Original Research Article

Polycystic ovary syndrome awareness: insights from female medical students in Telangana

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ABSTRACT

Background: Polycystic ovary syndrome (PCOS) affects millions of young women worldwide, yet awareness remains suboptimal even in medical trainees. This study explored the knowledge, attitudes, and practices (KAP) regarding PCOS among 320 female medical students in Telangana, India, a group particularly vulnerable due to academic stress, irregular lifestyles, and limited personal health prioritization.
Methods: A validated, web-based cross-sectional survey was conducted among undergraduate and postgraduate female medical students aged 18–30 years. KAP scores were categorized as low (<37), moderate (38–45), or high (>45) using visual binning. Associations with age, menstrual regularity, BMI, stress levels, and PCOS diagnosis were analyzed using chi-square tests and independent t-tests.
Results: Most participants (63.1%) showed moderate KAP, 24.1% low, and only 12.8% high. Higher KAP was significantly associated with older age (p=0.016), menstrual irregularity (p=0.029), and previous PCOS diagnosis (p<0.001). Students diagnosed with PCOS reported significantly higher stress levels (mean 3.30 versus 2.99, p=0.007). BMI was significantly linked to PCOS diagnosis (p=0.015).
Conclusions: Moderate levels of PCOS awareness have been recorded with personal diagnosis being the strongest driver of knowledge. The elevated stress among affected students highlights the emotional burden of the condition. These findings emphasize the need for structured PCOS education, early screening, and psychosocial support within medical curricula to empower future physicians to better care for themselves and their patients.

Keywords: PCOS, Mensuration, Telangana, India

INTRODUCTION

Polycystic ovary syndrome (PCOS) is one of the most prevalent endocrine disorders among women of reproductive age, affecting between 6–13% of women worldwide, depending on diagnostic criteria and study population.[1,2] The World Health Organization (WHO) estimates that up to 70% of women with PCOS remain undiagnosed, underscoring a critical gap in reproductive health services.[3] PCOS is a heterogeneous condition, characterized by hyperandrogenism, ovulatory dysfunction, and polycystic ovarian morphology, often accompanied by metabolic disturbances such as insulin resistance, dyslipidemia, and obesity.[4] Clinical manifestations typically emerge during adolescence or early adulthood and include irregular or absent menstrual cycles, acne, hirsutism, alopecia, weight gain, difficulty in losing weight, and infertility. Long-term consequences extend beyond reproductive health, with increased risks of type 2 diabetes mellitus, metabolic syndrome,

cardiovascular disease, endometrial cancer, anxiety, depression, and poor quality of life.[5,6] Globally, the burden of PCOS has been increasing over the past three decades, with a marked rise in incidence, prevalence, and disability-adjusted life years (DALYs), particularly among adolescents and young adults in low- and middle-income countries.[7] In India, community- and institution-based studies have reported a prevalence ranging from 8% to 22%, depending on the criteria used.[8,9]

A study from South India reported an 8.1% prevalence of PCOS in university students, with overweight and obesity as major correlates.[10] Another hospital-based study among female medical students documented a prevalence of 9.18% and highlighted high levels of academic stress and sedentary lifestyle as significant risk factors.[11] Despite its high prevalence, awareness of PCOS remains suboptimal. Knowledge gaps have been consistently demonstrated in different population groups, including adolescents, college students, and even medical trainees. A study among medical students in West Bengal reported that while general awareness was present, detailed understanding of symptoms such as hirsutism and acne was poor.[12] Similarly, a study from Hyderabad found that although more than 89% of adolescents were aware of PCOS, knowledge was positively associated with higher educational level and personal diagnosis.[13] Another cross-sectional study among pharmacy and engineering students in Telangana reported moderate awareness, highlighting the need for structured educational interventions.[14] Female medical students represent a particularly relevant group for research on PCOS awareness. Although they are more likely to encounter PCOS-related information in their medical training, their lifestyle factors—academic stress, erratic sleep schedules, irregular dietary habits, and reduced physical activity—place them at an increased risk of developing PCOS.[15]

At the same time, undiagnosed PCOS among this population can have implications for both personal health and professional development. Given this context, the present study was conducted to assess the knowledge, attitudes, and practices (KAP) regarding PCOS among female medical students in Telangana, to determine which subgroups have higher incidence, and to identify undiagnosed students exhibiting symptoms.

This work aims to provide evidence for integrating structured awareness programs and psychosocial support into the medical curriculum, thereby contributing to early detection and improved management of PCOS. Medical students, due to their demanding academic schedules, irregular sleep patterns, and often poor dietary habits, are at an increased risk of developing PCOS.

The study aimed at assessing the knowledge, attitudes and practices of medical students about PCOS and to determine which group of students are having higher incidence of PCOS and to determine the number of undiagnosed students having the symptoms.

METHODS

The medical students' knowledge, attitudes, and practices about PCOS were evaluated by a descriptive cross-sectional web-based statistical survey from August 2024 to October 2024. Google Forms that were sent among medical students at different Telangana State colleges were used to gather the data. The relevant questionnaire was developed using a variety of pre-existing scales, and it was verified by professionals with relevant job experience. The final questionnaire for the current study was approved by the experts and includes questions on participants' knowledge, attitudes, and practices related to PCOS, as well as basic sociodemographic information. Twenty-two of the 342 Google Forms that were received are invalid since the participants did not finish the survey, and the final sample size was 320. Female medical students enrolled in various years of UG and PG courses made up the study group. Participants who were between the ages of 18 and 30 were included in the study, while those who were younger than 18 or older than 30 were not included. For primary sociodemographic information such as age, gender, body mass index (BMI), residence, dietary personal habits, and symptoms, descriptive statistics were calculated. The Chi-square test was used to evaluate the association between knowledge, attitude, and practice with other categorical variables like PCOS/PCOD diagnosis and KAP. The Institute Research and Ethics Committee has been approached for ethical approval and has approved it. statistical packages of social sciences (SPSS) version 21 were used to conduct the statistical analysis.

RESULTS

Table 1 depicts the sociodemographic profile of the study participants. The age of the participants was categorized into four including 18-21, 22-24, 25-27, and 28-30. The results show that most participants were aged between 18–21 years 60.6% (n=194), followed by 22–24 years 32.2% (n=103). Only a small fraction were above 25 years 5% (n=16). Majority of the participants were from urban areas 79.7% (n=225), while a smaller proportion belonged to semi-urban 12.8% (n=41) and rural 7.5% (n=24) backgrounds and this indicates an urban-dominant study population.

The variable of year of study indicates the largest group was MBBS 4th-year students, 27.5% (n=88), followed by MBBS 1st year 23.1% (n=74), MBBS 2nd year 22.2% (n=71) and MBBS 3rd years are 15.3% (n=49). Interns 5% (n=16) and postgraduates 6.9% (n=22) made up the smallest groups. A majority of students reported being moderately active 71.9% (n=230), while 17.5% (n=56) had a sedentary lifestyle and only 10.6% (n=34) described themselves as highly active.

The most of the participants 82.5% (n=264) consumed a mixed diet, whereas 17.5% (n=56) were vegetarian and this shows a strong non-vegetarian dietary preference among students. Over half of the study participants 56.9%

(n=182) ate healthy with only occasional junk food intake about 35.6% (n=114) consumed junk food regularly, and 7.5% (n=24) indulged very often. Nearly all respondents were unmarried (97.8%), with only 2.2% being married.

Table 1: Frequency distribution of socio-demographic profile of the participants.

Variable	Categories	N (%)
Age categories (years)	18-21	194 (60.6)
	22-24	103 (32.2)
	25-27	16 (5.0)
	28-30	7 (2.2)
Domicile	Rural	24 (7.5)
	Semi urban	41 (12.8)
	Urban	255 (79.7)
Year of study (year)	Intern	16 (5.0)
	MBBS 1st	74 (23.1)
	MBBS 2nd	71 (22.2)
	MBBS 3rd	49 (15.3)
	MBBS 4th	88 (27.5)
	Post graduate 1/2/3	22 (6.9)
Lifestyle	Active	34 (10.6)
	Moderately active	230 (71.9)
	Sedentary	56 (17.5)
Diet	Mixed	264 (82.5)
	Vegetarian	56 (17.5)
Describing eating habits	Consume junk very often	24 (7.5)
	Eat healthy, but consume junk food on a regular basis	114 (35.6)
	Eat healthy most of the time but have junk food occasionally	182 (56.9)
Marital status	Married	7 (2.2)
	Unmarried	313 (97.8)

Table 2 shows the frequency distribution of participant's clinical profile. Hours of sleep in a day of participants results shows Most of the students 67.5% (n=216) slept 6–8 hours daily, while 24.7% (n=79) reported less than 6 hours of sleep and only 7.8% (n=25) slept more than 8 hours. The variable of habits of students shows a vast majority 94.7% (n=303) reported no habits of consumption of alcohol or tobacco, a small proportion of students consumed alcohol 4.7% (n=15), and others were negligible. The frequencies of age of Menarche indicates most of the student's experienced menarche between 11–13 years 75.9% (n=243), followed by 14–16 years 21.9% (n=70), very early <10 years 1.6% (n=5) and late >16 years 0.6% (n= 2) menarche were rare. Regularity of menstruation among the participants shows the majority reported regular cycles 67.8% (n=217) and 11.9% (n= 38) of the students reported regularly irregular menstruation and 11.6% (n=37) reported irregularly irregular menstruation and least majority of the students reported 8.8% (n=28) irregular menstruation. Pain during menstruation has rating points, higher points indicate

higher pain and lower indicates lower pain. Moderate pain (scores 3 and 4) was most common, reported by over half of the students. Severe pain (score 5) was experienced by 7.5% (n=24). Almost all participants 95% (n=304) did not use contraceptives and only 5% (n=16) reported usage. Family history of diabetes was common, with 33.8% (n=108) having affected grandparents and 19.1% (n=61) reporting parental diabetes and about 30.6% (n=98) had no family history. A majority of the students 60.9% (n=195) had never visited a gynecologist, while 30.6% (n=98) visited once a year and very few reported more frequent visits. Most students had a normal body mass index (BMI) 61.9% (n=198), while 26.6% (n=85) were overweight, and 5.3% (n=17) were obese, and underweight individuals accounted for 6.3% (n=20) of the sample.

Table 2: Frequency distribution of clinical profile of the participants.

Variable	Categories	N (%)
Hours of sleep in a day (hours)	<6	79 (24.5)
	>8	25 (7.8)
	6-8	216 (67.5)
Habits	Alcohol	15 (4.7)
	None	303 (94.7)
	Others	2 (0.6)
Age of menarche (years)	<10	5 (1.6)
	>16	2 (0.6)
	11-13	243 (75.9)
	14-16	70 (21.9)
Regularity of menstruation	Irregular	28 (8.8)
	Irregularly irregular	37 (11.6)
	Regular	217 (67.8)
	Regularly irregular	38 (11.9)
Pain during menstruation	1.0	64 (20.0)
	2.0	63 (19.7)
	3.0	98 (30.6)
	4.0	71 (22.2)
	5.0	24 (7.5)
Use of contraceptives	No	304 (95.0)
	Yes	16 (5.0)
Diabetics in the family	No	98 (30.6)
	Yes, both parents and grandparents are diagnosed	53 (16.6)
	Yes, grandparents	108 (33.8)
	Yes, parents are diagnosed	61 (19.1)
Frequency of visits to the gynaecologist	>2 times a year	12 (3.8)
	Never	195 (60.9)
	Once a year	98 (30.6)
	Twice a year	15 (4.7)
Body mass index	Normal (18-25)	198 (61.9)
	Obese (30-35)	17 (5.3)
	Overweight (25-30)	85 (26.6)
	Underweight (<18)	20 (6.3)

Table 3 represents the level of knowledge, attitude, and practice among the participants regarding PCOS/PCOD. Using the conventional visual binning technique, cut points at the mean, and selected standard deviations based on scanned cases, the aforementioned KAP categories were created. The mean value, standard deviation, range, minimum, and maximum values of the continuous scale of KAP were first determined using descriptive statistics in SPSS. Visual binning was then applied, resulting in a mean value of 40.92 and a standard deviation of 4.33.

Following the technique, the categories were determined: a KAP score of less than 37 denotes a lower level of KAP, a score between 38 and 45 denotes a moderate level of KAP, and a score of greater than 45 denotes a higher level of KAP. The distribution of KAP levels indicates that most respondents reported 63.1% (n=202) had a moderate level of KAP, while 24.1% (n=77) had a lower level and 12.8% (n=41) a higher level.

Results of the association between selected variables are summarized in Table 4 and a Chi-square association was performed to understand the association between the variables. Statistically significant association found between the age of the respondents and their level of Knowledge, attitude and practice (KAP) (χ^2=15.589, df=6, p=0.016), regularity of menstruation and their level of KAP (χ^2=14.101, df=6, p=0.029), body mass index and the PCOS/PCOD diagnosis (χ^2=10.406, df=3, p=0.015), Diagnosis of PCOS/PCOD and their level of KAP (χ^2=16.422, df=2, p≤0.001).

Table 3: Level of knowledge, attitude, and practice among the respondents.

Categories of KAP	Frequency	Percent	Valid percent
<37=lower level of KAP	77	24.1	24.1
38-45=moderate level of KAP	202	63.1	63.1
>45=higher level of KAP	41	12.8	12.8
Total	320	100.0	100.0

Table 4: Association between selected variables.

Variables	χ^2	df	P<0.05[a]
Age and their level of KAP	15.589[a]	6	0.016
Regularity of menstruation and their level of KAP	14.101[a]	6	0.029
Body mass index and the PCOS/PCOD diagnosis	10.406[a]	3	0.015
Diagnosis of PCOS/PCOD and the level of KAP	16.422[a]	2	<0.001

Table 5: Comparison of students' stress across the categories of PCOS/PCOD diagnosis

Variable	PCOS/PCOD diagnosis		Test statistics [t-test]	df	P [<0.05]
	Yes (mean±SD)	No (mean±SD)			
Level of stress	3.30±1.00	2.99±0.92	2.717	318	0.007

Table 5 indicates the independent sample t-test results of students' stress across the categories of PCOS/PCOD diagnosis. The results show a statistically significant differences in mean scores of levels of stress across the PCOS/PCOD diagnosis (t=2.717, df=318, p=0.007). it is concluded from the results that the level of stress among the participants is high (m=3.30, SD=1.00) among the participants diagnosed with PCOS/PCOD and the stress levels are less (m=2.99, SD=0.92) among participants not diagnosed with PCOS/PCOD.

DISCUSSION

The present study assessed KAP regarding PCOS among female medical students in Telangana, while also examining associations between demographic and clinical factors such as age, menstrual regularity, stress, BMI, and PCOS diagnosis.

Our results revealed that the majority of respondents demonstrated moderate KAP scores (63.1%), with only 12.8% attaining a higher level of awareness. The mean KAP score was 40.92±4.33, highlighting gaps in deeper understanding of the condition despite participants' medical background. This finding is comparable to a study from West Bengal, where students showed general awareness of PCOS but lacked detailed knowledge regarding its clinical features such as hirsutism and acne, underscoring the need for structured and repeated sensitization programs within the medical curriculum.[10] Similarly, a study among female adolescents in Hyderabad demonstrated good awareness (>89%), but knowledge was positively associated with educational level and personal diagnosis of PCOS.[11] Consistent with these findings, our data showed that respondents with a prior diagnosis of PCOS/PCOD had significantly higher KAP levels (χ^2=16.422, p<0.001), suggesting that personal health experiences strongly reinforce awareness.

Significant associations were also observed between KAP levels and both age (p=0.016) and menstrual regularity (p=0.029). This may be explained by the fact that as students advance in age, they are more likely to encounter menstrual disturbances, which in turn raises awareness of PCOS. A similar pattern was reported in reproductive health studies where menstrual irregularities served as both a clinical symptom and a trigger for awareness-seeking behavior.[14]

Stress emerged as another important correlate. Students diagnosed with PCOS reported significantly higher stress scores (3.30±1.00 versus 2.99±0.92, p=0.007). This aligns with existing literature documenting the psychological burden of PCOS, including higher rates of anxiety, depression, and reduced quality of life.[1] The dual impact of hormonal imbalances and social stigma surrounding cosmetic symptoms (e.g., acne and hirsutism) may further exacerbate stress among young women.

BMI was also found to be significantly associated with PCOS diagnosis (p=0.015). This supports findings from South Indian cohorts, where overweight and obesity were major risk factors linked to PCOS prevalence among university students.[7,8] The interplay between insulin resistance, obesity, and hormonal dysregulation underscores the need for early lifestyle interventions in high-risk student populations.

Comparisons with prevalence studies provide additional context. A South Indian university-based study reported an 8.1% prevalence of PCOS, with an additional 9.1% classified at high risk.[7] Another hospital-based study identified a prevalence of 9.18% among female medical students, alongside high stress (53.5%) and sedentary lifestyle risk factors (53.3%).[9] While our study did not estimate prevalence directly, the associations with stress, BMI, and menstrual irregularities mirror these observations, reinforcing the interconnectedness of lifestyle, clinical manifestations, and awareness.

Strengths and limitations

A major strength of our study lies in its relatively large sample size (n=320) and use of validated statistical techniques, including Chi-square testing, t-tests, and visual binning for KAP categorization. However, the reliance on self-reported online data introduces the possibility of recall and reporting bias. Furthermore, the absence of a universally standardized KAP tool for PCOS restricts direct comparability with other studies.

Implications

Our findings emphasize the importance of curriculum-based sensitization, such as seminars, workshops, and structured modules on reproductive endocrinology, to bridge the existing knowledge gaps. Students diagnosed with PCOS require integrated psychosocial support, including stress management and counseling, in addition to clinical care. Finally, the strong associations with BMI and menstrual irregularities highlight the need for screening and early lifestyle interventions to prevent long-term metabolic and reproductive sequelae.

CONCLUSION

In summary, female medical students in Telangana demonstrated moderate levels of awareness regarding PCOS, with higher knowledge associated with age, menstrual regularity, BMI, and prior diagnosis. The elevated stress observed in diagnosed individuals underscores the psychological burden of the disorder. In line with national and international studies, our results call for comprehensive educational and psychosocial strategies to improve PCOS awareness, early detection, and

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