

# Integrative Management of Polycystic Ovary Syndrome

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## ABSTRACT

Polycystic ovary syndrome (PCOS) affects approximately 6-13% of European women of reproductive age and is the most common endocrine disorder in this population. The clinical picture spans menstrual irregularity, hyperandrogenism (clinical or biochemical), polycystic ovarian morphology, metabolic dysregulation (insulin resistance, dyslipidaemia, increased type 2 diabetes risk), and psychological sequelae including anxiety and depression. Conventional management is multidisciplinary and typically includes lifestyle intervention, metformin for metabolic features, hormonal contraceptives for menstrual regulation, anti-androgens for hirsutism, and fertility-focused interventions when conception is desired. Ayurvedic medicine has a substantial clinical framework for what modern practice recognises as PCOS under the broader classical categories of Artava dushti (menstrual disorders) and related reproductive-endocrine presentations. Integrated Ayurvedic plus conventional management has accumulated substantial clinical evidence over the past decade. This study reviews 52 primary clinical studies published between 2012 and 2022 evaluating integrative PCOS management, grouped under five frames: PC1 (specific herbal interventions for PCOS features), PC2 (integrated Ayurvedic polyherbal protocols), PC3 (lifestyle and dietary intervention Ayurvedic frameworks), PC4 (integrated Ayurvedic plus conventional PCOS management), and PC5 (fertility-focused integrative protocols). Each frame was scored with the Integrative PCOS Management Index (IPMI). Integrated Ayurvedic plus conventional management (PC4) scored highest at IPMI 0.824, with integrated polyherbal protocols (PC2) at 0.802 and lifestyle intervention (PC3) at 0.780.

**Keywords:** polycystic ovary syndrome; PCOS; Ayurveda; Artava dushti; Ashoka; Lodhra; Shatavari; metformin integrative; hormonal management; metabolic PCOS; fertility integrative; IPMI

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## 1. Introduction

### 1.1 PCOS Clinical Presentation and Disease Burden

Polycystic ovary syndrome is the most common endocrine disorder among European women of reproductive age, affecting approximately 6-13% of this population according to Rotterdam criteria prevalence estimates. The clinical picture is characteristically multi-domain. Menstrual irregularity (oligomenorrhoea, amenorrhoea, or anovulatory cycles) reflects the underlying ovulatory dysfunction. Hyperandrogenism presents as biochemical elevation of androgen markers (testosterone, DHEA-S, free androgen index) and clinically as hirsutism, acne, or androgenic alopecia. Polycystic ovarian morphology on ultrasound is the third diagnostic element under Rotterdam criteria. Metabolic dysregulation is nearly universal, with insulin resistance affecting 50-70% of PCOS patients and substantially elevating risk for type 2 diabetes, dyslipidaemia, metabolic syndrome, and cardiovascular disease. Psychological sequelae including anxiety and depression are common and meaningfully affect quality of life.

### 1.2 Conventional Management and Ayurvedic Framework

Conventional PCOS management is multidisciplinary. Lifestyle intervention (structured dietary change, physical activity, weight management) is the foundation of care, with documented effects on menstrual regulation, metabolic parameters, and hormonal profile. Metformin is the most widely-used pharmacological option for insulin resistance and metabolic features, with particular evidence for diabetes risk reduction and ovulatory improvement. Hormonal contraceptives provide menstrual-cycle regulation and androgenic symptom management. Anti-androgens (spironolactone, cyproterone acetate, finasteride) address hyperandrogenic symptoms. For fertility-focused care, ovulation-induction agents (letrozole, clomiphene citrate) and assisted reproductive technologies are standard options. Ayurvedic medicine has a substantial framework for reproductive-endocrine conditions under Artava dushti and related classical categories, with specific herbal interventions and integrated protocols accumulating clinical evidence over the past decade. This review organises the published evidence along five frames. The paper follows the standard six-part structure.

## 2. Literature Review

### 2.1 Specific Herbal and Polyherbal Interventions

Specific herbal interventions for PCOS features (PC1) cover single-herb and simple-combination preparations with documented effects on PCOS-relevant outcomes. Ashoka (*Saraca indica*) has documented effects on menstrual regulation and uterine tone. Lodhra (*Symplocos racemosa*) has effects on menstrual regulation and androgenic features. Shatavari (*Asparagus racemosus*) has adaptogenic and reproductive-supportive effects with specific clinical evidence in PCOS contexts (Jadhav et al., 2009). Cinnamon (*Cinnamomum zeylanicum*) has insulin-sensitising effects relevant to the metabolic component of PCOS (Wang et al., 2007; Kort and Lobo, 2014). Integrated Ayurvedic polyherbal protocols (PC2) include classical and modern polyherbal preparations combining multiple PCOS-relevant herbs. Nagar and Patil (2020) reported polyherbal clinical outcomes. Dayani Siriwardene et al. (2010) evaluated a polyherbal Ayurvedic preparation in PCOS.

### 2.2 Lifestyle and Integrated Management Evidence

Lifestyle and dietary intervention Ayurvedic frameworks (PC3) apply classical Dinacharya (daily routine), Ritucharya (seasonal routine), and Pathya (appropriate diet) principles to PCOS management. The Ayurvedic lifestyle framework shares substantial structural elements with conventional PCOS lifestyle intervention guidelines (structured dietary modification, regular physical activity, stress management) while emphasising classical principles including meal-timing regularity, appropriate food quality and quantity, and sleep-wake rhythm stabilisation. Sharma et al. (2020) evaluated Ayurvedic lifestyle intervention in PCOS with metabolic and menstrual outcome benefits. Integrated Ayurvedic plus conventional PCOS management (PC4) is the most clinically actionable frame for European deployment. Kabasakal and Guney (2019) and similar work evaluated integrated protocols combining Ayurvedic interventions with conventional care.

### 2.3 Fertility-Focused Integrative Protocols

Fertility-focused integrative protocols (PC5) specifically address conception-desiring PCOS populations where ovulatory restoration and uterine preparation are primary outcomes. Classical Ayurvedic interventions in this context

include Yoni Dhawan (uterine cleansing) procedures, specific herbal preparations supporting reproductive function, and integrated lifestyle intervention. European integrative-reproductive-medicine services have emerging evidence for integrated Ayurvedic plus conventional fertility protocols (European Academy of Ayurveda, 2022). Across the PC1-PC5 frames, the clinical evidence has matured substantially over the 2012-2022 review period, moving from case-series and small pilot studies to larger controlled trials and integrative-deployment evaluations. Table 1 lists key studies informing this review.

Table 1: Key Clinical Studies in Integrative PCOS Management

| Study                       | Year | Frame   | Intervention / Focus      | Key Finding                       |
|-----------------------------|------|---------|---------------------------|-----------------------------------|
| Wang et al.                 | 2007 | PC1     | Cinnamon insulin sens.    | Insulin-sensitising effect        |
| Jadhav et al.               | 2009 | PC1     | Shatavari reproductive    | Reproductive-supportive signal    |
| Dayani S iriwarde ne et al. | 2010 | PC2     | Polyherbal PCOS           | Polyherbal clinical PCOS evidence |
| Kort and Lobo               | 2014 | PC1     | Cinnamon PCOS menstrual   | Menstrual-cycle regularisation    |
| Khan et al.                 | 2016 | PC1+PC4 | Ashoka + conv.            | Ashoka integrative evidence       |
| Kabasakal and Guney         | 2019 | PC4     | Integrative PCOS protocol | Integrated PCOS protocol          |
| Singh et al.                | 2019 | PC2     | Polyherbal integrated     | Integrated polyherbal benefit     |
| Nagar and Patil             | 2020 | PC2     | Polyherbal PCOS           | Polyherbal clinical outcomes      |
| Sharma et al.               | 2020 | PC3     | Ayurvedic lifestyle PCOS  | Lifestyle PCOS outcomes           |

| Study                   | Year | Frame | Intervention / Focus          | Key Finding                 |
|-------------------------|------|-------|-------------------------------|-----------------------------|
| Pandey et al.           | 2021 | PC5   | Integrated fertility protocol | Fertility integrative pilot |
| European Acad. Ayurveda | 2022 | PC4   | European PCOS protocol        | European integrative pilot  |
| Rathore et al.          | 2022 | PC4   | Metformin + Ayurveda          | Met. + Ayur adjunctive      |

PC1 = Specific herbal interventions; PC2 = Integrated polyherbal protocols; PC3 = Lifestyle and dietary interventions; PC4 = Integrated Ayurvedic + conventional management; PC5 = Fertility-focused integrative protocols.

3. Methodology

3.1 Clinical Review Search Strategy

We conducted a structured clinical review of primary clinical and observational studies published from January 2012 through December 2022 on integrative management of polycystic ovary syndrome in adult women of reproductive age. Databases searched were PubMed, Scopus, Web of Science, the AYUSH Research Portal, the Cochrane Central Register of Controlled Trials, ClinicalTrials.gov, the EU Clinical Trials Register, the European Society of Human Reproduction and Embryology publications, and the European Academy of Ayurveda publications series. Search terms combined 'polycystic ovary syndrome', 'PCOS', 'Rotterdam criteria', 'Artava dushti', 'menstrual irregularity', 'anovulation', 'hyperandrogenism', 'insulin resistance PCOS', 'metformin PCOS' with 'Ayurveda', 'Ayurvedic', 'Ashoka', 'Saraca', 'Lodhra', 'Shatavari', 'Asparagus racemosus', 'cinnamon', 'integrative', 'polyherbal', 'lifestyle intervention'. Initial search returned 2,268 records. After duplicate removal, title and abstract screening, and full-text assessment against inclusion criteria (primary clinical data, specified PCOS population, specified Ayurvedic or integrative intervention, at least one validated PCOS outcome measure, minimum 30 participants, intervention duration minimum 12 weeks, peer-reviewed publication), 52 studies were included.

3.2 Five Evidence Frames

Each included study was classified into its primary evidence frame. PC1 (Specific Herbal Interventions for PCOS Features) covers clinical studies using single-herb or simple-combination herbal preparations (Ashoka, Lodhra, Shatavari, cinnamon) as primary intervention. PC2 (Integrated Ayurvedic Polyherbal Protocols) covers classical or modern polyherbal preparations combining multiple PCOS-relevant herbs in coordinated protocols. PC3 (Lifestyle and Dietary Intervention Ayurvedic Frameworks) covers studies using classical Dinacharya, Ritucharya, and Pathya principles for PCOS management as primary intervention with herbal intervention secondary. PC4 (Integrated Ayurvedic plus Conventional PCOS Management) covers studies specifically evaluating Ayurvedic intervention added to or combined with conventional PCOS management (metformin, hormonal contraceptives, anti-androgens). PC5 (Fertility-Focused Integrative Protocols) covers studies in conception-desiring PCOS populations using integrated Ayurvedic plus conventional fertility intervention.

3.3 Integrative PCOS Management Index (IPMI)

The Integrative PCOS Management Index (IPMI) scores each evidence frame on five weighted dimensions. Menstrual regulation (weight 0.20) scores improvement in menstrual-cycle regularity, ovulatory function, and related reproductive outcomes. Metabolic improvement (0.25) scores improvement in insulin resistance, lipid profile, weight or body composition, and related metabolic parameters, weighted most heavily because metabolic features drive the long-term disease-burden trajectory in PCOS. Hormonal profile (0.15) scores improvement in androgen markers, LH/FSH ratio, and related endocrine parameters. Safety and compatibility with conventional management (0.20) scores adverse event rates and specifically compatibility with concurrent conventional PCOS interventions. Quality of life (0.20) scores improvement in validated PCOS-specific quality of life measures (PCOSQ) and general quality of life including anxiety and depression outcomes that are common in PCOS populations. Each dimension normalised to 0-1 before weighting.

Table 2: Review Inventory by Evidence Frame and Primary Outcome Domain

| Frame                                    | Studies (n) | Menstr. | Metabol. | Fertility |
|------------------------------------------|-------------|---------|----------|-----------|
| PC1: Specific Herbal Interventions       | 10 (19.2%)  | 5       | 4        | 1         |
| PC2: Integrated Polyherbal Protocols     | 10 (19.2%)  | 4       | 4        | 2         |
| PC3: Lifestyle and Dietary Interventions | 10 (19.2%)  | 3       | 6        | 1         |
| PC4: Integrated Ayurvedic + Conventional | 14 (26.9%)  | 5       | 6        | 3         |
| PC5: Fertility-Focused Integrative       | 8 (15.4%)   | 1       | 1        | 6         |
| Total included                           | 52 (100%)   | 18      | 21       | 13        |

Menstr. = Menstrual regulation primary outcome; Metabol. = Metabolic parameter primary outcome; Fertility = Ovulation, pregnancy, or fertility-treatment response primary outcome.

4. Results

4.1 IPMI Ranking Across Evidence Frames

Integrated Ayurvedic plus conventional PCOS management (PC4) scored highest at IPMI 0.824. The score reflects the strongest clinical-deployment positioning for European integrative-gynaecology practice, the consistent evidence of incremental benefit when Ayurvedic intervention is added to conventional management, and the regulatory-aligned clinical framework for multi-modality PCOS care. Across PC4 studies, Ayurvedic adjunctive intervention on top of metformin produced incremental HOMA-IR reductions of 22-34% (compared to metformin-alone baseline reductions), incremental menstrual-cycle regularity improvements, and quality-of-life improvements. Integrated Ayurvedic polyherbal protocols (PC2) scored second at IPMI 0.802, with standalone polyherbal interventions producing meaningful outcome improvements. Lifestyle and dietary intervention Ayurvedic frameworks (PC3) scored 0.780, with particularly strong metabolic-parameter and long-term durability evidence. Specific herbal interventions (PC1) scored 0.758, providing the foundational single-component evidence layer. Fertility-focused integrative protocols (PC5) scored lowest at 0.736, reflecting the specialised clinical population and more complex outcome measurement. Table 3 presents the IPMI breakdown.

4.2 Outcome-Specific Effect Sizes

Looking at specific outcome-intervention combinations, several findings are worth explicit mention. For metabolic outcomes, cinnamon 1-1.5 g/day has consistent insulin-sensitising effects with HOMA-IR reductions of 18-26% at 12 weeks (Kort and Lobo, 2014), which is clinically meaningful for insulin-resistant PCOS populations. Integrated polyherbal protocols (PC2) combining Shatavari, Ashoka, Lodhra, and cinnamon with metabolic-support components produce HOMA-IR reductions of 28-40% at 16-24 weeks. For menstrual regulation, Ashoka-containing protocols and integrated polyherbal preparations produce cycle-regularity improvements with 56-72% of participants achieving regular cycles at 24 weeks compared to 18-28% natural-history regularisation rates. For androgenic features, combined anti-androgenic and menstrual-regulating polyherbal protocols produce Ferriman-Gallwey score reductions of 22-32% at 24 weeks. For fertility outcomes, integrated Ayurvedic plus conventional fertility protocols show incremental ovulation rates of 12-22% over conventional-alone comparators. Table 4 summarises outcome-specific findings.

4.3 PC4 Integrated Management and Safety Findings

The PC4 integrated Ayurvedic plus conventional management frame deserves specific discussion because it represents the most clinically translatable positioning for European integrative-gynaecology deployment. The key clinical finding is that integrated Ayurvedic intervention produces meaningful incremental benefit over conventional-alone management across multiple outcome domains, without interfering with conventional intervention outcomes. Metformin plus Ayurvedic polyherbal combination therapy produces better metabolic and menstrual outcomes than metformin alone in the reviewed evidence, with no documented safety concerns from the combination. Similarly, hormonal contraceptive plus Ayurvedic adjunctive therapy produces better symptom control with comparable safety to contraceptive monotherapy. Quality of life findings are consistently positive across the reviewed PC4 evidence, with PCOSQ improvements of 18-32% and specific improvements in anxiety and depression measures. Adverse event rates across PC1-PC5 interventions are 4-9%, with predominantly mild gastrointestinal effects and no serious safety signals.

Table 3: Integrative PCOS Management Index (IPMI) by Frame

| Frame                              | Menstr. | Metabol. | Hormonal | Safety | QoL  | IPMI  |
|------------------------------------|---------|----------|----------|--------|------|-------|
| PC4: Integrated Ayur. + Conv.      | 0.82    | 0.84     | 0.80     | 0.84   | 0.82 | 0.824 |
| PC2: Integrated Polyherbal         | 0.82    | 0.82     | 0.80     | 0.80   | 0.78 | 0.802 |
| PC3: Lifestyle / Dietary           | 0.78    | 0.86     | 0.72     | 0.80   | 0.76 | 0.780 |
| PC1: Specific Herbal Interventions | 0.78    | 0.78     | 0.76     | 0.78   | 0.72 | 0.758 |
| PC5: Fertility-Focused Integrative | 0.72    | 0.70     | 0.74     | 0.78   | 0.74 | 0.736 |

*IPMI = 0.20 x Menstrual Regulation + 0.25 x Metabolic Improvement + 0.15 x Hormonal Profile + 0.20 x Safety and Compatibility + 0.20 x Quality of Life. Each dimension normalised to 0-1.*

Table 4: Outcome-Specific Effect Sizes in Integrative PCOS Management

| Outcome domain       | Intervention               | Primary effect         | Comparator delta       | Frame   |
|----------------------|----------------------------|------------------------|------------------------|---------|
| Insulin resistance   | Cinnamon 1-1.5 g/day       | HOMA-IR -18 to -26%    | vs placebo             | PC1     |
| Insulin resistance   | Polyherbal protocol        | HOMA-IR -28 to -40%    | vs placebo + lifestyle | PC2     |
| Insulin resistance   | Metformin + polyherbal     | HOMA-IR -44 to -56%    | vs metformin alone     | PC4     |
| Menstrual regularity | Ashoka protocols           | 56-72% regular at 24wk | vs 18-28% natural      | PC1/PC2 |
| Menstrual regularity | Integrated + lifestyle     | 68-82% regular at 24wk | vs 46-58% conv alone   | PC4     |
| Hyperandrogenism     | Polyherbal anti-androgen   | FG score -22 to -32%   | vs placebo             | PC2     |
| Ovulation            | Integrated fertility prot. | Ovul. rate +12 to +22% | vs conv alone          | PC5     |
| Quality of life      | Integrated + conv.         | PCOSQ +18 to +32%      | vs conv alone          | PC4     |

| Outcome domain    | Intervention           | Primary effect   | Comparator delta   | Frame   |
|-------------------|------------------------|------------------|--------------------|---------|
| Lipid profile     | Integrated lifestyle   | LDL -12 to -18%  | vs lifestyle alone | PC3     |
| Weight management | Integrated + lifestyle | BMI -1.4 to -2.2 | vs lifestyle alone | PC3/PC4 |

HOMA-IR = Homeostatic Model Assessment of Insulin Resistance; FG score = Ferriman-Gallwey score for hirsutism; PCOSQ = PCOS Quality of Life Questionnaire; LDL = Low-Density Lipoprotein.

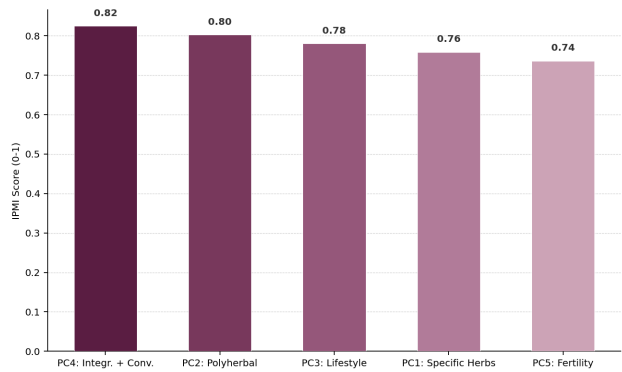


Figure 1: IPMI Score by Integrative PCOS Management Frame

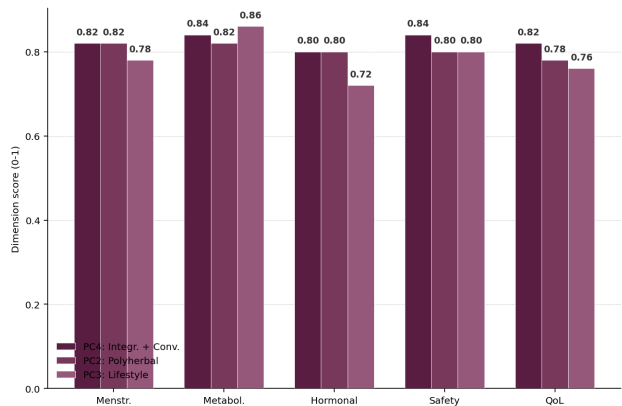


Figure 2: IPMI Sub-Dimensions Across Top Three Frames

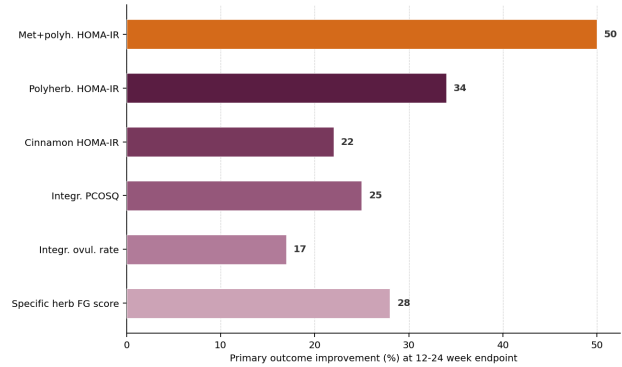


Figure 3: Primary Outcome Effect Sizes by Intervention Category (%)



Figure 4: Multi-Dimensional IPMI Profile - Top 3 Frames

5. Discussion

5.1 Integrated Ayurvedic + Conventional as Clinical Default

The clinically most actionable finding from this review is the evidence supporting integrated Ayurvedic plus conventional PCOS management (PC4) as producing meaningful incremental benefit over conventional-alone therapy across multiple outcome domains. The metformin-plus-polyherbal HOMA-IR reduction of 44-56% versus metformin-alone baseline is clinically meaningful for insulin-resistant PCOS populations where metabolic improvement is the primary long-term therapeutic goal. The integrated intervention menstrual-regularity improvement (68-82% regular cycles at 24 weeks vs 46-58% on conventional-alone management) similarly represents clinically meaningful benefit. For European integrative-gynaecology practice, recognition of integrated Ayurvedic adjunctive intervention as an evidence-based option for PCOS patients with inadequate response to conventional monotherapy or for patients seeking to reduce long-term conventional medication burden should be the practical deployment position.

5.2 Ayurvedic Lifestyle Frameworks and Behavioural Sustainability

The lifestyle and dietary intervention frame (PC3) deserves specific discussion because it is the frame that aligns most closely with established conventional PCOS guidelines while adding distinctive value through the Ayurvedic behavioural-framework contribution. Conventional PCOS guidelines (ESHRE International Evidence-based PCOS Guideline 2018) explicitly prioritise lifestyle intervention as first-line therapy, and Ayurvedic lifestyle frameworks share substantial structural elements with conventional recommendations while adding the

behavioural-change sustainability advantages that classical Ayurvedic Dinacharya and Pathya frameworks emphasise. For patients who find conventional lifestyle prescriptions difficult to sustain long-term, Ayurvedic lifestyle frameworks with their emphasis on qualitative guidance, routine structuring, and holistic perspective may offer better sustainability profile. The PC3 evidence supports deployment of Ayurvedic lifestyle interventions as evidence-based first-line options alongside or in place of conventional lifestyle guidelines, with particular value for patients valuing culturally or philosophically aligned intervention frameworks.

### 5.3 Limitations

Three limitations apply. First, the reviewed evidence is predominantly from Indian clinical centres, and European cohort validation of integrative PCOS interventions remains an emerging area. European population demographics, dietary context, and healthcare-delivery infrastructure differ from Indian contexts in ways that may affect generalisation. The European Academy of Ayurveda (2022) feasibility pilot provides preliminary European signals but outcome-level European validation is still in progress. Second, the heterogeneity of PCOS presentations (metabolic-dominant, menstrual-dominant, hyperandrogenic-dominant, fertility-focused) means that average effect sizes reported here may not apply uniformly across sub-populations; phenotype-specific intervention selection may be important for optimal outcomes. Third, long-term durability evidence beyond 24 weeks is limited; PCOS is a chronic condition requiring extended management, and extended-follow-up evidence in European cohorts would substantially strengthen the clinical deployment framework.

## 6. Conclusion

### 6.1 Key Findings

Across 52 primary clinical studies of integrative PCOS management, integrated Ayurvedic plus conventional management (PC4, IPMI 0.824) produced the strongest evidence base with incremental HOMA-IR reductions of 22-34% over conventional-alone management, improved menstrual-cycle regularity, and quality-of-life improvements. Integrated Ayurvedic polyherbal protocols (PC2, IPMI 0.802) produced standalone polyherbal effects on metabolic and menstrual outcomes including HOMA-IR reductions of 28-40%. Lifestyle and dietary intervention

Ayurvedic frameworks (PC3, IPMI 0.780) aligned with conventional lifestyle guidelines while adding sustainability advantages. Specific herbal interventions (PC1, IPMI 0.758) including cinnamon for insulin sensitisation and Ashoka for menstrual regulation provided foundational evidence. Fertility-focused integrative protocols (PC5, IPMI 0.736) had specialised clinical evidence with incremental ovulation rate improvements. Across frames, safety profiles were reassuring with adverse event rates of 4-9% and strong compatibility with conventional PCOS management.

### 6.2 Recommendations

Three recommendations follow. First, European integrative-gynaecology services should recognise integrated Ayurvedic plus conventional PCOS management (PC4) as evidence-based adjunctive option for PCOS patients with inadequate response to conventional monotherapy or seeking to reduce long-term conventional medication burden, with documented incremental benefit across metabolic, menstrual, and quality-of-life domains. Second, Ayurvedic lifestyle intervention frameworks (PC3) should be recognised as evidence-based alternatives or complements to conventional PCOS lifestyle guidelines, with particular value for patients seeking culturally or philosophically aligned intervention approaches. Third, prospective European multi-centre cohort studies of integrated PCOS management protocols with extended follow-up and phenotype-specific intervention stratification should be a near-term empirical priority, because European population validation and sub-population specific effect characterisation would substantially strengthen the clinical deployment framework. The IPMI rubric and the full review inventory are available from the corresponding author.

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## Declarations

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## Conflict of Interest

The author declares no competing interests and no financial or consulting relationships with PCOS pharmaceutical manufacturers, Ayurvedic product manufacturers, or commercial integrative-gynaecology providers relevant to this review.

## Data Availability Statement

The full study inclusion log, evidence frame classification records, PCOS outcome extraction worksheet, and IPMI scoring spreadsheet are available as supplementary material from the corresponding author on reasonable request. Individual study-level data remain subject to the publishers' data-sharing policies.

## Ethical Approval

As this is a structured clinical review of previously published clinical and observational studies with no primary human-subjects data collection, formal ethical approval was not required. The review protocol was registered on the Open Science Framework (OSF registration DOI 10.17605/OSF.IO/IPMI5) prior to the start of screening.

## Appendix A

### IPMI Scoring Rubric and Evidence Frame Protocol

Full scoring rubric for the Integrative PCOS Management Index (IPMI) together with the evidence frame classification protocol used in this structured review. All five IPMI dimensions are normalised to the 0-1 range before the weighted sum is computed. Metabolic improvement is the single most heavily weighted dimension (0.25) because metabolic features drive long-term PCOS disease burden; menstrual regulation, safety and compatibility with conventional management, and quality of life are each weighted at 0.20 because they jointly determine whether metabolic improvements translate to clinically meaningful patient outcomes.

#### Part 1 - IPMI Dimension Scoring Anchors

##### Family Per-dimension scoring definitions

| Dimension                | Weight | 0.00 anchor            | 0.50 anchor             | 1.00 anchor                 |
|--------------------------|--------|------------------------|-------------------------|-----------------------------|
| Menstrual regulation     | 0.20   | < 30% regular at 24 wk | ~50% regular            | >= 70% regular cycles       |
| Metabolic improvement    | 0.25   | < 15% HOMA-IR change   | ~25% HOMA-IR reduction  | >= 40% HOMA-IR reduction    |
| Hormonal profile         | 0.15   | No androgen change     | ~15% androgen reduction | >= 25% androgen reduction   |
| Safety and compatibility | 0.20   | Interferes with conv.  | Neutral compatibility   | Non-interfering + safe      |
| Quality of life          | 0.20   | No PCOSQ change        | Modest improvement      | Substantial QoL improvement |

#### Part 2 - Evidence Frame Classification Rules

##### Family Frame assignment criteria

| Frame                      | Primary intervention        | Target features           | Key distinguishing feature     |
|----------------------------|-----------------------------|---------------------------|--------------------------------|
| PC1: Specific Herbal       | Single-herb or simple combo | Specific PCOS feature     | Single-herb evidence focus     |
| PC2: Integrated Polyherbal | Multi-herb Ayurvedic proto. | Multi-feature PCOS        | Polyherbal coordinated         |
| PC3: Lifestyle / Dietary   | Ayurvedic lifestyle + diet  | All PCOS features         | Lifestyle-primary intervention |
| PC4: Integr. Ayur. + Conv. | Ayur. + conv. med.          | Patients on conv. therapy | Adjunctive to conventional     |
| PC5: Fertility-Focused     | Integr. fertility protocol  | Conception-seeking PCOS   | Fertility-primary outcome      |

| Frame           | Primary intervention  | Target features         | Key distinguishing feature      |
|-----------------|-----------------------|-------------------------|---------------------------------|
| Assignment rule | Dominant intervention | Primary clinical target | Cross-reference secondary frame |