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Original Research Article

Knowledge, perception and awareness associated with symptoms and complications of polycystic ovarian syndrome among college women

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ABSTRACT

Background: This study aimed to assess the knowledge, perception, and awareness of polycystic ovarian syndrome (PCOS) symptoms and complications among college women's in Chennai, India, to identify gaps in understanding and inform targeted educational interventions.

Methods: A cross-sectional survey was conducted among 292 female college students aged 18-25 years at Sri Ramachandra institute of higher education and research. A structured questionnaire evaluated participants' knowledge, perceptions, and awareness of PCOS symptoms, complications, and preventive measures. Data were analyzed using descriptive statistics.

Results: While 91.43% of participants had heard of PCOS, only 54.97% correctly identified androgen excess as a key factor. Awareness of symptoms like irregular menstrual cycles 82.19% and hirsutism 66.78% was relatively high, but knowledge of long-term complications such as diabetes 35.27% and heart disease 37.67% was low. Most participants recognized the importance of lifestyle interventions, with 77.05% endorsing regular exercise and 76.36% supporting dietary modifications. Allopathic medicine was the preferred treatment 70.89%, with minimal interest in alternative therapies.

Conclusions: The study reveals significant gaps in knowledge regarding the long-term complications of PCOS among college women's. While awareness of common symptoms is relatively high, targeted educational programs are needed to improve understanding of the syndrome's broader health implications. Healthcare professionals should play a central role in disseminating accurate information to promote early detection and effective management of PCOS.

Keywords: Polycystic ovarian syndrome, Knowledge, Perception, Awareness, College women, Reproductive health, Lifestyle interventions

INTRODUCTION

In women's of reproductive age, PCOS is the most common reproductive health problem which is different in terms of hormonal disturbances, ovarian malfunction, and variable clinical presentations among others, whereas the diagnosis is generally difficult as PCOS is a complex spectrum disease that often suggests a lack of PCOS knowledge in colleges. Students are more likely to be under-diagnosed as a result of a lack of knowledge.^{1,2} The

distribution of PCOS is only mildly affected by this group. It ranges from 2.2% to 20%, this way it depends on the declared diagnostic criteria or the study population combinations.³ Hirsutism, acne, and male-pattern baldness are the symptoms mostly associated with hyperandrogenism, which is the hallmark of PCOS.⁴ College years function as the most sensitive period for the reproductive system, yet the data expressed suggest that there is a considerable amount of misinformation and ignorance of PCOS among students.⁵ The timely diagnosis

is vital to the successful treatment, the prevention of complications, and the well-being of the individual. PCOS is a multi-faceted disorder affecting not only metabolism and reproduction but also the mind, thus, it affects the quality of life to a great extent. The strategies are based on symptom relief, ovulation restoration, fertility promotion, and metabolic regulation. Initially, the first-line treatments include lifestyle modifications such as weight management, regular physical activity, and a balanced diet to improve insulin sensitivity.⁶ In addition, oral contraceptives, especially in the form of estrogen/progestin pill combinations, are often given to patients to bring back normal periods and decrease androgen levels. Bringing out the awareness and education of PCOS at the college level partnerships can create a united atmosphere, beat a stigma, and enable individuals to become responsible for their health.⁷

METHODS

Study design

A cross-sectional survey-based study was conducted to evaluate the knowledge, perception, and awareness of PCOS among female college students. Participants completed a self-administered questionnaire to ensure consistent data collection. The study design minimized bias and provided a snapshot analysis of PCOS awareness in the target population. The study was conducted from April 2024 to September 2024.

Study setting

The study was conducted at Sri Ramachandra institute of higher education and research (SRIHER) in Chennai, India. The institution's diverse undergraduate student population provided an ideal setting to assess PCOS awareness among young women. The research was conducted over a defined period after obtaining institutional approval for data collection and analysis.

Inclusion criteria

Female college students aged 18 years or older, willing to participate, and providing informed consent were included. These participants were the primary focus due to their vulnerability to PCOS.

Exclusion criteria

Students who refused to participate, were uncooperative, married, or enrolled in medical programs were excluded to avoid biases related to reproductive health status or prior medical knowledge of PCOS.

Sample size determination

The sample size was calculated using OpenEpi software (version 1.0) with a 95% confidence interval and 80% power. A sample size of 292 participants was determined

to ensure statistical reliability and adequate representation of PCOS knowledge and awareness.

Survey instrument development and validation

A structured questionnaire was developed through an extensive literature review using databases such as PubMed, Google Scholar, and ScienceDirect. The questionnaire assessed PCOS awareness across five domains: general knowledge, perception, symptoms, complications, and preventive measures. Content validation was performed by subject-matter experts, and readability was enhanced by professional English language experts to ensure clarity and comprehension.

Ethical considerations

The study adhered to the guidelines of the institutional human ethics committee (IHEC) of SRIHER (approval number: CSP/22/DEC/119/605). Participants were provided with detailed information, and written consent was obtained. Confidentiality and voluntary participation were maintained in compliance with international conference on harmonization-good clinical practice (ICH-GCP) guidelines.

Data collection and management

The questionnaire was administered online in English. Data collection was closely monitored to ensure completeness and accuracy. Responses were anonymized and securely stored in a computerized format. Data were organized in Microsoft excel and subjected to statistical analysis, ensuring reliability and minimizing human error.

RESULTS

Socio-demographic characteristics and diet preferences

A total of 292 college women's participated in the study. Age distribution revealed that 29.79% (n=87) of respondents were between 18 and 20 years, 56.84% (n=166) in 21-23 years bracket, and only 13.35% (n=39) were between 24 and 25 years. Regarding body mass index (BMI), majority (52.39%) had a normal BMI, while 15.75% were classified as overweight, 18.49% as obese and 13.35% as underweight. Dietary habits indicated that 84.58% of participants consumed mixed diet (vegetarian and non-vegetarian), with smaller proportion (15.41%) adhering strictly to vegetarian diet (Figure 1 and 2).

Source of information about PCOS

Participants obtained information about PCOS from a variety of sources. Specifically, 15.41% reported teachers as their primary source, while 26.02% gained knowledge from friends. Medical professionals accounted for 26.71% of the information source, followed by newspapers (8.9%) and the internet (14.38%). Notably, 8.56% of the respondents indicated that they were unaware of PCOS.

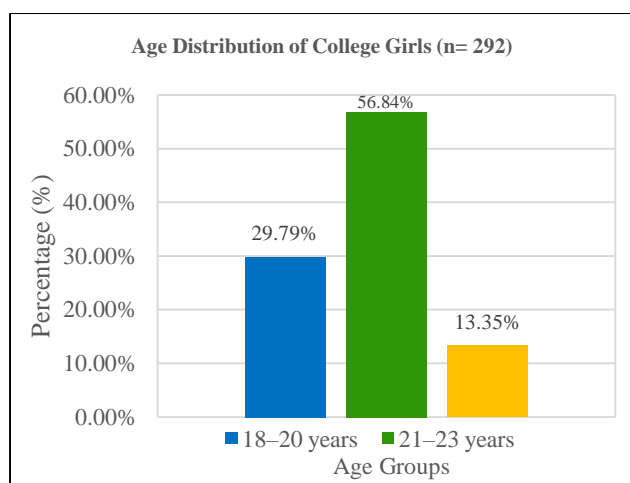


Figure 1: Age distribution of study participants.

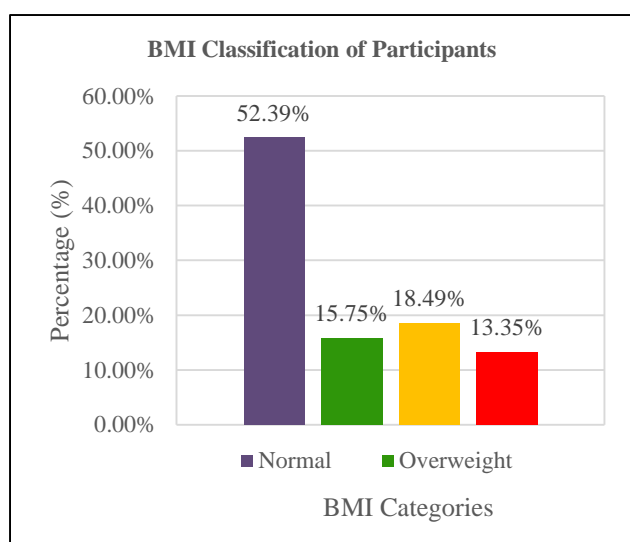


Figure 2: BMI distribution of study participants

Knowledge about PCOS

When queried about their familiarity with PCOS, a substantial 91.43% of the respondents confirmed that they had heard of the term. Among these, 54.97% correctly identified that an increase in the male hormone, androgen, is a causative factor for PCOS. Despite this awareness, 63.35% noted that the term “PCOS” is ambiguous and does not inherently convey detailed information about the condition. Additionally, 55.47% recognized that women’s with PCOS often have abnormal ovaries. In terms of treatment knowledge, 57.87% believed that ovarian cysts could be surgically removed, and 58.21% acknowledged weight loss as the primary treatment modality. Diagnostic perceptions varied, with 57.19% favoring ultrasonography and 42.46% endorsing blood tests as diagnostic tools. Moreover, 58.56% attributed infertility to PCOS, and 63.35% agreed that the condition can be effectively managed using drugs (Figure 3).

Perception about PCOS

Regarding perceptions of PCOS, 64.04% of the respondents disagreed with the notion that PCOS is an incurable and permanent condition. Nearly half (49.65%) believed that individuals with PCOS have control over the condition, whereas 36.98% remained uncertain about its impact on body image. More than half of the participants (53.76%) did not consider PCOS a particularly challenging condition to manage, and 56.16% felt that it does not significantly hinder social interactions. Furthermore, 55.82% emphasized the need for social support among those affected, although 42.80% were unsure if hirsutism adversely impacts social life. A majority (53.08%) perceived PCOS as a common condition, and 44.52% did not regard it as a major health issue. Finally, 76.71% acknowledged that PCOS can also affect married women (Figure 4).

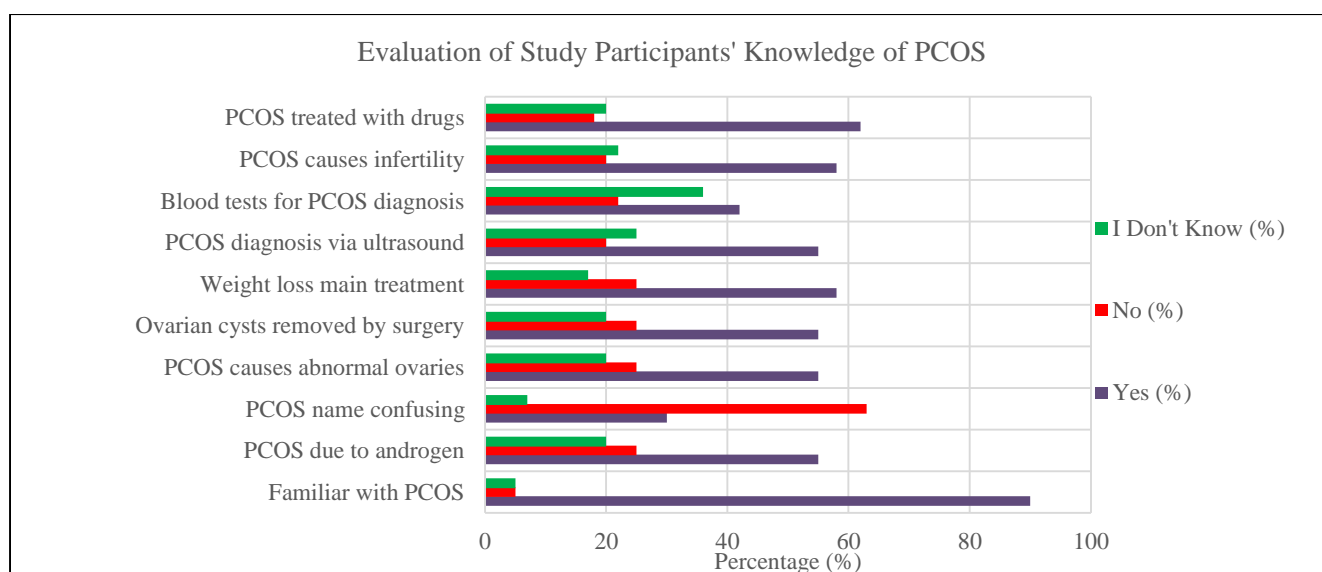


Figure 3: Knowledge evaluation on PCOS.

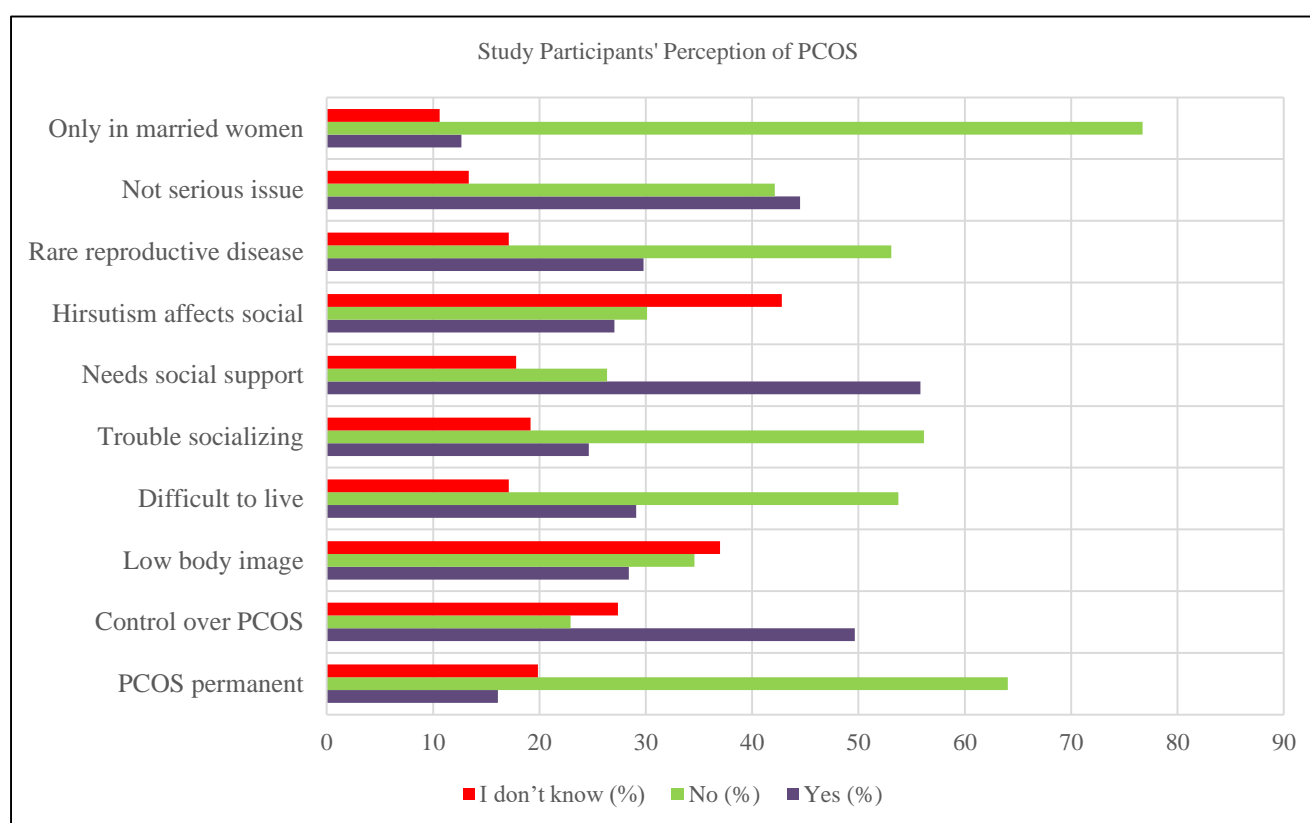


Figure 4: Perception of PCOS by study participants.

Awareness of signs and symptoms

The respondents demonstrated considerable awareness of the clinical manifestations of PCOS. A high proportion (82.19%) recognized that irregular or absent menstrual cycles are indicative of the condition, while 66.78% identified excessive hair growth on various body parts as a sign. Additionally, 64.72% associated severe acne during the menstrual cycle with PCOS, and 61.30% acknowledged scalp hair loss as a symptom.

Mood swings were recognized by 65.06% of the participants, whereas pelvic pain was identified by 48.63%. Furthermore, 78.08% considered weight gain as a symptom, although 42.12% were uncertain about early puberty's role. Hypertension was cited by 40.41% as a potential symptom, and 44.17% agreed that symptomatic treatment could alleviate PCOS manifestations.

Awareness of complications

Awareness regarding the complications associated with PCOS varied among the respondents. About 35.27% believed that PCOS is linked to diabetes mellitus, while 37.67% did not consider heart disease to be a complication. Additionally, 45.54% did not view stroke as a complication, whereas 41.43% acknowledged an association with breast and uterine cancer. A significant 68.49% identified depression and anxiety as complications of PCOS, and 58.90% reported sleep difficulties as another

concern. Furthermore, 40.41% recognized premature labor or preterm birth as potential outcomes, while 38.69% were unaware of any link to liver damage due to excess fat cells.

Miscarriage was acknowledged by 42.80% as a serious complication, and 65.41% concurred that obesity can contribute to the development of PCOS.

Awareness of measures to decrease PCOS symptoms

Regarding interventions to mitigate PCOS symptoms, 77.05% agreed that regular exercise is beneficial in controlling the condition. Weight reduction was recognized as a helpful strategy by 68.49% of the respondents. Dietary modifications also featured prominently, with 76.36% endorsing the consumption of fruits and vegetables and 68.83% supporting protein-rich meals as effective measures.

Conversely, 40.06% disagreed with the notion that fat-rich foods help reduce symptoms, and 39.38% were unaware of the potential role of contraception in symptom management.

A majority (80.47%) believed that a combination of diet and exercise can effectively manage PCOS, although 40.06% did not recognize metformin as a treatment option. Additionally, while 40.06% did not consider avoiding coffee beneficial, 56.50% affirmed that a high-fiber diet may help alleviate PCOS symptoms (Figure 5).

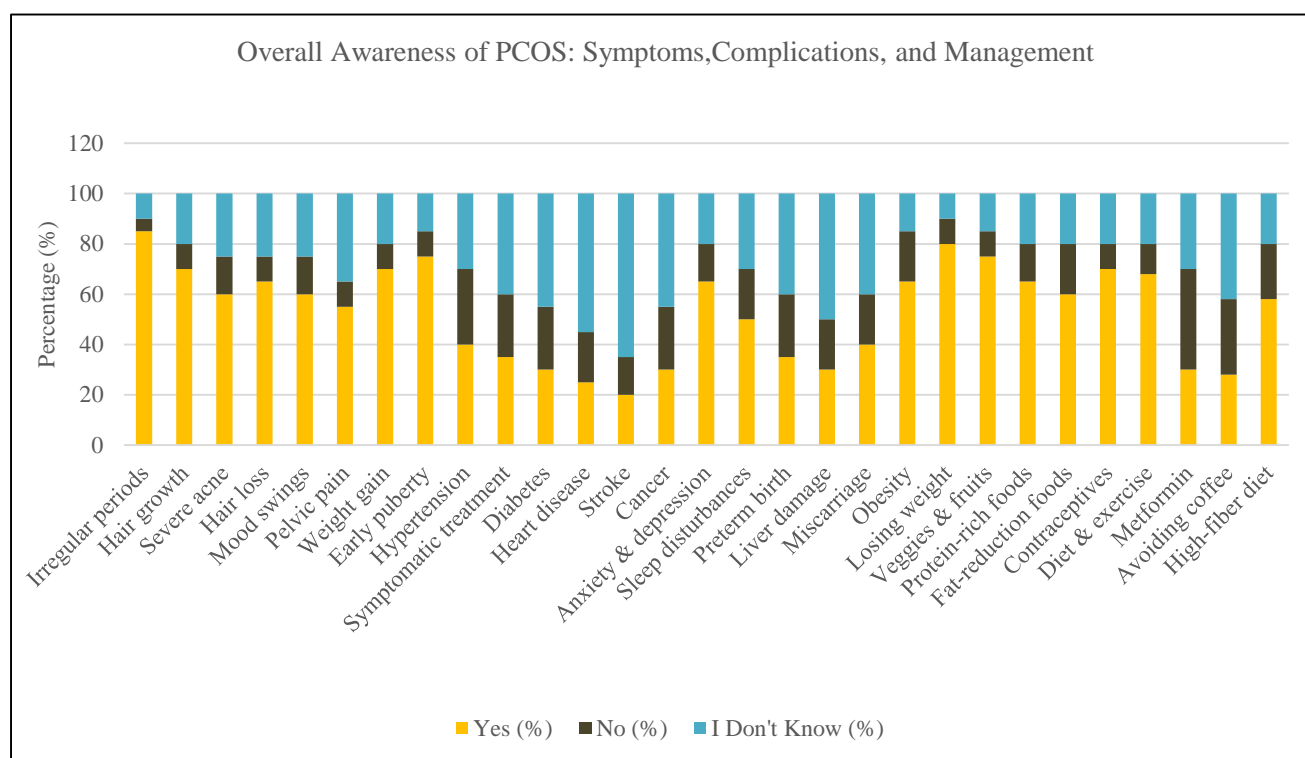


Figure 5: Overall awareness of PCOS by study participants.

Preferred therapies

In terms of therapeutic preferences, the vast majority of the respondents (70.89%) favored allopathic medicine for managing PCOS. Alternative therapies were less popular, with 10.95% preferring siddha, 8.56% choosing ayurveda, 6.16% opting for homeopathy, and a smaller proportion (3.42%) selecting other treatment modalities.

DISCUSSION

This analysis focused on the knowledge level, perceptions, and awareness of PCOS symptoms and complications of 292 young women's attending college (18-25 years). It is about 57% of the participants who are found to be between the ages of 21-23, which are the same as in the research of other similar studies.^{8,9} Socioeconomically, 54.45% of the students come from middle-class families which is in line with the data from the work of Malini et al where 76% were from this category. It is noteworthy that 52.39% had normal BMI whereby the results would be outstanding if compared to Jabeen et al.^{10,11} whereby 78% had normal BMI which shows that more research should be done on aspects of the health to understand the disparities around BMI. Information sources on PCOS came from a variety of sources: 26.71% got educated on PCOS from health care providers, 26.02% from their friends, and 15.41% from their teachers, thus showing the necessity of organizing a structured instructional program. The percentage of 91.43 was self-reported, which means that even though the term of the syndrome was recognized, (gap existed-the gap was) the majority was not able to

properly identify its origins. For example, the percentage of those who correctly identified PCOS as androgen excess was 54.79 which is much lower than 83.90% reported in the study by Goh et al.^{12,13} Similarly, 57.87% knew ovarian cysts could be surgically resolved, which is close to the 64.90% of those who were aware in the study by Goh et al.¹⁴ Diagnostic and treatment availability appeared to be quite diverse as 58.21% ranked weight loss as the primary intervention, similar to Jaber et al where 54.8% did so, while 57.19% diagnosed it via ultrasound, which was lower than Jaber et al 79.6%.^{15,16} Only 42.46% could therefore name blood tests as another method to detect the affliction, which contradicted Abu-Taha et al.¹⁷ where only 33.5% were acknowledged for this diagnosis. Reproductive impairment was clearly underestimated, as only 58.56% were able to explain PCOS and infertility, which was much lower than Hussin et al (91.3%).¹⁸ Perception about the severity of PCOS was diverse: 64.04% denied that PCOS is a permanent illness, whereas the percentage was lower than Al Souheil et al (37.8%).¹⁵ Among them, just under 50% were convinced that patients had control over the illness and 36.98% had no clue that PCOS was connected to poor body image which corresponds to the findings of Al Souheil et al (39.8%).¹⁵ Social aspects as hirsutism not allowing the user to be active were still 42.80% of the ones who did not have a clear understanding, which was to be found in line with the one by Al Souheil et al (35.1%).¹⁵ Overall, the interpretations of symptoms present expressed as a sign of a disease showed heterogeneity: 82.19% of the participants experienced the same symptoms (Alfanob et al 82.1%). Contrary to that, 66.78% of them had knowledge on hirsutism but for Malini, they took it differently, where

75% made it a dispensable factor. Misconceptions remained around complications: 68.49% of them were able to tie mental health problems among teenagers with reproductive illnesses such as PCOS which is in line with Abu-Taha et al (70.6%) the condition, whereas 41.43% were under the misguided opinion that this syndrome might be a precursor of breast and uterine cancer due to an answer given by Alessa et al.^{19,20} (Only 34.8% of them could come up with the correct answer). Lifestyle measures were very much preferred: 77.05% of them recommended exercise as a means of managing PCOS, and that didn't exceed Jakhar et al (only 8.18%).²⁰ The diet aspect, on the other hand, was not consistent: 76.36% of the respondents supported diets rich in vegetables and fruits, in stark contrast to Alessa et al (63.2% were unaware), whereas 68.83% were for diets high in protein, unlike Alessa et al. (It was the case that 74.6% of the respondents were unaware). Treatment preferences emphasized allopathy (70.89%), a position that veered away from Upadhye et al who run research that showed that most people did not prefer it as only 9.5% favored it, and it indicates that there are other aspects such as cultural preferences or accessibility that weigh in on the decision-types.^{21,22}

Limitations

While this study provides valuable insights into the knowledge, perception, and awareness of PCOS among college women, it has certain limitations. First, the cross-sectional design limits the ability to establish causal relationships. Second, the study was conducted at a single institution in Chennai, which may restrict the generalizability of the findings to other regions or populations. Third, self-reported data may be subject to recall bias or social desirability bias. Additionally, the exclusion of married students and those enrolled in medical programs might have influenced the results, as their perspectives could differ significantly. Future research should include a more diverse and representative sample, employ longitudinal designs, and incorporate qualitative methods to explore deeper understanding and lived experiences of PCOS.

CONCLUSION

The results of this study suggest that college women's are very capable of dealing with the syndrome of polycystic ovaries. In general, healthcare professionals came out as the main source of information, indicating how important it is for medical professionals to be the primary disseminators of precise knowledge regarding PCOS. The respondents showed that they had a good sense of the prevailing issues such as acne, hirsutism, weight gain, and facial acne. Contrary to this, the information gap is still present in the respondents' knowledge about the possible long-term causes of PCOS such as diabetes, heart disease, stroke, and liver damage. In addition, programs that promote and correct managing measures that were noticed participants were universally adopted. These findings

indicate that there is a need for continued educational efforts to address the gaps in knowledge and to encourage early detection and effective management of PCOS.

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Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee SRIHER (approval number: CSP/22/DEC/119/605).

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