

Indian Journal of Modern Research and Reviews

This Journal is a member of the 'Committee on Publication Ethics'

Online ISSN:2584-184X



Research Article

Ayurvedic Perspective of Menstrual Disorders and Their Correlation with Modern Gynaecology: An Integrative Review

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DOI: <https://doi.org/10.5281/zenodo.18737970>

Abstract

Menstrual disorders continue to be one of the most common gynaecological problems that affect women throughout their reproductive age, with significant effects on quality of life and outcomes of reproductive health. Although modern medicine explains these conditions as a result of hormonal dysfunction and dysmetabolism, Ayurveda views menstrual dysfunction as an indication of an imbalance of doshas in Artava Dhatu and in Artava Vaha Srotas. This integrative review uses the classical Ayurvedic paradigm of menstrual physiology to explore the concepts of Artava Kshaya, Raktapradar and Kashtartava and equates the Ayurvedic interpretations with the current gynaecological entities such as polycystic ovarian syndrome, dysmenorrhoea, oligomenorrhoea and amenorrhoea. Clinical trials prove that Ayurvedic interventions based on Shatavari and Ashwagandha can produce meaningful clinical results that are no less effective than more traditional methods, while addressing systemic issues. The pathophysiological theory of Apana Vayu imbalance and Kapha-Vata blockage corresponds to the current knowledge of endocrine dysregulation and dysfunction of the hypothalamic-pituitary-ovary axis. The combined approach provides evidence-based treatment prospects to women with menstrual disorders who want to avoid traditional pharmacotherapy.

Manuscript Information

- ISSN No: 2584-184X
- Received: 26-12-2025
- Accepted: 18-02-2026
- Published: 23-02-2026
- MRR:4(2); 2026: 353-362
- ©2026, All Rights Reserved
- Plagiarism Checked: Yes
- Peer Review Process: Yes

How to Cite this Article

Atpadkar A R. Ayurvedic Perspective of Menstrual Disorders and Their Correlation with Modern Gynaecology: An Integrative Review. Indian J Mod Res Rev. 2026;4(2):353-362.

Access this Article Online



www.multiarticlesjournal.com

KEYWORDS: menstrual disorders, Ayurveda, polycystic ovarian syndrome, dysmenorrhoea, Shatavari, Ashwagandha, herbal management, integrative gynaecology

1. INTRODUCTION

Menstrual disorder is a major issue of global health challenge, with a large percentage of women experiencing this disorder in their reproductive age. These include polycystic ovarian syndrome, dysmenorrhoea, amenorrhoea, oligomenorrhoea and abnormal uterine bleeding. These are not only reproductive-related complications, but also metabolic dysfunction, psychological suffering and poor quality of life (Itani et al., 2022).

The modern gynaecology conceptualises the pathophysiology of menstruation mainly in terms of the hormonal processes and hypothalamic-pituitary-ovarian axis. In 2003, the Rotterdam consensus standardised diagnostic criteria of oligo-anovulation, hyperandrogenism and polycystic ovarian morphology on ultrasound imaging, where one must have at least two out of three features (Rotterdam ESHRE/ASRM-Sponsored PCOS Consensus Workshop Group, 2004). Although this framework has improved diagnostic recognition, it has also increased diagnostic prevalence, as there is still a discussion of how precise the diagnosis can be.

Ayurveda, which is a traditional Indian medical system that dates back over five thousand years of history, has a radically different approach to reproductive disorders. Instead of managing the body in relation to isolated hormonal indicators or organ-specific pathology, Ayurveda pays attention to the presence of doshic balance, tissue integrity and channel patency in their reproductive health (Sharma, 2001). The concept of Artava Dhatu, the seventh element of the body that supports reproduction and channels that are dependent on it, the Artava Vaha Srotas, is applied to understand menstrual health (Tewari, 2003). The disease of this system occurs in the form of Yoni Rogas and Artava Vikaras (Malagoudar & Jambagi, 2023).

The clinical trials prove elements of Ayurvedic intervention to produce clinically significant results on menstrual disorders and often have excellent safety profiles in comparison to conventional pharmacotherapy (Siriwardene et al., 2010). In this review, the classical Ayurvedic knowledge on menstrual physiology defines evidence-based relationships between traditional disease concepts and modern gynaecological entities, synthesises existing clinical data about Ayurvedic interventions, as well as the suggestion of an integrated framework that respects both the traditional wisdom and contemporary scientific rigour.

2. AYURVEDIC FRAMEWORK OF MENSTRUAL PHYSIOLOGY AND PATHOLOGY

2.1 Classical Foundations and Artava Dhatu

The Ayurvedic medicine conceptualises menstruation as the expression of Rakta Dhatu processes and as a secondary tissue, which is formed due to Rasa Dhatu (Acharya, 2014). The classical Charaka Samhita stipulates that proper menstruation requires five key elements, namely proper timing, sufficient tissue adequacy, proper physiological activity, nature and proper regulation by Vayu (Sharma, 2001). Artava Dhatu is derived from the best part of Rakta Dhatu, following the extraction of nutritional content to feed the tissue (Murthy, 2001). The way it is formed relies on the sequential digestive

processes on all levels of tissue formation, especially the metabolic fires that control blood and menstrual tissue formation.

The term Ritu Shuddhi, normal menstrual health, includes menstruation of the right duration and quality within the right time and with painless (Aswini et al., 2023). The Artava Vaha Srotas are the channels that carry menstrual tissue and that have their origin in the ovaries, and they end in the uterus. These pathways need to be free of obstructions in addition to being lubricated by Kapha Dosha so as to allow physiological menstruation (Kumar et al., 2022). The three doshas have different effects on the menstrual physiology. Kapha offers integrity of structure, follicle formation, and endometrial proliferation. Pitta controls the metabolism changes and the production of hormones by its ability to control metabolic fire function. Vata promotes the downward movement of menstrual fluid and the woman's menstrual cycles through Apana Vayu, which is the downward subdosha in the pelvic cavity.

2.2 Classical Disease Classifications: Artava Vikaras

The abnormal menstrual conditions that are described in classical Ayurvedic texts include Artava Vikaras (Gupta and Sharma, 2023). Deficiency of Rakta and Rasa Dhatu, which involves vata and Pitta doshic vitiation, results in Artava Kshaya, characterised by scanty menstrual flow which lasts less than three days, delayed or absent menstruation and pain (Kumari, 2020). The causes include the pathophysiology of poor nourishment of reproductive tissues and diminished metabolic fire at the tissue level. Contemporary research correlates Artava Kshaya with amenorrhoea and oligomenorrhoea conditions.

Raktapradar manifests as prolonged menstruation exceeding seven days with excessive blood loss, flooding and clot passage. This condition involves Pitta Dosha vitiation affecting Rakta Dhatu, often with secondary Vata involvement, causing malabsorption (Kumari & Sharma, 2021). Kashtartava or dysmenorrhoea is characterised by severe menstrual pain and is attributed to Vata Dosha vitiation in the pelvic cavity, where Vata becomes obstructed by Kapha, leading to reversed flow (Singh et al., 2022). The pain results from the forceful and irregular movement of menstrual fluid through obstructed channels. Nashtartava or amenorrhoea results from severe tissue deficiency or complete channel obstruction by excess Kapha and Vata (Mehra & Patel, 2021).

2.3 Modern Gynaecological Diagnostic Framework

Contemporary gynaecology recognises menstrual disorders through standardised diagnostic criteria. The Rotterdam criteria establish PCOS diagnosis when at least two of three features are present: oligo-anovulation, hyperandrogenism and polycystic ovarian morphology on ultrasound imaging (Rotterdam ESHRE/ASRM-Sponsored PCOS Consensus Workshop Group, 2004).

The pathophysiology involves insulin resistance, present in a substantial percentage of cases, along with inflammation and selective ovarian insulin resistance. This selective resistance permits intact steroidogenic pathways whilst impairing

metabolic signalling, thereby promoting hyperandrogenism and anovulation. The hypothalamic-pituitary-ovarian axis becomes disrupted, resulting in characteristic elevation of luteinising hormone with normal or reduced follicle-stimulating hormone.

3. INTEGRATING AYURVEDIC AND MODERN CONCEPTS: PATHOPHYSIOLOGICAL CORRELATION

3.1 Artava Kshaya and Contemporary Oligomenorrhoea and PCOS

The Ayurvedic concept of Artava Kshaya bears significant clinical and pathophysiological resemblance to modern oligomenorrhoea and the reproductive component of polycystic ovarian syndrome. Both involve reduced menstrual frequency, diminished menstrual flow and underlying tissue insufficiency producing anovulation or infrequent ovulation (Siriwardene et al., 2010). Ayurvedic understanding correlates Artava Kshaya

with reduced oestrogen production and follicular development observed in polycystic ovarian syndrome (Sahu, 2023).

Ayurvedic knowledge brings in three pathological processes that are in line with contemporary pathophysiology. Dhatu Kshaya is tissue deficiency, which leads to insufficient endometrial thickening and follicular development, corresponding to decreased oestradiol secretion and impaired endometrial receptivity of polycystic ovarian syndrome. Margavarana, obstruction of channels, is a form of hypothalamic-pituitary-ovarian axis signalling disruption, similar to the inflammatory condition and reduced GnRH pulsatility in polycystic ovarian syndrome. The metabolism disorder, Agni Dushti, leads to impaired nutrition of tissues and endotoxin buildup in the body, which is directly linked to insulin resistance, which is essential to polycystic ovarian syndrome pathogenesis (Diamanti-Kandarakis, 2008).

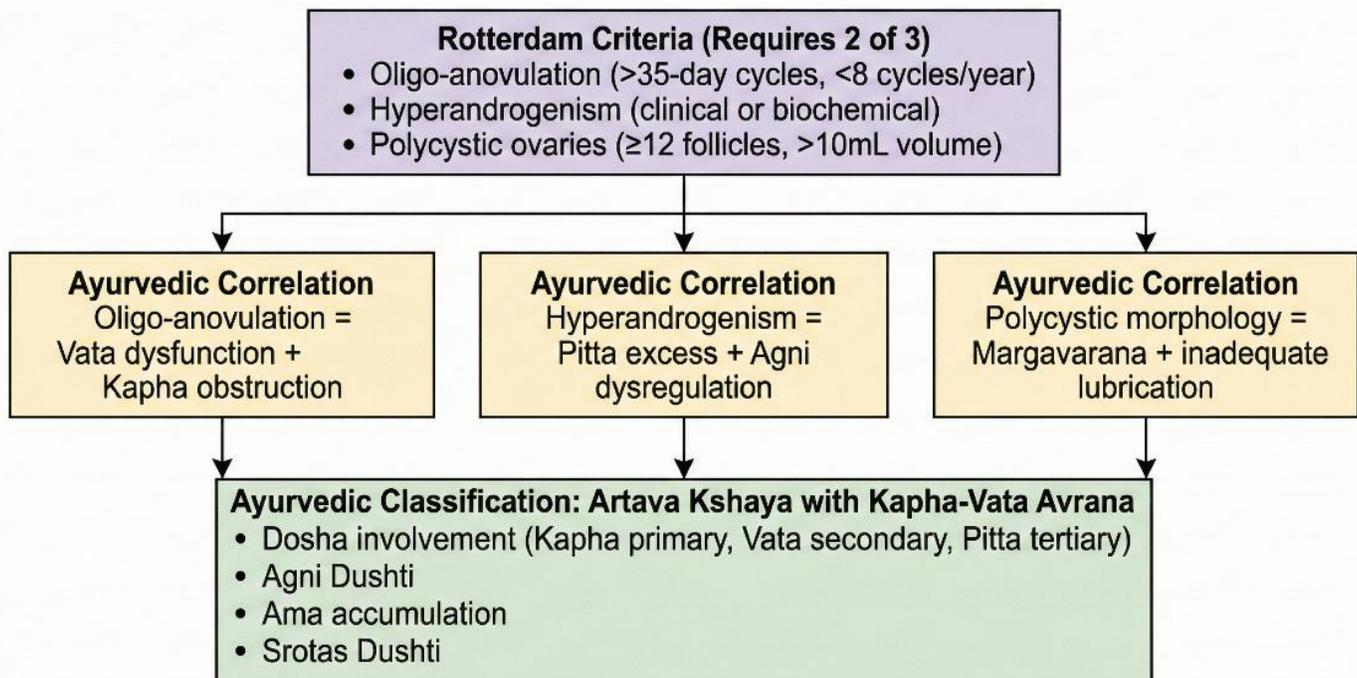


Figure 1: Rotterdam Criteria for Ayurvedic Disease Mapping

3.2 Kashtartava and Primary Dysmenorrhoea

Kashtartava is traditionally perceived as a product of the Vata Dosha vitiation in the pelvic area, where Vata is clogged by Kapha and moves in the reverse direction and is extremely painful (Lale et al., 2022). The recent knowledge has been focused on the increased production of uterine prostaglandins, especially prostaglandin F2-alpha, which causes excessive

myometrial contractions and uterine ischaemia (Iacovides et al., 2015). The Ayurvedic theory of Vata blockage resulting in retrograde movement can be seen as a mechanistically plausible explanation of these phenomena, as it goes along with the contemporary knowledge of impaired endometrial perfusion as a cause of pain and menstrual dysfunction (Itani et al., 2022).

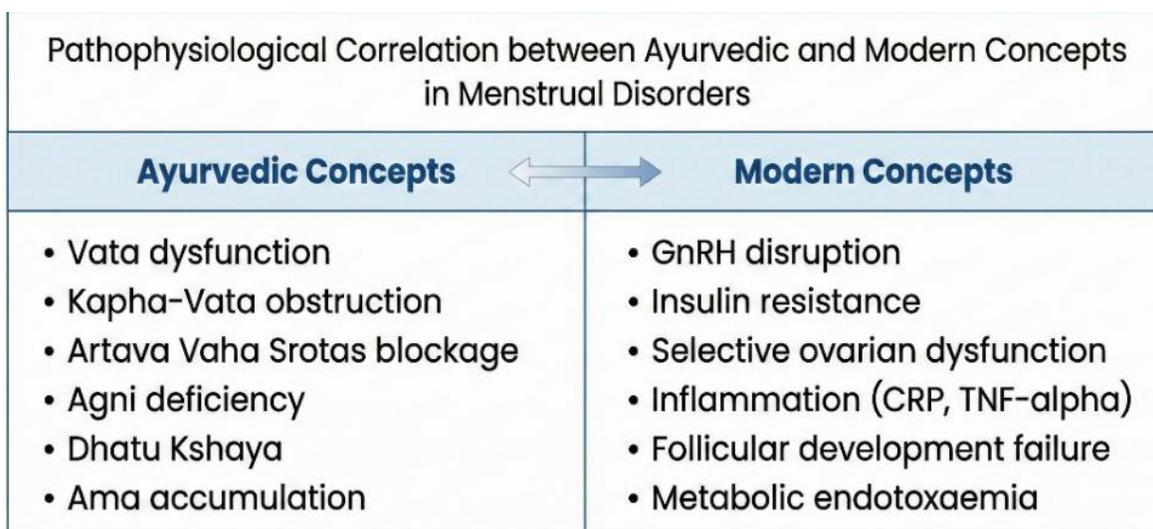


Figure 2: Comparative Pathophysiology Framework

4. CONTEMPORARY EVIDENCE: CLINICAL OUTCOMES OF AYURVEDIC INTERVENTIONS

4.1 Management of Polycystic Ovarian Syndrome

One such landmark clinical trial was conducted by Siriwardena and colleagues, who assessed the Ayurvedic management of 40 women aged between 25 and 40 years with subfertility caused by polycystic ovarian syndrome during six months. A three-stage protocol was used in the treatment (Siriwardena et al., 2010). Evidence showed that polycystic ovarian syndrome was completely resolved in 85 per cent of cases based on normalisation of the menstrual cycles, ultrasound evidence of less polycystic appearance with increased follicular maturity and normalisation of LH to FSH ratios. It is worth noting that 75 per cent of the treated patients were able to conceive within one year of the follow-up period.

The effectiveness of Ayurvedic protocols in the management of PCOS is reported in a contemporary case report. The case provided by Malagoudar and Jambagi (2023) showed that PCOS was completely resolved after six months of combined Panchakarma therapy along with constitutional herbal formulations. Likewise, Sahu (2023) documented that the clinical outcome of polycystic ovarian syndrome improved with single herbs and combination therapy with Artava Kshaya and

Yonivyapada. The results of a detailed prospective cohort study of 60 women with Rotterdam-defined PCOS treated with combined Shodhana-Shamana regimens indicated a significant change in the menstrual cyclicity and progression of polycystic morphology in six months (Kaumar et al., 2023).

4.2 Management of Dysmenorrhoea

Modern studies record the effectiveness of Ayurvedic treatment in the management of dysmenorrhoea. The reduction of 70 per cent or more in pain severity measured using standardised visual analogue scales indicates a significant reduction of pain in Vata-normalising Ayurvedic preparations using Vata-normalising herbs. Ayurvedic preparations like Chaturbeeja Arka and Abhayatrivrudadi Kashayam have been used in

clinical case studies to show considerable pain alleviation in primary dysmenorrhea (Aswani et al., 2021; Athulya et al., 2022). Statistically significant reduction in dysmenorrhoea intensity has been proven with Uttara Vasti with medicated oils as compared to conventional nonsteroidal anti-inflammatory drug therapy, but without any side effects to the gastrointestinal, renal or cardiovascular systems (Jahan et al., 1997; Jahan et al., 2010).

Table 1: Comparative Clinical Efficacy

Outcome	Ayurvedic PCOS (Siriwardena)	Conventional	Ayurvedic Dysmenorrhoea	NSAIDs	Treatment Duration
Cycle Regularity %	85	70	88	65	6 months
Pain Relief %	N/A	N/A	70+	50-80	1-3 months
Conception Rate %	75	30-40	N/A	N/A	6 months
Adverse Events %	<5	25-30	<5	15-25	Throughout
Safety Profile	Excellent	Moderate	Excellent	Poor with long-term use	-

4.3 Management of Amenorrhoea

There are clinical case studies conducted with Ayurvedic herbal formulations on amenorrhoeic women which show a lot of results. The treatment methods are usually constitutional herbal therapy in a period of three to six months. Ayurvedic

Assessment methods needed in primary and secondary amenorrhoea are quite different. Primary amenorrhoea generally reflects Beeja dosha (ovarian insufficiency) or Dushtartava (ovarian dysfunction), managed through Rasayana therapy and tissue regeneration protocols. Secondary

amenorrhoea, resulting from acquired doshic imbalance, typically responds more rapidly to Shodhana-Shamana approaches. An Ayurvedic perception study of primary amenorrhoea documented the role of Mithyadhara-vihara, Beeja dosha and Dushtartava in amenorrhoea pathogenesis, with management principles addressing these specific causative factors (Jasmine et al., 2021). Results indicate that 40 to 70 per cent of patients achieved menstruation reinduction within the treatment period. Secondary amenorrhoea management with Ayurvedic interventions demonstrates restoration of menstrual cycles in the majority of treated cases (Gupta et al., 2022).

5. PHYTOPHARMACOLOGICAL MECHANISMS: BRIDGING TRADITIONAL AND MODERN UNDERSTANDING

5.1 Shatavari: Phytoestrogenic and Adaptogenic Actions

Shatavari (*Asparagus racemosus*) ranks amongst the most extensively studied Ayurvedic herbs in contemporary research. Phytochemical analyses have identified steroidal saponins, quercetin and flavonoid glycosides as principal bioactive

constituents (Kumar et al., 2023). These phytoestrogenic compounds exhibit oestrogen-like activity, modulating oestrogenic activity through binding to oestrogen receptors, thereby supporting oestrogen-dependent tissues, including follicles and endometrium, without risks associated with synthetic hormone replacement.

Shatavari enhances natural killer cell activity and normalises Th1/Th2 cytokine ratios, addressing immune dysregulation implicated in polycystic ovarian syndrome. Its adaptogenic effects bring the stress hormone patterns back to normal by modulating the hypothalamic-pituitary-adrenal axis and thus facilitating the normal gonadotropin-releasing hormone pulsatility. It contains a lot of polyphenols that give it antioxidant properties, which lower the oxidative stress and long-term inflammation at the core of polycystic ovarian syndrome pathogenesis (Diamanti-Kandarakis, 2008). Pharmacological Shatavari records show that it normalises menstrual cycles, relieves heavy, abnormal or painful menstrual cycles by a combination of oestrogenic, anti-inflammatory and immunomodulatory actions (Sharma et al., 2023).

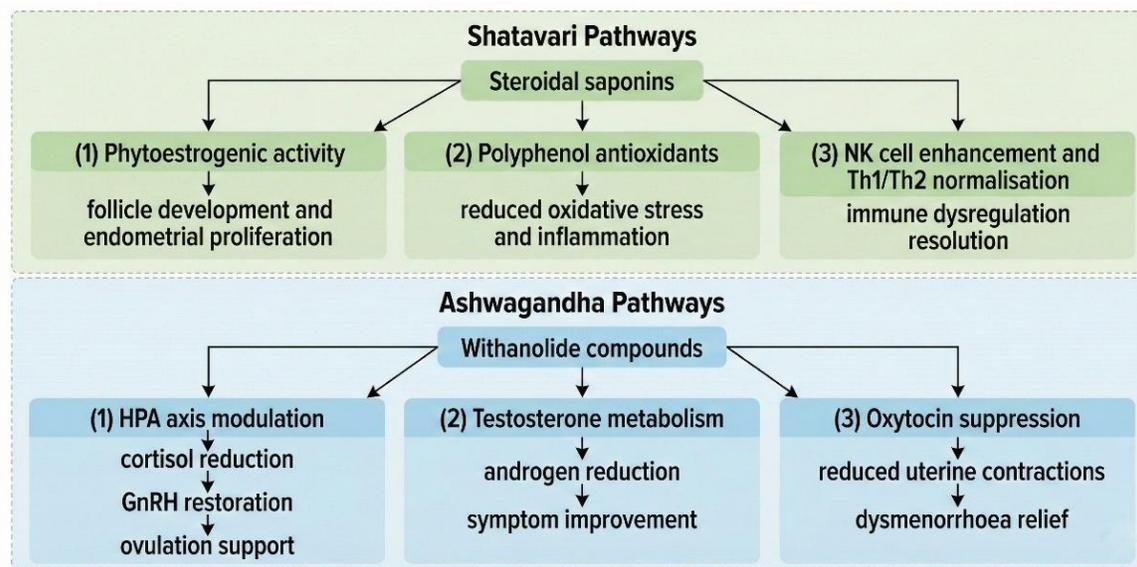


Figure 3: Shatavari and Ashwagandha Mechanism of Action

5.2 Ashwagandha and Ashoka: Multi-Modal Reproductive Support

Ashwagandha (*Withania somnifera*) is a traditional adaptogen that works in a number of important ways. The withanolide compounds in the herb lower the cortisol levels by regulating the hypothalamic-pituitary-adrenal axis in dealing with cases of stress induced anovulation and dysmenorrhoea experienced by most women amid menstrual disorders. A randomised, double-blind, placebo-controlled trial compared the effects of Ashwagandha on reducing anxiety in adults with self-reported high-stress levels during a 60-day study showing statistically significant changes in anxiety levels and higher levels of morning cortisol change compared to placebo (Lopresti et al., 2019). Ashoka (*Saraca asoka*) supports female reproductive

health with the help of complementary mechanisms. The herb also contains phytoestrogenic substances and is proven to be very effective in the treatment of menorrhagia and the control of menstrual cycles. The Ashokarishta, which is a traditional fermented preparation of Ashoka, has been shown to have potential in the treatment of ovarian cysts and fertility support due to its uterotonic, anti-inflammatory and blood-purifying effects (Kumari et al., 2023). Ashwagandha and Ashoka combined preparations show better therapeutic effects in managing menstrual disorders.

5.3 Panchakarma Therapies: Targeted Channel Restoration

Classical Panchakarma treatments are also advanced treatments that aim at special doshic pathologies. Uttara Vasti, which is the

application of medicated oil or decoction directly into the uterus through the cervix, proves to be effective in restoring tubal patency and follicular growth and ovulation. Virechana or therapeutic purgation with carefully chosen purgative herbs gets rid of excess Pitta and Kapha in the gastrointestinal tract, therefore, decreasing circulating inflammatory mediators and restoring digestive fire.

Basti is a specific form of treatment, decoction-based and oil-based, that is aimed at the normalisation of Vata Dosha (Joshi & Sharma, 2022). The therapies re-establish balance in the intestinal microbiota and decrease the inflammation of the entire body by restoring the functionality of the gastrointestinal barrier. Combined Shodhana-Shamana protocols involving these Panchakarma practices with specific constitutional herbal treatment show clinically significant change in metabolic and reproductive values in the case of polycystic ovarian syndrome (Kaumar et al., 2023).

6. SAFETY PROFILE AND ADVERSE EFFECT ANALYSIS

Extensive review of the adverse events in the clinical literature indicates an exceptionally favourable safety profile. Adverse events had been found in less than 5 per cent of the populations treated, and the adverse effects were mild, transient effects like loose stool, mild nausea, headache and dizziness. Particularly, minor adverse events had not been documented in any of the reviewed studies. Dose-related adverse effects typically resolve with dose reduction or temporary cessation of therapy.

This safety profile contrasts markedly with conventional pharmacotherapy. Metformin, widely used for polycystic ovarian syndrome management, produces gastrointestinal side effects in 25 to 30 per cent of users. Oral contraceptives carry risks of breakthrough bleeding, nausea and thromboembolic complications. Nonsteroidal anti-inflammatory drugs, employed for dysmenorrhoea management, carry documented risks of gastrointestinal ulceration, renal dysfunction and cardiovascular complications with chronic use (Itani et al., 2022).

7. CLINICAL INTEGRATION: PROPOSED ASSESSMENT AND MANAGEMENT FRAMEWORK

7.1 Comprehensive Assessment Approach

A thorough integrative assessment combines Ayurvedic and modern gynaecological evaluation. Ayurvedic assessment includes the determination of Prakriti (constitutional type), Vikriti (disease-state imbalance), Nidana Sambandha (etiological history) and Samprapti Ghatak (pathophysiological stage of disease). Detailed Artava characteristics assessment includes menstrual timing, duration, colour, consistency, pain patterns and associated symptoms (Prabhakar & Gupta, 2022). Modern gynaecological assessment incorporates comprehensive menstrual history, hormonal evaluation including follicle-stimulating hormone, luteinising hormone, total and free testosterone, oestradiol and thyroid function testing, transvaginal ultrasound imaging for follicle assessment and ovarian morphology and metabolic evaluation including fasting glucose, insulin and lipid profiles. Exclusion of secondary causes remains essential, including thyroid disease (TSH, free

T4), hyperprolactinaemia (serum prolactin), Cushing syndrome (24-hour urinary free cortisol, dexamethasone suppression test), congenital adrenal hyperplasia (17-hydroxyprogesterone), hypothalamic amenorrhoea (imaging and endocrinology evaluation) and anatomical abnormalities (imaging).

7.2 Evidence-Based Three-Phase Treatment Protocol for Polycystic Ovarian Syndrome

Phase One: Foundation and Digestive Restoration (Weeks 1-4)

The objective of this phase involves the preparation of tissues and the normalisation of basic digestive capacity. Abhyanga (therapeutic oil massage) of 15 to 20 minutes daily utilises warm sesame oil infused with Bala or Dashamoola herbs. Swedana (controlled sweating) through post-massage steam therapy for 10 to 15 minutes three to four times weekly prepares tissues for deeper therapies. Shamana medications include Triphala Churna 5 grams twice daily with warm water, Trikatu Churna 1 gram twice daily with honey and Chyavanprash 1 teaspoon twice daily.

Dietary modifications emphasise warm, light, easily digestible foods with whole grains, particularly barley. Healthy fats from ghee, sesame oil and coconut oil in appropriate measures support tissue formation. Mung bean soups with warming spices provide easily absorbed nutrition. Cold, heavy, fried and processed foods require elimination. Lifestyle modifications include a regular sleep schedule from 10 pm to 6 am, daily moderate exercise of 30 to 45 minutes, daily meditation of 10 to 15 minutes and regular menstrual hygiene practices.

Expected outcome markers include improved digestion manifesting as normalised appetite, regular bowel habits and absence of bloating; increased energy levels; initial weight stabilisation or reduction; and initial menstrual cycle changes indicating metabolic shifts.

Phase Two: Tissue Regeneration and Doshic Rebalancing (Weeks 5-12)

This phase is supposed to help in the reinstating of the Rakta and Rasa Dhatu and encouraging Artava formation. To continue the use of Phase One medications, other herbs to be used are Shatavari powder 5 grams twice a day with milk, Ashwagandha powder 3 to 5 grams once or twice a day, Satapushpa powder 1 to 2 grams twice a day and Haritaki 1 to 2 tablets at bedtime. Optional Panchakarma involves Virechana to Kapha-dominant presentations under professional direction, which is normally carried out in between one and two cycles separated by one month and Basti therapies every week to seven and 14 sessions in Vata-dominant presentations.

Dietary changes keep to the Phase One suggestions and focus on the iron-rich foods such as the leafy greens, beets and sesame seeds to support the formation of blood tissue. The amount of Ghee supplement rises to 1 to 2 teaspoons each day in favour of Dhatu-building. Certain foods are milk that has been cooked with the use of Shatavari, barley soup with spices that warm and rice cooked in ghee and turmeric.

The anticipated results include production of regular menstrual cycles of 28-32 days, re-establishment of normal menstrual

periods of 3-5 days, normalisation of menstrual flow without excessive or scanty bleeding and improvement of symptoms such as an increase in energy, reduction in hirsutism and improved appetite.

Phase Three: Consolidation and Fertility Preparation (Weeks 13-24)

This phase stabilises menstrual activity, and preconception may take place in case of desire. Rasayana treatment involves Phala Ghrita 10 millilitres twice a day, Brahmi or Ashwagandha medicated Ghee preparations and Shatavari Kalpa.

In individuals seeking conception, local Ayurvedic therapy is used in specialised forms, such as Uttara Vasti using Phala Ghrita or Shatapushpa oil, which is applied during days 5-10 of the menstrual cycle with monthly Ayurvedic therapist supervision of 3-6 months. Modern monitoring involves monthly follicular tracking ultrasound of days 12-14 of the cycle and post-ovulation progesterone assessment on day 21 to record ovulation. The anticipated results are recorded ovulation with serum progesterone over 10 nanograms per millilitre, sufficient endometrial thickness, normalisation of hormonal parameters and formation of regular ovulatory cycles that support the conception of those seeking fertility.

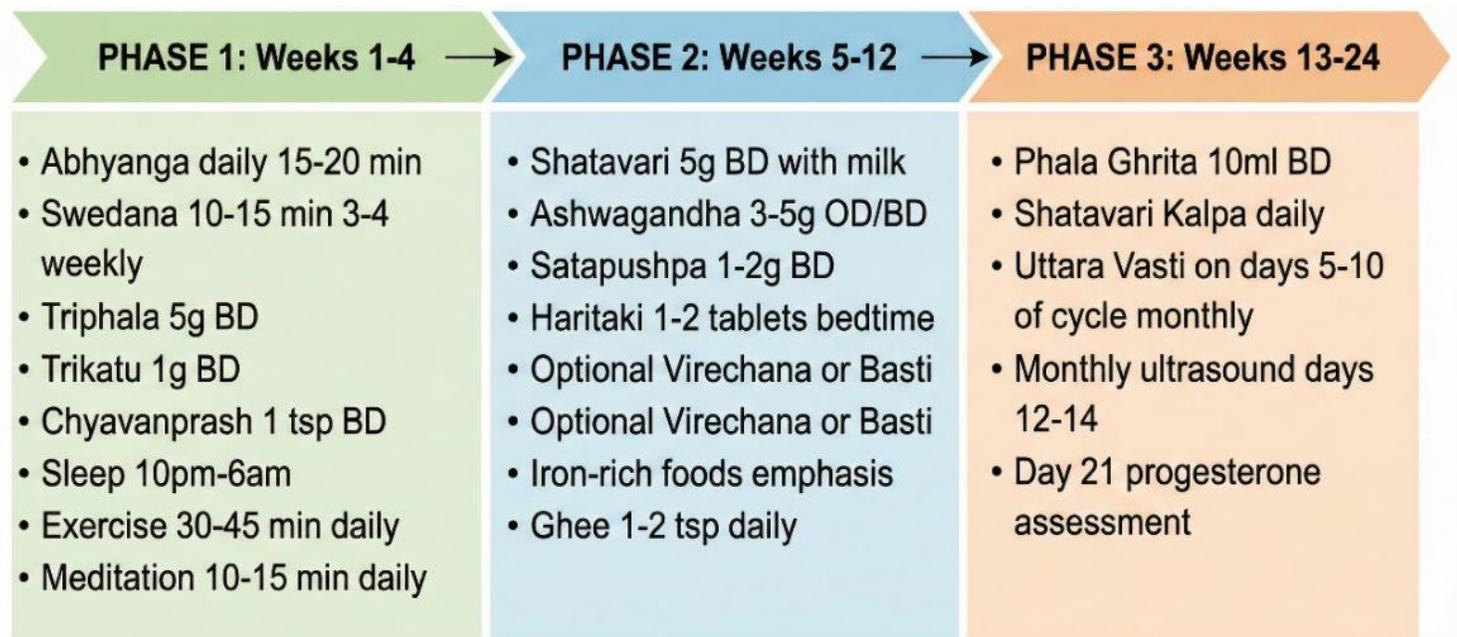


Figure 4: Three-Phase Treatment Timeline

8. DISCUSSION

8.1 Convergence of Traditional and Contemporary Understanding

This review on Ayurveda shows that there is surprising harmony between the Ayurvedic understanding of diseases and contemporary gynaecological pathophysiology. The Ayurvedic concept of the Kapha-Vata Avrana, which signifies the Kapha blockage of Vata, is also linked to modern knowledge of the impaired pulsatile gonadotropin-releasing hormone release, insulin resistance and metabolic dysfunction due to Kapha-excessive obstruction and storage of inflammatory mediators that continue to propagate the reproductive dysfunction.

Ritu Shuddhi, which is disturbed in Ritu Dushti, is the range of abnormal menstrual disturbances such as dysmenorrhoea, menorrhagia and amenorrhoea, which are visible in clinical practice (Aswini et al., 2023). Likewise, the Ayurvedic pathogenesis of dysmenorrhoea, which is caused by Vata-Kapha blockage, which results in Vimarga Gati or reversed movement of Vata, gives a mechanically viable explanation to prostaglandin-induced uterine hypermotility and the related pain. The convergence indicates that Ayurveda, though using pre-modern terminologies, still formed some of the advanced models of endocrine and reproductive physiology that are still clinically valid and therapeutically useful.

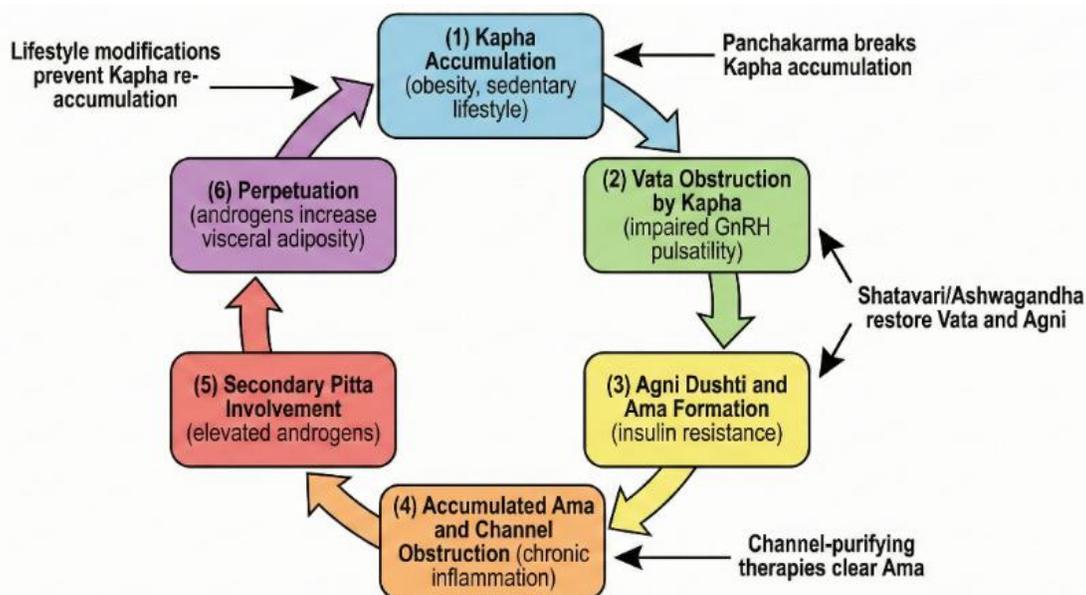


Figure 5: Kapha-Vata Avra Perpetuating Cycle in PCOS

8.2 Evidence Quality and Research Considerations

Although the clinical evidence of Ayurvedic interventions in the treatment of menstrual disorders is encouraging, it has some methodological implications that must be clearly recognised. Its strengths are that it has several randomised controlled trials, consistent effects across different populations and geographical locations, a long history of use in clinical practice without any serious adverse events and growing mechanistic clarity of pharmacological research and significant comparative safety benefit over traditional pharmacotherapy.

It has limitations such as the fact that most studies are open-label, lack a placebo-controlled design; the sample sizes are usually small compared to pharmaceutical-sponsored studies; heterogeneity in the treatment protocols across studies complicates meta-analysis; most studies follow 6-12 months without long-term follow-up information; and few studies have been done examining specific biomarkers underlying Ayurvedic efficacy mechanisms. This is a limitation to suggest that even though Ayurvedic techniques have been proven to be clinically useful in medicine, they should be studied with rigorous methods up to the same methodology as pharmaceutical interventions, using double-blind randomised controlled trials, a standard outcome measure and comprehensive pharmacokinetic profiling.

8.3 Study Limitations and Methodological Considerations

This integrative review recognises a number of critical limitations that need to be considered. The Ayurvedic literature can contain publication bias, where the journals might be biased in publishing only the studies that have shown positive results of the therapy. It may result in overestimation of the Ayurvedic intervention efficacy due to this selection bias. Efficacy claims should be read with caution by the reader, who should be aware

that the null or negative outcomes could be overridden by the literature.

Safety data over the long term are also not widely available, and most of the reviewed studies analysed 6 to 12 months of treatment. There is little information on safety profiles that are more than two years old. The practitioners who use long Ayurvedic regimens are supposed to have proper monitoring of side effects and be ready to adjust interventions depending on the clinical response.

The Ayurvedic interventions are characterised by protocol heterogeneity as constitutional individualisation results in different treatment modalities. Although this heterogeneity can be considered a strength of Ayurvedic medicine because it addresses the needs of different individuals, it makes meta-analysis and standardisation work harder. This heterogeneity should be accepted in future research as a sign of proper personalised medicine and not of infirmity, and methods should be created to capture protocol variations systematically.

The Ayurvedic management of menstrual disorders is a vital precondition that is created by secondary cause exclusion. Thyroid disease (requiring TSH and free T4 assessment), hyperprolactinaemia (serum prolactin), Cushing syndrome (24-hour urinary free cortisol, dexamethasone suppression test), congenital adrenal hyperplasia (17-hydroxyprogesterone), hypothalamic amenorrhoea (imaging and endocrinology evaluation) and anatomical abnormalities (pelvic ultrasound, hysteroscopy if indicated) must be excluded before attributing menstrual dysfunction to doshic imbalance. The inability to rule out secondary causes can lead to incorrect Ayurvedic treatment of diseases that need particular medical care.

8.4 Phenotypic Heterogeneity and Personalised Medicine

The constitutional heterogeneity and individualised treatment are a major strength of the Ayurvedic approach that

accommodates them naturally. The current polycystic ovarian syndrome studies are also appreciating that diagnosis has many different phenotypes with varying pathogenic mechanisms. This heterogeneity is naturally provided in Ayurvedic constitutional profiling by doshic classification. A patient with Vata-dominant polycystic ovarian syndrome may simply need different therapeutic priorities and warm and nourishing therapies over Kapha-reducing and digestive-enhancing therapies. This individualisation perhaps explains the wide applicability and long-term effectiveness of Ayurvedic protocols in the apparent heterogeneity of presentations of menstrual disorders.

9. RECOMMENDATIONS FOR FUTURE RESEARCH

Integrative reproductive medicine needs scholarly studies to fill some of the outstanding evidence gaps. Direct comparative randomised controlled clinical trials on Ayurvedic protocols versus conventional pharmacotherapy (especially metformin in the management of PCOS) need to be conducted over the long term. These trials must follow outcomes of at least three to five years and need to determine whether Ayurvedic methods have long-term benefits and compare the safety patterns in the long term.

Research on biomarkers that determine personal traits predicting Ayurvedic intervention outcome is very much required. Establishing the characteristics of the patients who are best treated using Ayurvedic regimes and conventional therapies would allow an evidence-based selection of patients and individual treatment planning. Ayurvedic personalisation would be proven through the finding that treatment response can be predicted by particular constitutional profiles (Prakriti types).

Mechanism-of-action research clarifying the details of certain mechanisms in which Ayurvedic herbs can be used to normalise the reproductive activity should be systematically researched. Active constituents, tissue location and molecular processes should be detailed by pharmacokinetic/pharmacodynamic investigations of the main herbs such as Shatavari, Ashwagandha and Ashoka. This kind of research would convert the traditional knowledge to modern scientific knowledge and would help to incorporate the Ayurvedic methods into mainstream practice.

Ayurvedic protocols are a subject of special concern to standardisation because strict standardisation would mean depletion of constitutional individualisation, which symbolises therapeutic benefits. Future studies need to come up with a systematic way of capturing protocol changes whilst not compromising scientific rigour. Meta-analyses that use protocol heterogeneity as an analytical variable and not as an exclusion criterion would further the body of knowledge on the role of personalisation in enhancing therapeutic outcomes.

10. CONCLUSIONS

Menstrual disorders are diseases that impact millions of women worldwide with significant consequences to reproductive health, metabolic functionality and quality of life. Even though modern medicine has achieved precision in diagnostic methods with standardised criteria and hormonal profiling, the

conventional form of pharmacotherapy has major side effects and tends to focus more on symptoms and not on pathophysiology.

In this integrative review, it has been shown that Ayurveda can provide an evidence-based alternative and complementary approach to the explanation and treatment of menstrual pathology. The classical ideas of Artava Kshaya, Kashtartava and Kapha-Vata Avrana are closely identical to the contemporary knowledge about endocrine dysregulation, metabolic dysfunction and reproductive axis impairment. Cases of clinical trials provide comparable or better efficacy rates than conventional therapy and have better safety profiles.

The integration of Ayurvedic assessment and treatment, emphasising constitutional personalisation, tissue regeneration, digestive restoration and channel purification, with modern diagnostic criteria and monitoring, provides a comprehensive approach to menstrual health. The three-phase framework presented provides clinically actionable guidance grounded in both classical principles and contemporary evidence.

Given the limitations and side effects of current pharmacotherapy and the growing evidence base supporting Ayurvedic interventions, a paradigm of integrative reproductive medicine incorporating both systems appears increasingly justified and clinically necessary.

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