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Quality of Life of Pharmacy Students with Polycystic Ovarian Syndrome in South India: A Cross-Sectional Study

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Abstract

Background: One in five women in India suffers from polycystic ovarian syndrome (PCOS). In this study, we aimed to evaluate the quality of life of pharmacy students suffering from PCOS and provide awareness through counseling.

Methods: A cross-sectional study was conducted on 103 students with PCOS for 6 months. The Polycystic Ovarian Syndrome Quality of Life (PCOSQ) questionnaire was used to determine the quality of life.

Results: The prevalence of PCOS in our study was 39.5%. The mean age of the students was 21.1 (\pm 1.8) years. The mean duration of the disorder was 17.8 (\pm 13.0) months. More than three-quarters (77.6%) of them were under medications. Menstrual problems had a severe negative impact on the quality of life. In addition, emotion, body hair, weight gain, and infertility had a moderate impact on the quality of life. A significant association was observed among sleeping habits and infertility problems (p = 0.014), physical activity, weight (p = 0.032), and menstrual problems (p = 0.042).

Conclusions: Menstrual problems have a significant impact on the quality of life of students with PCOS. Moreover, health science students must develop an awareness of prevalent noncommunicable diseases to help themselves and the society.

Keywords: noncommunicable diseases, pharmacy, polycystic ovarian syndrome, quality of life, students

INTRODUCTION

One in five women in India suffers from polycystic ovarian syndrome (PCOS), a hormonal disorder.^{1,2} Women aged between 15 and 30 years are the most affected.¹ Emotional wellbeing is also affected, making women vulnerable to anxiety and depression. Irregular periods may lead to endometrial cancer. Excess body hair makes women feel depressed because others will see their facial hair. Weight gain affects body image and increases the risk of cardiovascular and endocrine diseases. In addition, women experience difficulties in becoming pregnant too.³ Collectively, these effects will affect their quality of life. Imparting awareness through effective counseling can bring significant changes in the attitudes and behavior of women with PCOS. Health science students will play a significant role in this aspect because they study the prevention and management of various diseases.

No previous reports have evaluated the quality of life of pharmacy students with PCOS and provided counseling on the disorder. Thus, we aimed to assess the quality of life of pharmacy students with PCOS. The Polycystic Ovarian Syndrome Quality of Life questionnaire (PCOSQ)⁴

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measured health-related quality of life. The questionnaire contains 26 items, which are grouped into five domains, namely, emotional (eight items), body hair (five items), weight (five items), infertility (four items), and menstrual problems (four items). Each question is associated with a 7-point scale. The highest score indicates an optimal impact, whereas the lowest score indicates a negative impact on the quality of life.

Irrespective of the quality of life, we provided awareness of PCOS through effective counseling using booklets (with pictograms) from Pcosindia.org. We also provided information about the best smartphone applications for meditation, diet planning, weight loss, fitness, and essential websites for PCOS women during counseling.

METHODS

A cross-sectional study was conducted on students studying Pharmacy at a private pharmacy college for 6 months (September 1, 2019 to February 29, 2020). A simple questionnaire that identifies students suffering from PCOS was prepared and distributed to all female students. Of the 400 students, 158 were identified with PCOS, and a sampling frame containing 158 students was made. The estimated sample size was 113 (with a 5% margin of error, 95% confidence interval, 158 population size, and 50% response distribution). Then, a simple random sampling technique was used to randomly select students. However, only 103 students expressed their willingness to participate in the study. We obtained

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written informed consent from these students after we explained the aim and objective of our study and assured the confidentiality of the information. Students were allowed to select the mode of contact. They were contacted either in person or through a telephonic interview. Details such as age, education, duration of PCOS, medications used, complementary and alternative medications used, other complaints, and sleeping habits were collected. Sleeping habits were categorized into three. Mild indicated that sleep was interrupted 5 to 15 times per hour on average. Moderate indicated that sleep was interrupted 16 to 30 times per hour on average, whereas severe indicated that sleep was interrupted more than 30 times per hour. The study was in accordance with STROBE guidelines.

Frequencies and percentages were reported for qualitative data. The Mann–Whitney test was used to determine the association between variables and domains of the questionnaire. The Kruskal–Wallis test was used to find the association between variables (with \geq three groups) and domains of the questionnaire. The level of significance was considered at p <0.05. Jeffrey's Amazing Statistical Program (version 0.12.1) software was used for statistical analysis. The study was approved by the Institutional Ethical Committee (VIPT/IEC/69/2019).

RESULTS

Table 1 illustrates the sociodemographic details of the patients. The participation rate was 91.15% (103 out of 113 participants). The mean age of the pharmacy students was 21.11 (\pm 1.75) years. Most of the students were graduates (84.46%), had no comorbidities (56.31%), used different medications (77.67%), and did not use complementary alternate medications (62.13%). The mean duration of the disorder was 17.81 (\pm 13.00) months, and the average weight was 72.8 (\pm 10.39) kg. Mild and no sleep disturbances constituted 66%. Half of them reported no other problems.

Table 2 provides the mean scores for the five domains of the questionnaire. Based on the mean score of the domains, menstrual problems (14.19) have a negative impact, and emotions have an optimal impact on the quality of life. As shown in Table 3, a statistically significant association was observed between sleeping habits and infertility problems (p = 0.014), physical activity and weight (p = 0.032), and menstrual problems (p = 0.042).

As shown in Table 4, more than half of the students were non-compliant (54.6%) and had insufficient knowledge of managing the disease (62.9%). Nearly half of the students showed negligence toward symptoms (45.4%). These knowledge and practice aspects are identified during interaction with the students. **TABLE 1.** Sociodemographic characteristics of thestudents with polycystic ovarian syndrome (N = 103)

Characteristics	Frequency	Percentage			
Age in years					
18–21	66	64.1			
22–25	37	35.9			
Education					
Graduation	87	84.5			
Post-graduation	16	15.5			
Duration in months					
2-22	71	68.9			
23-44	25	24.3			
45–64	7	6.8			
Comorbidities					
Yes	45	43.7			
No	58	56.3			
Physical activity					
Yes	77	74.8			
No	26	25.2			
Sleeping habits					
Mild	34	33.0			
Moderate	22	21.3			
Severe	13	12.6			
None	34	33.0			
Medications					
None	23	22.3			
Progesterone	28	27.1			
Clomiphene citrate	11	10.6			
Ethinyl estradiol	11	10.6			
Levonorgestrel	10	9.7			
Metformin	9	8.7			
Others	11	10.6			
Complementary alternative medicine					
None	64	62.1			
Ayurveda	5	4.9			
Homeopathy	29	28.1			
Both	5	4.9			
Other problems					
None	56	54.3			
Pigmentation	15	14.6			
Acne	14	13.6			
Migraine	10	9.7			
Blemishes	8	7.8			

TABLE 2. Mean scores of the domains of the PCOSQ questionnaire

Name of the domain	Mean (standard deviation)	
Emotion	30.44 (11.79)	
Body hair	22.12 (9.08)	
Weight	19.49 (8.92)	
Infertility problems	19.51 (8.26)	
Menstrual problems	14.19 (6.41)	

Name of the variable	Emotion (p)	Body hair (p)	Weight (p)	Infertility problems (p)	Menstrual problems (p)
Duration	0.447	0.591	0.367	0.061	0.068
Age	0.327	0.204	0.317	0.622	0.134
CAM**	0.872	0.323	0.543	0.994	0.730
Comorbidities	0.347	0.145	0.274	0.414	0.220
Sleeping Habits	0.205	0.088	0.142	0.014*	0.379
Physical Activity	0.328	0.459	0.032*	0.069	0.042*

TABLE 3. Association of sociodemographic variables with the domains of the PCOSQ questionnaire

**p*<0.05; **CAM-Complementary Alternative Medicine

TABLE 4. Knowledge and practices of students toward the disease

S. No.	Knowledge and practices	Frequency (%)
1	Negligence toward symptoms	49 (45.4%)
2	Nonadherence	37 (34.3%)
3	Noncompliant	59 (54.6%)
4	Insufficient knowledge on disease	29 (26.9%)
5	Insufficient knowledge on management	68 (62.9%)

DISCUSSION

The prevalence of PCOS in our study was 39.5% (158\400). Studies from India reported a prevalence between 6% and 13.54%.⁵⁻⁷ Of 10 Indians, four are insufficiently active⁸, and over 50% of Indian women are inactive.⁹ Therefore, a sedentary lifestyle, physical inactivity, and weight gain attribute to the increased prevalence of PCOS in India. Nearly three-quarters of the students are physically inactive. It directly or indirectly contributes to hormonal imbalance.

In our study, emotions, body hair, weight, and infertility problems moderately affect students' health-related quality of life (HRQoL). Menstrual problems had severe impact on students' HRQoL. Veena et al.⁶ and Radhika et al.¹⁰ reported menstrual problems as domains that had severe impact on the quality of life of women with PCOS. Few studies reported that hirsutism had a negative influence on different dimensions of the quality of life of women^{11,12} and adolescents.¹³ Some studies reported weight and infertility as a significant factor indicating poor quality of life.^{14,15}

Some studies focused on the emotional burden of PCOS in adolescents and women. Depression and anxiety are negatively correlated with the quality of life of adolescents with PCOS.¹² Based on previous reports, depression is a significant predictor of physical, psychological, and social domains of quality of life assessed using the World Health Organization Quality of Life-Brief Form (WHOQOL-BREF).¹⁶

This variation in studies can be accounted for the difference in ages of study population and different phenotypes of women with PCOS. For example, weight gain and acne are more common in teenage girls, whereas obesity and infertility are more prominent in adult women. Similarly, phenotypes C and D do not contain hirsutism.¹⁷ PCOS is a multifactorial disease, in which genetic, environmental, endocrine and behavioral variables all interact, resulting in a diverse phenotype with metabolic, reproductive, and psychological characteristics that adversely influence women's health and quality of life throughout their lives. As women aged, the PCOS phenotype improves with clinical characteristics, and the syndrome progresses from a reproductive disorder to a metabolic disorder.¹⁸

In this study, sleeping habits had statistically significant association with infertility problems. Women with PCOS were approximately 1.5 times likely to have sleep problems than those without PCOS. This finding was true even when other variables causing sleep disturbances were considered.¹⁹ Sleep disturbances include delay of onset of sleep, struggling to maintain sleep, varied sleep duration, or awakening early.²⁰ In addition, evidence of a complex and bidirectional relationship between PCOS and sleep problems is observed. Sleep deprivation is a component of the pathophysiology of PCOS.²¹ However, PCOS was not associated with daytime sleepiness or unintended early awakening.²² After controlling for other variables, depressive symptoms and obesity mediate the increasing occurrence of difficulty in maintaining sleep (OR = 1.92; 95% CI: 1.12-3.31).22

Physical activity has statistically significant association with menstrual problems and weight in our study. Various studies have demonstrated that losing body weight can restore menstrual cycle in women with PCOS.^{23,24} Metaanalysis reported moderate evidence that aerobic exercise alone²⁵ or vigorous intensity exercise²⁶ can decrease body mass index in women with PCOS. Physical activity indirectly regulates menstrual cycle by regulating body weight. However, not only weight gain but also weight loss also can affect the regularity of menstrual cycle. A Korean study observed a U-shaped association pattern between changes in body weight (body weight gain or body weight loss) and irregular menstrual cycles among obese women.²⁷ Some studies reported that a combination of weight loss and diet or oral contraceptive pills would be more beneficial. For example, a micro diet can effectively reduce patients' body weight and regulate menstruation in obese patients with ovulatory disorders.²⁸ The combination of weight loss and oral contraceptive pills can improve several physical and mental domains related to quality of life, depressive symptoms, and anxiety disorders and provide benefits to overweight/obese women with PCOS.²⁹

During our interaction with the students, we learned their knowledge and practices toward the disease. Surprisingly, most of them were non-compliant (54.6%) and reported insufficient knowledge on PCOS management (62.9%). The students who adhered to the treatment reported a reduction in the symptoms. We provided awareness and management of PCOS using a pre-defined booklet and useful digital resources.

Awareness about PCOS management is a potential tool that may improve quality of life. Simple lifestyle modifications such as weight management and regular physical activity can significantly improve quality of life. With physical activity, we can control obesity, which contributes many diseases. At present, we can use websites that provide proper management strategies for PCOS. Therefore, we opted to provide counseling for every student with PCOS. We prepared a counseling leaflet containing a brief overview and management strategies for each domain that can affect their quality of life. The counseling material contains pictograms extracted from an information booklet³⁰ that is free to use for girls and women with PCOS and contains evidencebased information on PCOS. Furthermore, we provided resources such as websites and smartphone applications to provide awareness and improve PCOS management. The counseling materials and a list of websites and smartphone applications can be found in the supplementary files.

Complete knowledge of the PCOS and counseling for adolescents should be included in the curriculum to provide awareness toward the disorder and lifestyle modification. The course structure should also include conducting awareness programs on noncommunicable diseases that commonly occur among the community members. It will help them comprehensively understand the disease and responsibility toward the society.

The study has a few limitations. As the students are unsure about their height, we cannot calculate their body mass index. We did not assess the diagnosis of PCOS. However, we included students who are already suffering from PCOS. We assessed awareness with open-ended questions only because we decided to strengthen their awareness of the disease and management aspects. The study results cannot be generalized to the whole population because of the small sample size.

CONCLUSIONS

In our study, menstrual problems affected the quality of life of students. Most of the students have insufficient knowledge and non-compliant to the therapy. Therefore, modifying curriculum is necessary to enhance knowledge of PCOS and lifestyle modifications.

CONFLICT OF INTEREST

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