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Original Article

A Retrospective Observational Study on Clinical Profile and Treatment Patterns of Polycystic Ovary Syndrome (PCOS) Patients

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ABSTRACT

Background: Polycystic Ovary Syndrome (PCOS) is a common endocrine disorder among women of reproductive age. It is marked by hormonal imbalance, ovulatory dysfunction, and metabolic irregularities, which can contribute to infertility and long-term health risks. **Objectives:** This study aimed to evaluate the clinical features and treatment practices in patients diagnosed with PCOS. **Materials and Methods:** A retrospective observational analysis was carried out using medical records of 65 PCOS patients at a tertiary care Ayurvedic hospital. Data on demographics, menstrual history, clinical symptoms, and therapeutic interventions were collected. Descriptive statistics were applied, and findings were presented as frequencies and percentages. **Results:** The majority of patients were aged 19-25 years (53.1%), followed by those aged 26-35 years (30.3%). Menstrual irregularities were reported in 90.8% of cases. The most frequent clinical manifestations included acne (93.8%), hair fall (89.2%), obesity (87.7%), and hirsutism (68%). Infertility was documented in 41.5% of patients. Regarding management, Panchakarma therapy was administered in 50.8% of cases, while 56.9% received oral medications. **Conclusion:** PCOS primarily affects younger women and is strongly associated with menstrual disturbances and dermatological symptoms. The findings highlight that both Ayurvedic therapies and pharmacological treatments are commonly employed, reflecting an integrative approach to PCOS management.

Keywords: Ayurvedic Treatment, Hyperandrogenism, Infertility, Insulin Resistance, Panchakarma, Polycystic Ovary Syndrome.

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INTRODUCTION

Polycystic Ovary Syndrome (PCOS) also known as the Stein-Leventhal syndrome, is a prevalent endocrine disorder affecting women of reproductive age (Azziz *et al*., 2009). This syndrome is a heterogeneous endocrine disorder characterized by enlarged and dysfunctional ovaries, excess androgen levels, resistance to insulin. The name comes from the observation of small follicles (or "cysts") that often appear on the ovaries (Fauser *et al*., 2012). According to the WHO, PCOS affects approximately 8%-13% of women in their reproductive years (World Health Organization, 2023). Multiple comorbidities that are associated with PCOS include infertility, metabolic syndrome, obesity, impaired glucose tolerance, type 2 diabetes mellitus, cardiovascular disease, depression, Obstructive Sleep Apnea (OSA), endometrial cancer, and Metabolic Dysfunction-Associated Steatotic Liver Disease (MASLD) (Escobar-Morreale, 2018). It is characterized by hyperandrogenism, ovulatory dysfunction, and polycystic ovarian morphology, often accompanied by insulin resistance, obesity, dyslipidemia, and infertility (Goodarzi *et al*., 2011). The cause of PCOS is unknown but women with a family history or type 2 diabetes are at higher risk. PCOS is diagnosed clinically when at least two of the feature are present: Irregular or absent ovulation, Clinical or biochemical signs of hyperandrogenism, Polycystic ovarian features on ultrasound (Diamanti *et al*., 2012).

Newer Pharmacological Agents in PCOS

Recently, several novel drugs have been studied for PCOS management: Inositols (myo-inositol and D-chiro-inositol) improve insulin sensitivity and ovulatory function by modulating intracellular signaling pathways associated with insulin resistance (Unfer *et al*., 2017; Bevilacqua *et al*., 2019). Glucagon-Like Peptide-1 Receptor Agonists (GLP1-RAs) such as Liraglutide have shown promise in weight reduction and metabolic improvement in PCOS patients, particularly in those with obesity and impaired glucose tolerance (Jensterle *et al*., 2015; Rasmussen

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and Lindenberg, 2014). Sodium-Glucose Co-Transporter-2 (SGLT2) inhibitors, e.g., Dapagliflozin, are under investigation for their role in reducing insulin resistance and visceral adiposity in PCOS, although their clinical use is still emerging (Javed *et al*., 2021; Elkind-Hirsch *et al*., 2018). Research indicates that SGLT-2 inhibitors may help reduce body weight, visceral adiposity, and androgen levels, thereby improving metabolic and reproductive outcomes in PCOS patients (Elkind *et al*., 2018). Dipeptidyl Peptidase-4 (DPP-4) Inhibitors such as sitagliptin and linagliptin enhance incretin hormone activity and improve glucose metabolism. These drugs may improve insulin sensitivity, beta-cell function, and metabolic parameters in women with PCOS (Papaetis *et al*., 2021).

Ayurvedic Perspective and Management

Ayurveda approaches PCOS through a **holistic framework**, focusing on restoring metabolic balance (Agni), hormonal regulation, and maintaining equilibrium of **doshas,** especially **Kapha dosha** (Mishra, 2004). Ayurvedic management generally includes herbal remedies, dietary modifications, and lifestyle practices.

Herbal Remedies

Herbs are the hidden gems of the plant world, used in Ayurveda for centuries.

Ashwagandha (*Withania somnifera*)

It helps in managing stress, which is a critical factor in hormonal imbalance and PCOS. These herbal remedies for PCOS support the endocrine system by balancing cortisol levels. Ashwagandha works like a natural mood booster for women with PCOS. It alleviates anxiety and irregular periods (Singh *et al.*, 2011).

Shatavari (*Asparagus racemosus*)

Shatavari is one of the well-known Ayurvedic herbal remedies for PCOS. This herb promotes hormonal balance by modulating estrogen levels. It improves fertility and supports regular menstrual cycles. Shatavari's antioxidant and anti-inflammatory properties decrease PCOS-related symptoms. Thus, it promotes healthy reproductive health in women.

Turmeric (*Curcuma longa*)

Turmeric helps resolve chronic inflammation and insulin resistance associated with PCOS. It also improves metabolic function and modulates estrogenic activity in female reproductive organs. It can also ease symptoms like acne and weight gain (Gupta *et al*., 2013).

Lodhra (*Symplocos racemosa*)

It helps control excessive bleeding and correct hormonal imbalance (Tillu *et al*., 2015).

Ashoka (*Saraca asoca*)

It regulates menstrual cycles and improves uterine health (Singh, 2010).

Panchakarma for Infertility and PCOS

The "Panchakarma" therapy of Ayurveda provides a clear response to the rising problem of PCOS in the modern era. Therapy with panchakarma gives power to the sexual bodies such as the uterus, ovaries, Fallopian tubes, female vagina and male testis. The hormone equilibrium is preserved by panchakarma treatment.

Basti (Vasti)

For treatment with Basti, various types of herbal oils, Ghruta, milk or decoctions are used. Miracles may arise if they are treated correctly with suitable medications. Benefits of basti - Reduces Female Infertility = Irregular Menses, Hormone Unbalance, Dysmenorrhea, PCOD.

Uttarbasti

It seems to be the most effective therapy for gynecological conditions. Because of its resulting effects on the uterus and ovaries, it dissolves the cyst in the ovaries more efficiently than oral medications.

Dietary Recommendations

A PCOS diet chart to balance Kapha dosha includes some light, warm, and easy to digest food, including; Vegetables: Incorporate fresh vegetables into your diet. These may include leafy greens, broccoli, cauliflower, carrots, beets, and asparagus. Whole grains: Add whole grains such as brown rice, quinoa, and barley. Fruits: Avoid extra sweet or ripe fruit. Instead, have fruits like apples, berries, and pomegranate. Dry Fruits: It may include almonds, walnuts, pistachios, chia seeds, flax seeds, and berries. Legumes: Include legumes like lentils, chickpeas, and mung beans (Lad, 1999) (Tables 1-4).

Yoga and Exercise

Regular physical activity of minimum 30 min can be an effective solution for managing PCOS.

- **Butterfly pose:** Baddha Konasana, or Butterfly pose, is ideal for improving blood flow to the pelvic region.
- **Cobra Pose:** Bhujangasana or Cobra pose strengthens the back and stretches the chest. This improves posture and relieves stress. This pose helps regulate the adrenal gland, balancing cortisol levels.
- **Pranayama (Breathing Exercises):** It supports the menstrual cycle in PCOS management (Healthline, n.d.) (Katore and Bhingare, 2024).

Pathophysiology of PCOS

PCOS is a multifactorial endocrine and metabolic disorder affecting women of reproductive age. Its mechanism involves hormonal imbalance, insulin resistance, genetic predisposition, and ovarian dysfunction, which together lead to the characteristic symptoms such as irregular menstruation, hyperandrogenism, and polycystic ovaries.

Hypothalamic-Pituitary-Ovarian (HPO) Axis Dysfunction

The hypothalamic-pituitary-ovarian axis regulates reproductive hormones. In PCOS, this axis becomes dysregulated. Mechanism: The hypothalamus secretes Gonadotropin-Releasing Hormone (GnRH) in increased pulse frequency. This stimulates the pituitary gland to produce more Luteinizing Hormone (LH) than Follicle-Stimulating Hormone (FSH). The LH/FSH ratio becomes elevated (often>2:1). High LH stimulates ovarian theca cells to produce excessive Androgens such as testosterone. Reduced FSH leads to impaired follicular maturation, preventing normal ovulation (Franks, 1995). Result: Chronic anovulation and accumulation of immature follicles in the ovaries (polycystic appearance) (Dumesic *et al*., 2015).

Insulin Resistance and Hyperinsulinemia

One of the most important mechanisms of PCOS is insulin resistance. Mechanism: Body cells become less sensitive to Insulin.The pancreas compensates by producing excess insulin (hyperinsulinemia). High insulin levels: Stimulate ovarian theca cells to produce more androgens. Reduce hepatic production of Sex Hormone Binding Globulin (SHBG) (Dunaif, 1997). Result: Increased free testosterone levels, worsening hyperandrogenism and symptoms like acne, hirsutism, and irregular menstruation (Ehrmann, 2005).

Hyperandrogenism

PCOS is characterized by excess androgen production from ovaries and adrenal glands. Mechanism: Increased LH and insulin stimulate ovarian theca cells. These cells produce high levels of testosterone and androstenedione. Reduced SHBG increases the biologically active form of testosterone. Effects: Hirsutism (excess hair growth), Acne, Alopecia, Disruption of normal follicular development (Azziz, 2005).

Ovarian Follicular Arrest

In PCOS, follicles start developing but fail to mature. Mechanism: 1. Low FSH levels prevent normal follicle maturation. 2. High androgen levels inhibit granulosa cell function. 3. Follicles remain in immature stages (2-9 mm size). Result: Multiple small follicles accumulate in ovaries and ovaries appear enlarged and polycystic on ultrasound (Rotterdam ESHRE/ASRM-Sponsored PCOS Consensus Workshop Group, 2004).

Genetic and Environmental Factors

PCOS also has a genetic predisposition. -Family history increases risk, Several genes affecting insulin signalling and androgen synthesis are involved. Environmental factors include: Obesity, Sedentary lifestyle, High-calorie diet. These factors worsen insulin resistance and hormonal imbalance (Barber *et al*., 2019).

Chronic Low-Grade Inflammation

Many PCOS patients exhibit low-grade inflammation. Mechanism: Increased inflammatory markers such as C-Reactive Protein (CRP) and inflammation, contribute to insulin resistance and ovarian dysfunction (González, 2012).

Conventional Management of PCOS

Management of PCOS focuses on symptom control, prevention of metabolic complications, and improvement of fertility outcomes (Teede *et al*., 2018).

Lifestyle Modifications

Lifestyle modifications are the primary and most effective management approach for PCOS treatment.

Dietary changes

Balanced diet focusing on reduced calories, low glycemic index foods, and improved nutrient quality. Exercise and physical activity-Regular physical activity improves insulin sensitivity, supports weight reduction, and helps regulate menstrual cycles. Weight management-Even modest weight loss (~5% of body weight) is associated with significant clinical improvements in ovulation, hormonal balance, and metabolic markers (Moran *et al*., 2013).

Pharmacologic (Medication-Based) Management

When lifestyle measures alone are insufficient, medications are used based on specific symptoms. Hormonal contraceptives: The first-line treatment for women with symptomatic PCOS, specifically for issues such as menstrual irregularities, hirsutism, and acne, is a combined hormonal contraceptive (Legro *et al*., 2013). Anti-Androgen Therapy: Used when hyperandrogenic symptoms persist despite COCP (Combined Oral Contraceptive Pills) therapy. Spironolactone and Cyproterone acetate are common agents (Carmina and Lobo, 2006). Insulin-Sensitizing Agents: Metformin is the most widely used insulin-sensitizing drug in PCOS (González, 2012). Infertility Treatment: The first-line therapy for infertility in PCOS patients is Letrozole.

Psychosocial management

PCOS is strongly associated with reproductive and metabolic implications affecting patients' psychological functioning and satisfaction with life. Depression: In patients with PCOS evaluated

with depression and/ or anxiety, psychological counseling by an appropriate professional is suggested, based on severity of disease.

Cardiovascular Risk Management

Specialist CV monitoring and care is recommended in all patients showing CV risk factors, irrespective of the severity of their symptoms.

MATERIALS AND METHODS

It is a retrospective, observational, record-based study. The study is conducted at the the Govindbhai Jorabhai Patel Ayurveda College, New V.V. Nagar. The study is carried out over a period of one- two months. Female patients who are diagnosed with PCOS. A total of approximately 50-100 patient medical records are included in the study.

Inclusion Criteria and exclusion criteria

Age group

Female patients aged 15-45 years. Patients whose medical records contained complete clinical data, including: Demographic details, Clinical symptoms, Laboratory investigations, Prescribed treatment patterns. Patients who received pharmacological or ayurvedic treatment for PCOS, such as: Hormonal therapy, Panchakarma treatment/Herbal medicament, Lifestyle modification therapy. Patients with documented clinical symptoms of PCOS, such as: Irregular menstruation, Hirsutism, Acne, Infertility, Obesity. The following patient records were excluded from the study: Female patients without a confirmed diagnosis of PCOS. Patients with incomplete or missing medical records, including lack of information on: Clinical profile, Diagnostic reports, Treatment details. Patients diagnosed with other endocrine disorders that may mimic PCOS symptoms, such as: Cushing Syndrome, Congenital Adrenal Hyperplasia, Hyperprolactinemia, Thyroid Disorders. Pregnant women diagnosed with PCOS during pregnancy. Patients undergoing treatment for other gynecological conditions unrelated to PCOS. Patients taking metformin are excluded.

Data Collection

Data were entered into Microsoft Excel and analyzed using basic descriptive statistics. Results are expressed as frequencies and percentages. No inferential statistical tests are applied as the study is observational and descriptive in nature. Data were obtained from hospital records /case sheets via google form. Variables include: Age, Body Mass Index (BMI), Menstrual history, Clinical features (hirsutism, cne), Biochemical and hormonal parameters (LH, FSH). Descriptive statistical methods were used to summarize patient characteristics. Categorical variables were expressed as frequencies and percentages. Data Presentation: The results were presented in Tables (age distribution, clinical features, treatment patterns) and Simple bar charts or pie charts (optional, for better visualization). No inferential statistical tests (such as *t*-test, chi-square test, *p*-values) were applied. This is because the study is observational, retrospective, and descriptive, with no comparison groups or interventions.

Level of Significance

Not applicable, as no hypothesis testing is performed.

Interpretation of Results

Interpretation were focused on describing trends and characteristics of PCOS in the study population.

Ethical Considerations

An approval was taken from the Institutional Ethics Committee of Govindbhai Jorabhai Patel Ayurveda College, New Vallabh Vidhyanagar and confidentiality of patient data was strictly maintained. (Approval No. CVMU/GJPIASR/IEC/13/2026-27/82).

RESULTS

Among 65 patients diagnosed with PCOS, the majority belonged to the 19-25-year age group (53.1%), followed by 26-35 years (30.3%). Patients aged 12-18 years and 36-50 years constituted 12.5% and 6.3%, respectively (Figure 1).

Irregular menstruation was observed in 90.8% of patients, whereas only 9.2% reported regular menstrual cycles (Figures 2, 3).

Acne was the most common clinical manifestation (93.8%), followed by hair fall (89.2%), obesity (87.7%), hirsutism (68%), and infertility (41.5%) (Figure 4).

Panchakarma therapy was administered to 50.8% of patients, while 56.9% received oral Ayurvedic medications (Figure 5).

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DISCUSSION

A total of 65 patients diagnosed with Polycystic Ovary Syndrome (PCOS) were included in this study. Among the study population, the majority of patients were in the 19-25 years age group (53.1%),

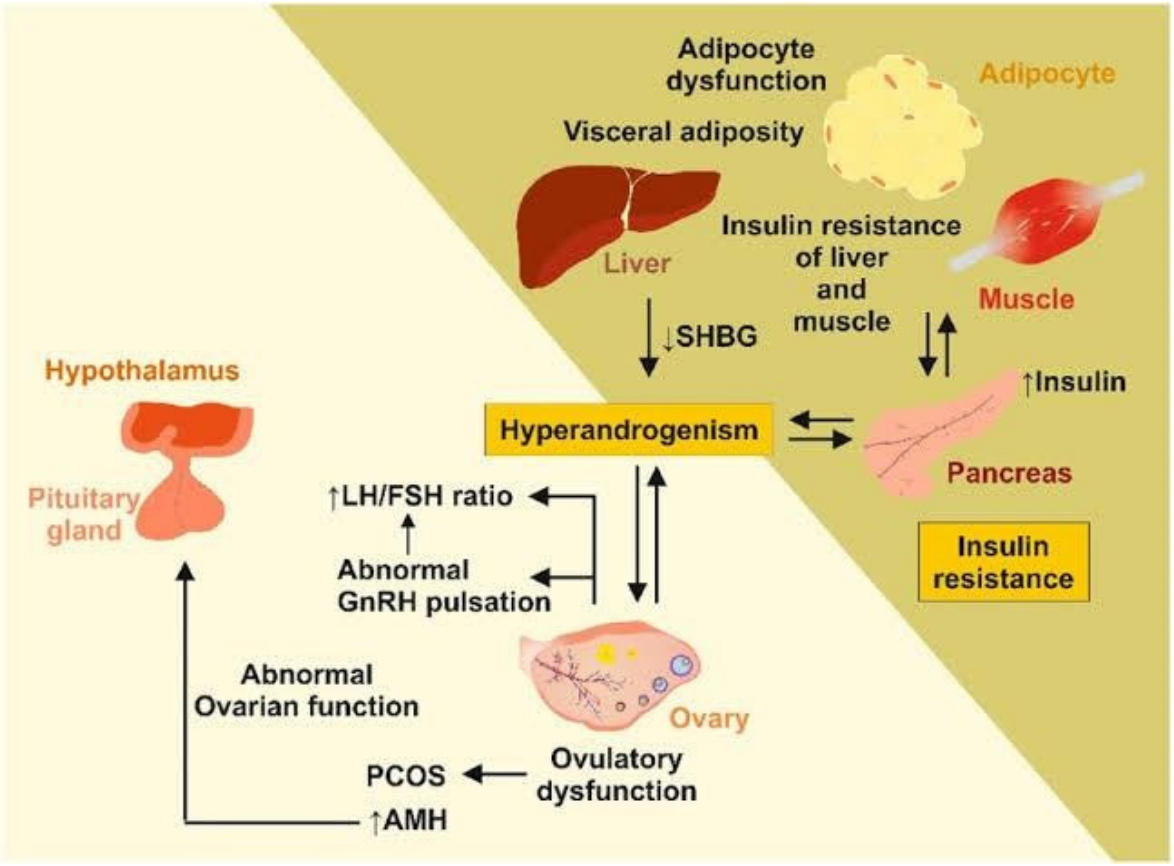


Figure 1: Pathophysiology of PCOS.

Table 1: Shows the demographic details.

Demographic Details Age (years)	Number of Patients (*n*=65)	Percentage of patients
12 to 18	8	12.50%
19 to 25	34	53.10%
26 to 35	20	30.30%
36 to 50	4	6.30%

Table 2: Shows the menstrual patterns in girls and women included in the study.

Menstrual History (Menstrual Cycle Pattern)	Number of Patients (*n*=65)	Percentage of patients
Regular	6	9.20%
Irregular	59	90.80%

followed by 26-35 years (30.3%). A smaller proportion of patients belonged to the 12-18 years group (12.5%), while the 36-50 years group accounted for 6.3% of the total participants. This indicates that PCOS was most prevalent among young adult women. Regarding menstrual cycle patterns, most of the patients had irregular menstrual cycles (90.8%), whereas only 9.2% of patients reported having a regular menstrual cycle. This highlights that menstrual irregularity is a common clinical feature among PCOS patients. Several clinical manifestations associated with PCOS were observed among the patients. Hirsutism was present in 68% of patients, while 32% did not show this condition. Acne was observed in 93.8% of patients, whereas 6.2% did not have acne. Infertility was reported in 41.5% of patients, while 58.5% did not report infertility. Hair fall was seen in 89.2% of patients, whereas 10.8% did not experience hair fall. Obesity was present in 87.7% of patients, while 12.3% were not obese. These findings indicate that acne, hair fall, and obesity were among the most common clinical features observed in the study population. In terms of treatment approaches, 50.8% of patients received Panchakarma therapy, while 49.2% did not undergo Panchakarma treatment. Additionally, 56.9% of patients were treated with oral medications, whereas 43.1% did not receive oral pharmacological therapy.

Overall, the results suggest that PCOS was most commonly observed among young women aged 19-25 years, with irregular menstruation, acne, hair fall, and obesity being the most prevalent clinical manifestations. Both Ayurvedic therapies and oral medications were commonly used in the management of PCOS patients.

Study Limitations

The present study has certain limitations that should be considered while interpreting the findings. First, the study was conducted at a single tertiary-care Ayurvedic hospital, which may

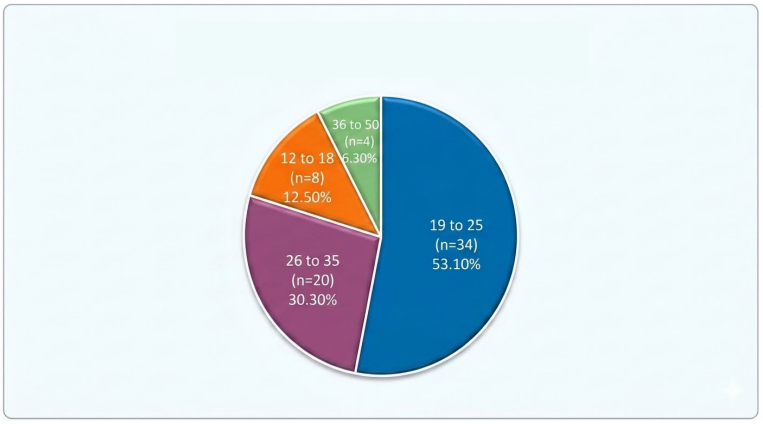


Figure 2: Graph showing the age of the Patients.

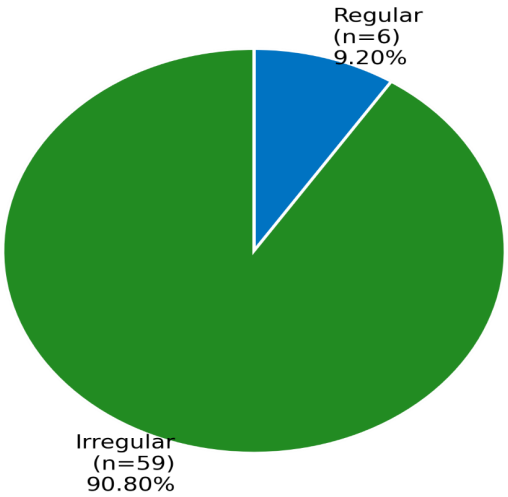


Figure 3: Graph showing the menstrual cycle pattern (*n*=65).

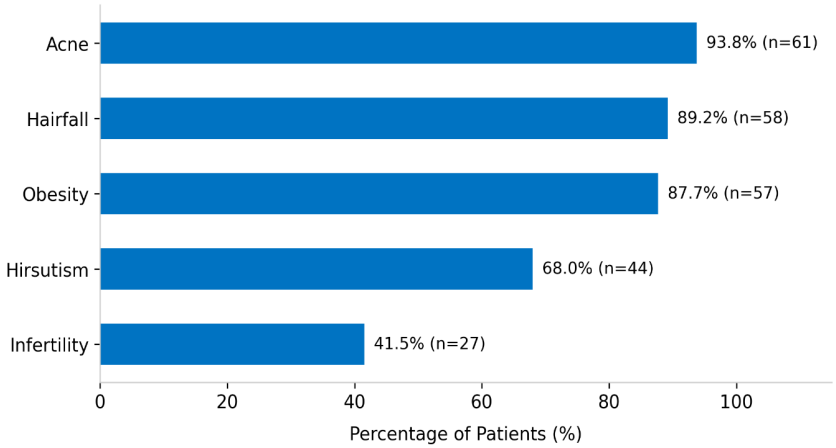


Figure 4: Graph showing the clinical features.

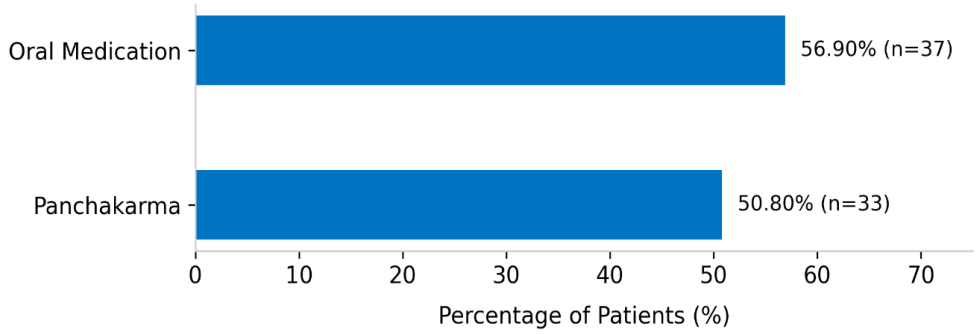


Figure 5: Graph showing ayurvedic treatment.

Table 3: Shows the Clinical features like hirsutism, acne, infertility, hairfall and obesity parameters.

Clinical Features	Number of Patients (*n*=65)	Percentage of Patients
Hirsutism	44	68
Acne	61	93.8
Infertility	27	41.5
Hair fall	58	89.2
Obesity	57	87.7

Table 4: Shows the Ayurvedic treatment like Panchakarma and Ayurvedic oral medications.

Ayurvedic Treatment	Number of Patients (*n*=65)	Percentage of Patients
Panchakarma	33	50.80%
Oral Medication	37	56.90%

limit the generalizability of the results to other healthcare settings and populations. Second, the retrospective observational design relied on existing medical records, making the study susceptible to incomplete documentation and information bias. Third, the relatively small sample size (*N*=65) may have limited the ability to identify less common clinical manifestations and treatment patterns. Additionally, detailed hormonal, biochemical, and metabolic parameters were not consistently available in all patient records; therefore, subgroup analyses based on endocrine and metabolic profiles could not be performed. Despite these limitations, the study provides valuable insights into the clinical characteristics and treatment practices among women with PCOS in an Ayurvedic healthcare setting and may serve as a foundation for future large-scale prospective studies.

FUTURE DIRECTIONS

Future multicentric studies involving larger sample sizes and comparative treatment arms are needed to establish the long-term effectiveness of Ayurvedic interventions in PCOS management. Randomized controlled studies comparing Ayurvedic and conventional pharmacological therapies may further strengthen evidence-based integrative management approaches.

CONCLUSION

This retrospective observational study provides valuable insights into the clinical profile and treatment patterns of women diagnosed with Polycystic Ovary Syndrome (PCOS). The findings highlight that PCOS is most prevalent among women in their reproductive years, particularly between 20-30 years of age, underscoring its impact on fertility and long-term health. Menstrual irregularities emerged as the most common clinical manifestation, while hirsutism, acne, obesity, and infertility were frequent associated features. These results reaffirm the heterogeneous nature of PCOS, which encompasses reproductive, metabolic, and psychological dimensions.

The treatment analysis revealed a strong reliance on Ayurvedic therapies and lifestyle modifications, reflecting the institutional setting of the study. Herbal remedies, Panchakarma therapies, dietary interventions, and yoga were widely prescribed, while pharmacological agents were used less frequently due to exclusion criteria. This integrated approach emphasizes the growing interest in complementary and alternative medicine for managing PCOS, particularly in regions where traditional practices are culturally embedded. Lifestyle interventions, including weight management and exercise, were consistently recommended, aligning with global guidelines that recognize lifestyle modification as the cornerstone of PCOS management.

Overall, the study underscores the importance of early diagnosis and individualized treatment strategies that combine lifestyle, pharmacological, and traditional approaches. By addressing both metabolic and reproductive aspects, such integrated management can improve clinical outcomes and enhance the quality of life of affected women. Future research should focus on larger, multi-centric studies with comparative designs to evaluate the long-term efficacy of Ayurvedic therapies alongside

conventional pharmacological treatments. This will help establish evidence-based guidelines for holistic PCOS management and contribute to bridging the gap between modern medicine and traditional practices.

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ABBREVIATIONS

PCOS: Polycystic Ovary Syndrome; **WHO:** World Health Organization; **HPO:** Hypothalamic-Pituitary-Ovarian; **GnRH:** Gonadotropin-Releasing Hormone; **LH:** Luteinizing Hormone; **FSH:** Follicle Stimulating Hormone; **SHBG:** Sex Hormone Binding Globulin; **CRP:** C-Reactive Protein; **BMI:** Body Mass Index; **COCP:** Combined Oral Contraceptive Pills; **GLP-1 RA:** Glucagon-Like Peptide-1 Receptor Agonist; **SGLT2:** Sodium-Glucose Co-Transporter 2; **DPP-4:** Dipeptidyl Peptidase 4; **OSA:** Obstructive Sleep Apnea; **MASLD:** Metabolic Dysfunction-Associated Steatotic Liver Disease.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

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There was no funding received.

AUTHOR CONTRIBUTIONS

Dudhat Himani Rameshbhai: Data collection, literature review, data analysis, and manuscript drafting. Yadav Khushi Umeshbhai: Data collection, literature review, and manuscript preparation. Patel Payal Rajeshbhai: Data collection, data analysis, and manuscript preparation. Dabhi Sherin Sandeepkumar: Data collection, literature review, and manuscript preparation. Mrs. Palak K. Vyas: Conceptualization, study design, supervision, manuscript review, editing, and final approval of the manuscript. All authors read and approved the final manuscript.

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