

Management of Polycystic Ovary Syndrome in India

A Consensus Evidence-based
Good Clinical Practice Recommendations

A Short Handbook



Management of Polycystic Ovary Syndrome: Consensus Evidence-based Good Clinical Practice Recommendations



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FOREWORD

The Indian Fertility Society is a National Society founded in 2005. It is committed to creating awareness, fostering research and education in the field of human reproduction and infertility amongst the medical fraternity. The society provides a common forum for medical and other interested health professionals and people from all walks of life to work towards this goal.

The IFS has been carrying out academic activities ever since its inception in order to fulfil its goals. Today, it has a membership of more than fifteen hundred members across its ten chapters spread over the country.

Very early, during the formative years of the society, it was realized that there was a need to regulate clinical practice in ART in the country. There also was a lack of structured training of the fraternity. Slowly but surely, the society has taken care to fill these gaps. One such attempt is the formulation of good practice guidelines. As a pilot initiative, the first multi-specialty meeting was convened to discuss the management of all aspects of PCOS other than infertility. We are indeed proud to publish the first good clinical practice recommendations on the management of PCOS in India. These guidelines have taken into account not only the evidence from the West but also published and unpublished good clinical practices from India. It describes the nuances of the disease as it affects our people and how the presentation is different from the West. We are sure that these recommendations will go a long way in helping clinicians across the world to practice management of PCOS in the Indian community more effectively.

I am extremely thankful to all the experts who participated in this initiative on our invitation. The IFS also gratefully acknowledges the unconditional educational grant provided by Bayer Zydus Pharma Ltd. We thank Jeevan Scientific Technology Limited, Hyderabad, India for providing editorial assistance in the development of this manuscript.

Finally, I thank my IFS team for always standing by me in our endeavours, for participating in this Herculean task whole heartedly and making it possible.

With best wishes,

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ABBREVIATION

AE	Androgen excess
AN	Acanthosis nigricans
ASRM	American Society for Reproductive Medicine
BMI	Body mass index
COCs	Combined oral contraceptives
CPA	Cyproterone acetate
CVD	Cardio vascular disease
EC	Endometrial Cancer
EL	Evidence Level
ESHRE	European Society of Human Reproduction and Embryology
GCPR	Good clinical practice recommendations
HAIRAN	Hyperandrogenism, Insulin Resistance, Acanthosis Nigricans
IFS	Indian Fertility Society
IR	Insulin resistance
LDL-C	Low-density lipoprotein- cholesterol
mFG	modified Ferriman-Gallwey
MI	Menstrual irregularity
MS	Metabolic syndrome
NAFLD	Non-alcoholic fatty liver disease
NASH	Non-alcoholic steatohepatitis
OGTT	Oral glucose tolerance test
OSA	Obstructive sleep apnoea
PCO	Polycystic Ovary
PCOS	Polycystic Ovary Syndrome
RCT	Randomized controlled trial

Disclaimer

The contents of this document serve as a consensus based guideline regarding appropriate patient care practices based on the available medical literature and clinical expertise from India at the time of development. They should not be considered to be accepted protocol, policy or code of practice, nor are intended to replace good clinical judgment or dictate the care of individual patients.

Polycystic Ovary Syndrome

Polycystic Ovary Syndrome (PCOS) is a complex metabolic, endocrine and reproductive disorder that results in overproduction of androgens, and is associated with insulin resistance (IR). The most common symptoms of PCOS can range from menstrual disorders, infertility and hyperandrogenemia to metabolic syndrome (MS). It affects ~5-10% of the female population in developed countries. Much higher prevalence rates of 3.7-22.5% (9.13-36% in adolescents) are reported from India.

The rising prevalence and varied opinions of doctors from different specialties on the management of this life-long disorder is confusing to the patient and complicating for the treating physician. With this background, the Indian Fertility Society (IFS) has initiated an interdisciplinary consensus building meeting to understand the current views on the management of PCOS by different specialties, and to evolve a strategy to disseminate the information to a larger audience.

Objectives of the meeting:

1. To invite expert opinions from participants of various health disciplines on the current management of PCOS – apprehensions, benefits and risks.
2. To discuss the current guidelines by various International Medical Organizations and strategize a wholesome approach across specialties and develop a roadmap.
3. Develop strategies to align the mind-set of Indian clinicians towards a common management of PCOS.

It was proposed to conduct a series of meetings with experts pan India. Systematic review of literature from the best possible evidence in the Indian scenario was conducted by a group of doctors and relevant recommendations were framed, and discussed by an expert panel (gynaecologists, physicians, ultrasonologists, endocrinologists, dermatologists, and paediatricians) in a series of meetings. In the areas where there was little or no evidence, the panel relied on experience, clinical judgment and consensus. The current consensus GCPR are based on clinical importance (A: strongly recommended, B: suggested, C: unresolved) coupled by four intuitive levels of evidence (1 = 'at least one randomized controlled trial (RCT) or meta-analysis of RCTs', 2 = 'at least one non-randomized or non-controlled, prospective epidemiological study', 3 = 'cross-sectional or observational or surveillance or pilot study' and 4 = 'existing guideline or consensus expert opinion on extensive patient experience or review').

1 Risk factors for assessment of PCOS

The presentation of certain biochemical characteristics and clinical symptoms is associated with the incidence of PCOS. Presence of these risk factors is indicative of the risk for PCOS, but not the etiological likelihood of disease development.

Recommendations

1.1. It is recommended that Indian women showing at least one biochemical characteristic in conjunction with one clinical symptom should be considered for further evaluation for the likelihood of PCOS (**Grade A, EL 3**)

Biochemical characteristics: high body mass index (BMI) for overweight/obesity $>23 \text{ kg/m}^2$ for adults and $> 97.5^{\text{th}} \text{ percentile}$ for age in adolescents, insulin resistance (acanthosis nigricans as clinical marker of insulin resistance), family history of diabetes or PCOS, obesity and improper lifestyle, any marker of lipid metabolic dysregulation (elevated serum total cholesterol, triglyceride and low-density lipoprotein-cholesterol levels)

Clinical symptoms: pubertal deviations (early or late), disturbances in periodicity/ timing of menstrual cycle, presence of PCO and clinical signs of hyperandrogenism such as early acne or hirsutism, persistent severe acne, frequent relapse in acne, acne in facial 'V' area, persistent acne and hirsutism for more than two years.

1.2. In women suspected to have PCOS, it is recommended to screen and appropriately document all clinical and biochemical risk factors in the case history (**Grade A, EL 4**).

1.3. It is recommended that patients who currently show either a clinical symptom or fit into a biochemical characteristic may be referred for further diagnosis when feasible or should be regularly monitored for appearance of other presentations of PCOS (**Grade A, EL 4**)

1.4. It is recommended that individual patients with two or more clinical risk factors be subjectively assessed by the gynaecologist and referred to an appropriate healthcare provider for further diagnosis of PCOS (**Grade B, EL 4**).

2. Diagnosis of PCOS in adults and adolescents

The three main criteria for diagnosis of PCOS are androgen excess (AE), chronic anovulation, and presence of poly cystic ovary PCO. Androgen excess (AE) is established using either clinical or biochemical determination of hyperandrogenism. Biochemical hyperandrogenism is determined by total serum testosterone (T) levels. Clinical hyperandrogenism includes hirsutism, acne, and androgenic/ central alopecia. Hirsutism is the excessive growth of thick, dark terminal hair in women where hair growth is normally absent. The modified Ferriman-Gallwey (mFG) score is used in India to grade hirsutism. In addition, presentation of acanthosis nigricans (AN) with or without obesity is suggested as an additional diagnostic criterion in adults and adolescents. Acne can be graded as mild, moderate, and severe based on the number and types of inflammatory lesions. Androgenic/central alopecia may also be presented as female pattern hair loss in some patients with PCOS. Ludwig score is used to grade androgenic alopecia.

Ovulatory dysfunction is assessed by menstrual history of oligo/anovulation with bleeding intervals outside the normal interval (25-35 days), happening frequently at ≤ 21 days and/or infrequently at 35 days. In adolescents, persistent observation of oligo-/amenorrhea beyond two years of menarche in children/adolescents can be evaluated as an early clinical sign of PCOS. Polycystic ovary morphology as defined by ESHRE/ASRM consensus criteria is the presence of at least one ovary with 12 follicles of 2–9mm (between day 2-5 of cycle) or ovarian volume greater than 10mL in the absence of a cyst or dominant follicle > 10 mm, established with ultrasound examination of ovaries.

Polycystic ovarian syndrome (PCOS) is considered a diagnosis of exclusion; it is important to screen all women to exclude other disorders that mimic the symptoms of PCOS. Further, it is essential to order minimal tests possible to diagnose PCOS in adolescent subjects to avoid the burden of tests.

Recommendations

2.1. In women with PCOS, for the objective assessment of cutaneous manifestations such as hirsutism, acne and androgenic alopecia, Indian specific grading should be performed with appropriate scales and possibility of other aetiologies should be excluded (**Grade B, EL 3**).

Adults

2.2. In adult women, it is recommended that diagnosis of PCOS be made using the Rotterdam criteria, meeting two of the following three conditions: (**Grade A, EL 4**)

Androgen excess

- Biochemical: serum total testosterone
 - Clinical: persistent acne, hirsutism, female pattern hair loss
 - Ovulatory dysfunction
 - Polycystic ovary
- 2.3.** Presentation of acanthosis nigricans with or without obesity is an additional diagnostic criterion for PCOS in adults and adolescents* (**Grade B, EL 4**).
- 2.4.** Mild prolactinemia and subclinical hypothyroidism are common in PCOS; referral to specialist should be made when indicated by prolactin or thyroid stimulating hormone (TSH) and T4 levels (**Grade B, EL 4**)
- 2.5.** Determination of anti-mullerian hormone levels for diagnosis of PCO is not recommended in adult and adolescent women (**Grade A, EL 4**).
- 2.6.** In peri-menopausal and menopausal women with a clinical history of prolonged periods of androgen excess and oligomenorrhea during the reproductive years, additional evidence of PCO morphology, log ovarian volume, follicle number, and testosterone should be considered as a diagnosis of PCOS (**Grade B, EL 3**).

Adolescents

- 2.7.** In adolescents, presence of oligomenorrhea or amenorrhea beyond two years of menarche should be considered an early clinical sign of PCOS, followed by Rotterdam criteria (of adults) for diagnosis of PCOS (**Grade B, EL 4**).

Androgen excess

- Biochemical: serum total testosterone
 - Clinical: acne, hirsutism, female pattern hair loss
 - Ovulatory dysfunction
 - PCO with strict interpretation of ultrasonography findings
- 2.8.** Minimal diagnosis of PCOS in adolescents should include 5 tests (**Grade A, EL 4**)
- Serum total testosterone (cut off 60 ng/dL)
 - Oral glucose tolerance test (OGTT) (zero, two hours after 75 gm glucose load)
 - Serum 17-hydroxy progesterone (assessed at 8 am)
 - Serum TSH
 - Serum prolactin levels
- 2.9.** For the diagnosis of PCOS in adolescents, serum luteinizing hormone, follicle stimulating hormone and cortisol should be assessed as indicated (**Grade B, EL 4**).

* Healthcare provider should also assess other signs of insulin resistance & metabolic syndrome.

MANAGEMENT OF PATIENTS WITH PCOS

Both pharmacological and non-pharmacological management strategies are crucial in the overall management of PCOS. Because the three main characteristics of PCOS (hyperandrogenism, oligo-ovulation and IR) drive most of its long-term consequences, management approaches targeted at them may potentially provide improvement in all aspects of the syndrome.

3. Physical activity

Management of IR and obesity should be considered the first-line of treatment for PCOS. The benefits of physical activity (at least 150 minutes per week) in improving metabolic status and reducing the incidence of diabetes in high risk groups of general population have been reported.

Recommendations

- 3.1.** In adults and adolescents with PCOS, daily strict physical activity sessions for at least 30min/day or 150min/ week are recommended (**Grade A, EL 4**).

4. Diet Control

In women with PCOS and obesity, weight loss through diet control has been shown to improve pregnancy rates, normalize hyperandrogenemia, and improve insulin sensitivity, menstrual functions, and hirsutism. However, no PCOS- specific diet has been reported. **B, EL 4**).

Recommendations

- 4.1.** For the management of obesity in adults ($BMI > 23 \text{ kg/m}^2$) and adolescents ($BMI > 97.5^{\text{th}}$ percentile for age) with PCOS, it is recommended to follow lifestyle modifications in combination with healthy, balanced diet consisting of regular, calorie-restricted meals (**Grade B, EL 4**).

- 4.2.** In adult and adolescent women with PCOS, it is recommended to routinely screen for BMI and waist circumference as an index for increasing adiposity and development of hyperandrogenism (**Grade A, EL 3**).

- 4.3.** It is recommended to follow calorie restricted diet (low carbohydrate and fat, high protein) in consultation with dietician and lifestyle modification as first-line therapy for at least 6 months, then add metformin as second-line therapy (**Grade B, EL 4**).

5. Management of menstrual irregularity in PCOS

In women with menstrual irregularity (MI), proliferation of endometrium can be inhibited using either cyclic progestin or combined oral contraceptives (COCs: oestrogen + progestin). Low-dose COCs (< 50 mcg of oestrogen in combination with a progestin) have been the mainstay of treatment for MI in patients with PCOS not willing to conceive. Current evidences from India in the management of MI in women with PCOS are available on COCs with two progestin components- drospirenone and desogestrel. Besides drospirenone and desogestrel, other progestins commonly used in India for clinical practice, either as cyclic progestin or COCs, for the management of MI in women with PCOS include natural micronized progesterone, dienogest, nor-ethisterone and the levonorgestrel- intrauterine system. There is limited evidence of use of COCs in adolescents with MI and physician discretion is needed on oestrogen component.

Since the AE in women with PCOS is also linked to IR and consequent hyperinsulinemia, the use of insulin sensitizers such as metformin are also used in the management of PCOS. However, the duration of metformin treatment for treatment of ovulatory dysfunctions in adolescents has not been established

Recommendations

Adults

5.1. In adults with PCOS showing menstrual irregularity, it is recommended to include progesterone withdrawal bleeds as first-line therapy till menopause to avoid the risk of endometrial proliferative disorders (**Grade A, EL 4**)

5.2. In adults with PCOS who do not intend to conceive, it is recommended to use COCs (drospirenone and desogestrel as progestin component) for the management of menstrual irregularity (**Grade A, EL 1**). Drospirenone has been shown to be more beneficial than desogestrel in Indian conditions.

5.3. In women with PCOS, metformin is not recommended as first-line therapy for the management of menstrual irregularity (**Grade A, EL 4**).

5.4. In women with PCOS, spironolactone is not recommended for menstrual irregularity (**Grade B, EL 4**)

5.5. In adults and adolescents with PCOS, if there is no improvement of menstrual irregularity with COCs or COCs are not tolerated, it is recommended to use insulin sensitizers such as metformin (with or without progestins), but not thiazolidinediones for the management of menstrual irregularity (**Grade A, EL 2**).

Adolescents

5.6. In adolescents with PCOS, it is suggested to use low-dose COCs (with or without anti-androgenic progestins- drospirenone and desogestrel) for the management of MI (**Grade A, EL 4**).

- ❑ Between 12-16 years of age, low-dose COCs to be used only for a short period (up to 7 days)
- ❑ After 16 years, low-dose COCs to be used
- ❑ Menstrual regularity: 4 cycles/year in adolescents of 12-16 years

5.7. In adults and adolescents with PCOS with menstrual irregularity and hirsutism, low-dose COCs are suggested (**Grade A, EL 2**).

6. Management of Hyperandrogenism in PCOS

Management of biochemical and clinical hyperandrogenism requires long-term and multi-dimensional treatment.

Combined Oral Contraceptives with anti-androgenic progestins such as cyproterone acetate (CPA), drospirenone, desogestrel are generally used for the management of hirsutism in women with PCOS. Parallel administration of direct (mechanical) hair removal methods ameliorates the condition and reduces the time required. Evidence from India comparing COCs containing CPA, desogestrel, and drospirenone in women with PCOS reporting MI and hirsutism, found that CPA showed the strongest anti-androgen activities with significant decrease in mFG score after 12 months of treatment. In addition to hormonal therapy, administration of insulin sensitizers can improve the hyperinsulinemic as well as hyperandrogenic state in women with PCOS. In addition, temporary and permanent methods of hair removal/ reduction should also be used as first-line therapy for management of hirsutism in women with PCOS.

Management of acne needs careful selection of anti-acne agents according to clinical presentation and individual patient needs. Hormone therapy with low-dose COCs is suggested as first-line therapy for androgenic acne in women with PCOS, Seborrhoea, acne, hirsutism, alopecia (SAHA) syndrome, HAIRAN syndrome (hyperandrogenism, IR, AN), or cutaneous hyperandrogenism. Adjunctive therapies using topical applications, in consultation with a dermatologist should also be used as first-line therapy for synergistic effects. Similarly, COCs and androgen blockers can be used to manage alopecia.

Recommendations

- 6.1.** In adult women with PCOS who do not intend to conceive, it is recommended to use low-dose COCs with anti-androgen progestin (cyproterone acetate, drospirenone, or desogestrel) for the management of hirsutism (**Grade A, EL 1**). Cyproterone acetate has been shown to be more beneficial than other progestins in Indian conditions.
- 6.2.** Use of direct hair removal methods are recommended along with COCs as first-line therapy (**Grade A, EL 1**).
- 6.3.** If there is no improvement with COCs or COCs are not tolerated, it is recommended to use spironolactone or finasteride (**Grade A, EL 2**); spironolactone or finasteride are suggested but recommended to stop 6 months before planned pregnancy.
- 6.4.** In women with PCOS, if menstrual irregularity and hirsutism are diagnosed, low-dose COCs with anti-androgenic activity (CPA, drospirenone, desogestrel) are suggested (**Grade A, EL 2**).
- 6.5.** The ideal time to stop hormonal therapy for hyperandrogenism cannot be established with existing evidence (**Grade A, EL 4**).
- 6.6.** Risk of thromboembolism with use of COCs can be managed by identifying susceptible patients and/or pausing treatment for 3 months after one year of treatment (**Grade A, EL 4**).
- 6.7.** In adolescents/children with hyperandrogenism, obesity and signs of insulin resistance, lifestyle modification is first-line therapy; metformin is second-line therapy with a wait period of 2 years post-menarche in children (**Grade A, EL 4**).
- 6.8.** In adolescents with hyperandrogenism, if glucose intolerance is not established by OGTT, metformin should not be started (**Grade B, EL 4**).
- 6.9.** Due to insufficient evidence, alternative (acupuncture) and complementary therapeutic options (e.g. myoinositol, omega-3 fatty acids) are not recommended for the management of hyperandrogenism (**Grade B, EL 4**).

Acne

- 6.10.** In adults and adolescents with PCOS and acne, it is suggested to use topical medication along with pharmacological interventions based on the clinical presentation of acne as early as possible, in consultation with dermatologist (**Grade A, EL 4**).

6.11. In adults with PCOS, it is suggested to use oral contraceptives (cyproterone acetate, drospirenone, or desogestrel as progestin component) as first-line therapy for management of all types of acne lesions (**Grade A, EL 1**). Cyproterone acetate has been shown to be more beneficial than other progestins in Indian conditions.

6.12. In adolescents with PCOS and acne, it is suggested to use oral contraceptives (cyproterone acetate, drospirenone, or desogestrel as progestin component) based on the clinical presentation of acne, in consultation with dermatologist (**Grade A, EL 2**).

Alopecia

6.13. In women with PCOS presenting with alopecia, COCs and androgen blockers are recommended as first line therapy (**Grade B, EL 3**).

Short-term health problems such as impaired fertility, complications during pregnancy, and long-term problems such as type 2 diabetes mellitus (T2DM), obesity, CVD, sleep-disordered breathing and increased risk of endometrial cancer (EC) are associated with PCOS.

7. Management of depression in PCOS

Recommendations

7.1. In adults and adolescents with PCOS, it is recommended to routinely screen for depression and anxiety with appropriate psychological instruments (**Grade B, EL 3**).

7.2. In patients with PCOS evaluated with depression and/or anxiety, psychological counseling by an appropriate professional is suggested, based on severity of disease (**Grade B, EL 4**).

8. Management of other psychosocial dysfunctions in PCOS

Recommendations

8.1. If a woman with PCOS is positive on screening for any psychosocial dysfunction, the practitioner should perform a more detailed clinical interview (**Grade B EL 4**).

8.2. In those evaluated with any psychosocial dysfunction, appropriate treatment for improvement of quality of life is suggested (**Grade B, EL 4**).

9. Recommendations for the management of diabetes in PCOS

Recommendations

- 9.1. In women with PCOS who develop symptoms and/or a risk factor of diabetes, screening at a clinically feasible periodicity is suggested (**Grade B, EL 4**).
- 9.2. It is recommended to screen adult and adolescent women with PCOS for impaired glucose tolerance and T2DM using a 75 gm oral glucose tolerance test; glycated haemoglobin test should be used only when an OGTT is not feasible (**Grade A, EL 2**).
- 9.3. In women with PCOS who have impaired glucose tolerance or T2DM, it is recommended to use metformin alone, or in combination with oral contraceptives (**Grade A, EL 1**).
- 9.4. Early referral to specialist diabetological care is recommended for timely management of diabetes and its complications (**Grade A, EL 4**).

10. Management of cardiovascular risk in PCOS

Recommendations

- 10.1. It is recommended to screen for CV disease in adult women with PCOS by assessing risk factors: obesity (especially abdominal obesity), smoking, hypertension, dyslipidemia (increased LDL-C), vascular disease, IGT, high-sensitivity C-reactive protein, homocysteine, and family history of premature cardiovascular disease (CVD) (**Grade A, EL 1**).
- 10.2. It is recommended to screen for CV disease in adult women with PCOS by assessing high risk factors: metabolic syndrome, T2DM, overt vascular or renal disease (**Grade A, EL 1**).
- 10.3. It is suggested to assess obesity (by BMI and WC), lipid profile, oral glucose tolerance test and BP in adult women at baseline, and repeat lipid profile and OGTT at 6 months for borderline risk and one year for normal profiles (**Grade B, EL 4**).
- 10.4. Specialist CV monitoring and care is recommended in all patients showing CV risk factors, irrespective of the severity of their symptoms (**Grade A, EL 4**).

11. Management of pregnancy complications in PCOS

Recommendations

11.1. In women with PCOS planning to have children, it is recommended to screen for markers of obesity, hypertension and IR to reduce the risk of pregnancy related complications (**Grade A, EL 3**).

11.2. In women with PCOS who have experienced a miscarriage, it is suggested to assess serum homocysteine levels for identification and treatment of hyperhomocystenemia mediated repeated pregnancy losses (**Grade B, EL 3**).

11.3. In women with PCOS, it is recommended not to use metformin therapy only during pregnancy until specific evidence on beneficial effects is demonstrated (**Grade B, EL 3**).

12. Assessment and management of endometrial cancer in PCOS

Recommendations

12.1. In women with PCOS without abnormal bleeding, routine screening using TVS is not recommended (**Grade B, EL 1**)

12.2. In women with PCOS with unexpected bleeding and spotting, it is suggested to assess endometrial thickness using TVS and report the same to the physicians (**Grade B, EL 4**).

12.3. In women with PCOS and risk of endometrial carcinoma, it is suggested to use progestogens every 3-4 months (**Grade B, EL 3**).

12.4. Regular oncological referrals, for screening at a clinically feasible periodicity are recommended for timely detection of endometrial cancer (**Grade A, EL 4**).

13. Management of obstructive sleep apnea in PCOS

Recommendations

13.1. In adult, adolescent women with PCOS, it is suggested to routinely screen for OSA and insomnolence if symptoms are suggestive of obstructive sleep apnea (OSA), investigate using polysomnography and refer to appropriate institution for further therapy (**Grade B, EL 4**).

14. Management of NAFLD and NASH in PCOS

Recommendations

14.1. In adult and adolescent women with PCOS, it is suggested to provide sufficient awareness on symptoms and complications of non-alcoholic fatty liver disease/ non-alcoholic steatohepatitis (NAFLD/ NASH) and carry out appropriate screening in those diagnosed with insulin resistance and/or metabolic syndrome (**Grade B, EL 4**).

14.2. In patients with PCOS and NASH, treatment with vitamin E is preferred and metformin is not suggested for reduction of metabolic syndrome with specialist inputs from a multidisciplinary team (**Grade B, EL 1**).

Polycystic Ovarian Syndrome (PCOS) is an important emergent public health problem in India. It has not been possible in contemporary Indian clinical practice to formulate a comprehensive response which is commensurate with the scale of problems that PCOS poses. The approach of current GCPR is to provide a strong rationale for harnessing the mutual synergies in a modern multidisciplinary clinical setting to deliver quality care in the management of PCOS in India. It is hoped that the current GCPR will fulfil a key role in helping current clinical practices to transition to a comprehensive PCOS care paradigm in India.

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