDING POLYCYSTIC OVARIAN SYNDROME AMONG ADOLESCENTS AND YOUNG WOMEN IN INDORE: A CROSS SECTIONAL STUDY

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ABSTRACT

Background: As per World Health Organisation, Polycystic Ovarian Syndrome is a common endocrine disorder and leading cause of anovulation and infertility among females of reproductive age group worldwide. [1,2] Early identification and appropriate management help in improving overall health of women. [5,6] Hence, aim of the present study was to assess and improve knowledge, awareness and perception regarding PCOS among adolescents and young women in Indore city.

Materials and Methods: The present cross-sectional study was conducted in Indore, between October and November 2023 among 200 girls of 13-25 years attending schools and colleges in Indore. An informative briefing on PCOS using a PowerPoint presentation was used to improve the basic knowledge of PCOS. A questionnaire-based survey (pre- and post-test) was carried out to identify the level of knowledge and awareness while perception was assessed using 5-point Likert's scale.

Results: Majority study participants were adolescents (76.5%) while rest were young women (23.5%). 79.5% were college-going students residing in hostel (73.5%). 20.50% young and only 3.50% adolescents had knowledge about PCOS. Majority acquired information through school/college teachers (37.5%). 7.50% had already been diagnosed with PCOS. Only 24% had knowledge of PCOS. Knowledge and awareness increased significantly (p-value<0.0001) after educational intervention. Majority perceived PCOS as a serious health condition that affected their self-esteem and body image. Limited education and information (41%), taboo and misconceptions (26.5%), lack of public awareness campaigns (22.5%) were among the significant barriers to awareness.

Conclusion: This study underscores the need for comprehensive and targeted efforts to improve awareness, perception, and understanding of PCOS among school-going girls and college-going women.

Keywords: Polycystic Ovarian Syndrome (PCOS), knowledge, awareness, perception.

INTRODUCTION

Polycystic ovarian syndrome (PCOS), which was initially described by Stein and Leventhal in 1935, is a common endocrine disorder affecting females of the reproductive age group worldwide.^[1] As per the World Health Organisation (WHO), it is the most frequent cause of anovulation, as well as, the leading cause of infertility.^[2] An estimated 8-13% of women in the reproductive age are affected by it; and 70% of those affected remain undiagnosed worldwide.^[2] In India, the prevalence is estimated to be 3.7-22.5% among women.^[3] The risk factors of PCOS include genetic predisposition and environmental factors such as sedentary lifestyle, diet, and obesity.^[2,3] Though the onset commonly occurs in adolescence, the symptoms could fluctuate over time.^[2] Presence of at least two of the three criteria: chronic anovulation, clinical or biological hyperandrogenism and polycystic ovaries, are required for the diagnosis of PCOS, though it is a diagnosis of exclusion.^[1] Multiple comorbidities associated with it include obesity, metabolic syndrome, impaired glucose tolerance, Type-2 Diabetes Mellitus, infertility, cardiovascular diseases, hypertension and endometrial cancer,^[1,4] which affect the physical and emotional well-being of the women and can lead to mental health issues and social stigma.^[2]

Early identification and appropriate management can aid in improving the mental, metabolic and reproductive health. Adequate knowledge and awareness regarding PCOS in women can greatly enhance their perception and comprehension of the disorder and can provide access to early therapy.^[5,6] Hence the present study was carried out to assess and improve the knowledge, awareness and perception regarding polycystic ovarian syndrome among adolescents and young women in Indore city.

MATERIAL AND METHODS

The present cross-sectional study was conducted in Indore, Madhya Pradesh, India, between October and November 2023 among 200 girls belonging to the age group of 13-25 years attending schools and colleges in Indore.

Sample size was calculated by the following formula:

$$N = 4PQ/d^2$$

$$P = \text{Prevalence (13.1\%)}$$

$$Q = 100 - P = (100 - 13.1) = 86.9\%$$

$$d = \text{Allowable error (5\%)}$$

(Prevalence of PCOS in India is estimated to be 3.7-22.5%).^[3] We calculated the mean of this range which was 13.1% and margin of error was taken as 5%)

Therefore,

$$N = 4 \times 13.1 \times 86.9 / 5 \times 5 = 182.1$$

Thus, for this study, sample size is 182.1 rounded off to 200.

Adolescent school girls who had attained menarche and were willing to answer, as well as, college-

going girls willing to be a part of the study were included. Multistage random sampling procedure was used. First of all, a list of all middle and high schools was obtained from School Education Department (DEO office) in Indore city. Two schools and two colleges were selected randomly with help of random number table. Permission was obtained from the principals of the respective schools to carry out the study. School-going and college-going girls were selected by systematic random sampling, from their attendance register. Thus, a total of 200 participants were selected. All the participants of the study were explained the procedure and informed consent was obtained. An informative briefing on PCOS using a PowerPoint presentation was used to improve the basic knowledge of PCOS. A pre-tested semi-structured questionnaire-based survey (pre- and post-test) was carried out to identify the level of knowledge, awareness, barriers to awareness, potential predisposing factors and complications of PCOS. Perception towards PCOS, among those ever diagnosed was done using 5-point Likert's scale. Statistical analysis was done using SPSS 25.0 (trial version). Continuous data was expressed in mean and standard deviation. The descriptive representation of data was done in the form of frequencies and percentages. The graphical representation of data was done using figures and tables. Analytical part was done using Chi-square test. The result was considered significant at 95% level of significance (p-value < 0.05).

RESULTS

Majority (76.5%) of the study participants were adolescents (13-19 years) and the rest (23.5%) were young (20-25 years). Of these, majority (79.5%) were college-going students residing in hostel (73.5%). The Body Mass Index (BMI) of majority students (78.5%) was within the normal range, while 17.5% were underweight and only 4% were overweight. [Table 1]

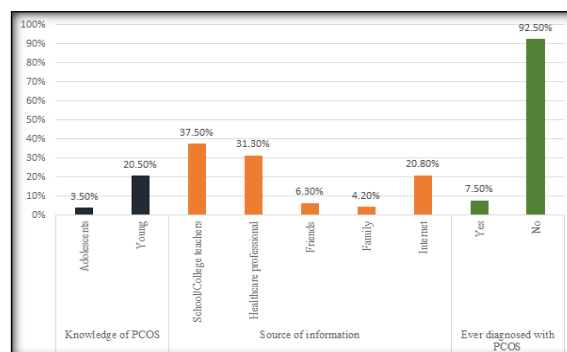


Figure 1: Knowledge, source of information of PCOS and presence of PCOS diagnosed students among the participants

20.50% young and only 3.50% adolescents had knowledge about PCOS. Majority acquired

information through school/college teachers (37.5%), followed by healthcare professionals (31.30%), the internet (20.80%), and a few participants collected information from friends (6.30%) and family (4.20%). 7.50% had already been diagnosed with PCOS. [Figure 1]

The knowledge of study participants regarding PCOS along with the pre- and post-test comparisons are depicted in Table 2.

The awareness of study participants regarding causes, symptoms, complications and preventive measures of PCOS along with the pre- and post-test comparisons are depicted in Table 3.

The perception of study participants who have been diagnosed with PCOS has been depicted in Table 4. Table 5 depicts the possible barriers that have been reported by the study participants causing lack of awareness of PCOS. Most participants (41%) believed that there was limited education and information related to PCOS; 26.5% believed that taboo and misconceptions surrounding reproductive health prevented them from gaining adequate information; 22.5% believed that there was a lack of public awareness campaigns, while the rest felt that there was limited media coverage pertaining to PCOS and also lack of access to healthcare services played an important role.

Table 1: Sociodemographic details of the study participants

Socio-demographic characteristics	Variables	Number of participants (n)	Percentage (%)
Age group (in years)	Adolescent (13-19)	153	76.5
	Young (20-25)	47	23.5
Mean±S.D.		17.53±2.75	
Education	School-going	41	20.5
	College-going	159	79.5
Residence	Hostel	147	73.5
	Home	53	26.5
BMI (kg/m ²) ^[7]	Underweight	35	17.5
	Normal	157	78.5
	Overweight	8	4.0
Median BMI		21.31	

Table 2: Comparison of knowledge of study participants about PCOS

Variables		Pre-test (n)	Post-test (n)	p-value
Full form of PCOS	Correct answer	35	177	<0.0001
	Incorrect answer	165	23	
PCOS affects what organs	Only ovaries	35	184	<0.0001
	Only uterus	12	1	
	Both ovaries and uterus	38	9	
	Don't know	115	6	
PCOS has no cure but can be managed effectively	Yes	15	176	<0.0001
	No	125	19	
	Don't know	60	5	

Table 3: Comparison of awareness of study participants about various parameters related to PCOS

Variables		Pre-test (n)	Post-test (n)	p-value
Causes of PCOS				
Hormonal imbalance	Yes	37	173	<0.0001
	No	163	27	
Sedentary lifestyle	Yes	34	168	<0.0001
	No	166	32	
Obesity	Yes	31	161	<0.0001
	No	169	39	
Genetic	Yes	35	177	<0.0001
	No	165	23	
Symptoms of PCOS				
Irregular menstrual cycles	Yes	73	185	<0.0001
	No	127	15	
Excessive hair growth on face, chin, chest and back (hirsutism)	Yes	41	179	<0.0001
	No	159	21	
Weight gain/ difficulty losing weight	Yes	43	171	<0.0001
	No	157	29	
Mood swings	Yes	57	175	<0.0001
	No	143	25	
Acne	Yes	49	167	<0.0001
	No	151	33	
Hyperpigmentation (neck)	Yes	35	169	<0.0001
	No	165	31	
Hair loss (alopecia)	Yes	39	178	<0.0001

	No	161	22	
Complications associated with PCOS				
Diabetes	Yes	27	164	<0.0001
	No	173	36	
Cardiovascular diseases	Yes	15	166	<0.0001
	No	185	34	
Infertility	Yes	67	171	<0.0001
	No	133	29	
Abortions	Yes	59	179	<0.0001
	No	141	21	
Endometrial cancer	Yes	33	170	<0.0001
	No	167	30	
Preventive measures for PCOD				
Healthy balanced diet	Yes	132	189	<0.0001
	No	68	11	
Maintaining healthy weight	Yes	91	191	<0.0001
	No	109	9	
Regular physical activity or exercise	Yes	125	193	<0.0001
	No	75	7	
Managing stress levels	Yes	78	188	<0.0001
	No	122	12	
Limiting consumption of sugary and processed foods	Yes	85	173	<0.0001
	No	115	27	
Adequate sleep	Yes	105	181	<0.0001
	No	95	19	
Regular medical check-ups and screenings for early detection	Yes	91	187	<0.0001
	No	109	13	

Table 4: Perception among study participants who have been diagnosed with PCOS

Variables		Frequency (n)	Percentage (%)
PCOS is a serious health condition	Strongly disagree	0	0
	Disagree	1	6.7
	Neutral	3	20
	Agree	9	60
	Strongly agree	2	13.3
PCOS affects a woman's self-esteem and body image	Strongly disagree	0	0
	Disagree	0	0
	Neutral	4	26.7
	Agree	9	60.0
	Strongly agree	2	13.3
There is enough awareness and support for women with PCOS to access treatment and support	Strongly disagree	3	20
	Disagree	10	66.7
	Neutral	1	6.7
	Agree	1	6.7
	Strongly agree	0	0
It is important to educate others about PCOS	Strongly disagree	0	0
	Disagree	0	0
	Neutral	2	13.3
	Agree	5	33.3
	Strongly agree	8	53.3
Your perception of PCOS influences your own health behaviours and decisions	Strongly disagree	0	0
	Disagree	1	6.7
	Neutral	3	20
	Agree	5	33.3
	Strongly agree	7	46.7

Table 5: Barriers causing lack of awareness regarding PCOS

Variables	Frequency (n)	Percentage (%)
Limited education and information	82	41%
Taboo and misconceptions surrounding reproductive health	53	26.5%
Lack of access to healthcare services	13	6.5%
Lack of public awareness campaigns	45	22.5%
Limited media coverage	25	12.5%

DISCUSSION

The present study aimed to assess and improve the knowledge, awareness and perception regarding polycystic ovarian syndrome among adolescents and young women in Indore city. Similar studies were

carried out by Patel J and Rai S (2018),^[8] and Jabeen A et al (2022).^[9]

Majority of the study participants included in the present study were adolescents while the rest were young women. Of these, most were college-going students residing in hostel. The Body Mass Index (BMI) of majority students was within the normal

range. Jabeen A et al (2022),^[9] carried out their study among a similar group of students, with majority being adolescents and having normal BMI. Rajkumari P et al (2016),^[10] in their study among government school girls in a semi-urban region, similarly observed that majority girls had a normal BMI, and few were overweight or obese.

The knowledge of PCOS in the present study was notably lacking among the adolescents compared to young women, who exhibited a comparatively better understanding of the condition. Jabeen A et al (2022),^[9] observed similar findings and attributed the reason to limited exposure of adolescents to society, as parents of participants from rural backgrounds may impose restrictions on their social behaviour.

A total of only 24% of the study participants had knowledge of PCOS, in the present study. A low awareness of 21.6% and 22% was also reported by Jabeen A et al (2022),^[9] and Rajkumari P et al (2016),^[10] respectively. On the contrary, Patel J and Rai S (2018),^[8] in their study among college-going and working women (18-30 years of age) reported an awareness of 41%. A study conducted by Jahangir S (2017),^[11] among non-medical undergraduates in Dhaka, Bangladesh, found that 64% of the participants had knowledge of PCOS, a percentage significantly higher than what was observed in our study. In another study by Pitchai P et al (2016),^[12] conducted among patients (18-35 years of age) visiting the gynaecological clinic, 6% of the study population had no awareness at all, while 94% had varying levels of awareness. This variation in the level of knowledge and awareness could be due to the difference in study population with reference to age group and occupation among the various studies. Pitchai P et al (2016),^[12] found a significant level of association between level of awareness and occupation (p-value=0.014). Rizvi M et al (2023),^[6] in their study among female undergraduate students studying in medical and non-medical colleges reported that good knowledge score for PCOS increased by 0.184 among participants of medical colleges (p-value<0.001). They also found increasing age to be a significant determinant of higher knowledge score for PCOS in univariate analysis (p-value=0.002).

The most common source of acquiring information regarding PCOS, was through school/college teachers for majority students, followed by healthcare professionals, internet, friends and family, in the present study, similar to findings of Jabeen A et al (2022).^[9] The internet, friends and family were identified as significant sources for disseminating information about PCOS in the study by Rajkumari P et al (2016),^[10] In studies by Pitchai P et al (2016),^[12] and Jahangir S (2017),^[11] doctors, followed by internet, media, friends and family were the common sources.

The present study reveals a concerning lack of knowledge and awareness regarding PCOS among the target demographic. Majority participants reported limited knowledge about PCOS, organs

affected by it, its causes, symptoms, potential health implications and preventive measures. The study participants were provided with detailed information about PCOS, and efforts were made to explain the facts logically to ensure understanding. The knowledge and awareness increased significantly (p-value<0.0001) after the educational intervention. Similar findings were observed by Patel J and Rai S (2018),^[8] where awareness regarding the term PCOS, organ system involved, its causes, symptoms, association with cancer and infertility and lifestyle changes increased significantly by 58.53% (p=0.000002), 36.95% (p=0.000641), 15.70% (0.04), 47.95% (0.0000010), 50.68% (p=0.000204) and 34.25% (0.000124) respectively. Jabeen A et al (2022),^[9] also reported a significant (p-value<0.0001) increase in the awareness of the study participants regarding causes, symptoms, complications and measures for prevention. They also reported that educating the age group of 13-19 years was found to be more effective compared to educating young girls, possibly due to rigid perceptions within the latter group.

7.50% of the participants, in the present study, reported that they had already been diagnosed with PCOS. Similarly, Jabeen A et al (2022),^[9] reported 6.8% participants who were being treated for PCOS; Rajkumari P et al (2016),^[10] observed that 12% had clinical PCOS and Jahangir S (2017),^[11] and Rizvi M et al (2023),^[6] found that 9.71% and 9.6% participants, respectively, had been diagnosed with PCOS. The findings of our study are also concordant with the prevalence in India which is estimated to be between 3.7-22.5% among the women.^[3]

The perception of study participants who have been diagnosed with PCOS was assessed in the present study. The perception of PCOS was varied among the respondents. Majority perceived PCOS as a serious health condition that affected their self-esteem and body image. However, they agreed that this perception did influence their own health behaviour and decisions. The study participants felt that there was lack of enough awareness and support for women with PCOS to access treatment and support and that education through reliable information sources was necessary. Jahangir S (2017),^[11] and Pitchai P et al (2016),^[12] also reported that patients with PCOS perceived mixed feelings about dealing with this condition with majority feeling anxious and depressed while few felt embarrassed. Most of them had no idea about its management options.

Limited education and information, taboo and misconceptions surrounding reproductive health, lack of public awareness campaigns, limited media coverage and lack of access to healthcare services emerged as significant barriers to awareness, in the present study. Jabeen A et al (2022),^[9] also identified similar barriers. Rizvi M et al (2023),^[6] reported that a third of their participants felt that lack of self-knowledge was a barrier towards screening for PCOS.

Recommendations

This study suggests a need for more comprehensive education and awareness initiatives targeting young women, both within educational institutions and through broader public health campaigns. Relying on the internet or informal sources for information about PCOS, is concerning due to the accuracy and reliability of the information accessed. Developing and disseminating evidence-based educational materials and resources on PCOS, as well as promoting trusted sources of information, is essential in addressing this issue. Addressing misconceptions and fostering a more supportive and understanding societal attitude towards PCOS is also essential in improving awareness and promoting early detection and intervention. Efforts to improve access to healthcare, particularly in underserved communities, and to provide education and training for healthcare providers on PCOS diagnosis and management, are critical in addressing these barriers.

Limitations

1. The convenience sampling method used in this study may limit the generalizability of the findings.
2. Since the questionnaire is solely self-reported, responses from participants may not accurately reflect the true prevalence, as some individuals may be unaware or undiagnosed.

CONCLUSION

In conclusion, this study underscores the need for comprehensive and targeted efforts to improve awareness, perception, and understanding of PCOS among school-going girls and college-going women. Addressing barriers such as stigma, limited access to healthcare, and misinformation will require collaboration between healthcare providers, educators, policymakers, and advocacy groups. By raising awareness, reducing stigma, and improving access to accurate information and healthcare services, we can work towards better supporting individuals affected by PCOS and promoting their overall health and well-being.

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