GMR
The Original

A CRITICAL STUDY OF STREE VANDHYATVA (FEMALE INFERTILITY) MENTIONED IN AYURVEDA WITH ITS CORRELATION TO CONTEMPORARY BIOMEDICAL SCIENCES: AN INTEGRATIVE REVIEW

Subhash Waghe[1]*, Roopali Sharnagat[2], Darshana Ubhale[3], Nilesh Dalvi[4]

[1]Department of Rog Nidana, SAM College of Ayurvedic Sciences, Raisen, Madhya Pradesh – 464551, India, E mail – carenidan@rediffmail.com, ORCID ID – 0009-0006-2176-5549
[2.] Department of Streeroga and Prasuti Tantra, Saradar Patel Ayurvedic Medical College & Hospital, Balaghat (MP)
E mail – roopalins1992@gmail.com, ORCID ID – 0009-0007-2391-9094
[3.] Department of Rog Nidana, Tilak Ayurved Mahavidyalaya, Rasta Peth, Pune – 411002, India, E-Mail –drdarshu03@gmail.com, ORCID ID – 0009-0000-9425-7226
[4.] Department of Stree Roga and Prasuti Tantra, Vaidya Yagyadatta Sharma Ayurved Mahavidyalaya, Khurja – 203131, Uttar Pradesh, India
E-Mail - explorenil3456@gmail.com / ORCID ID – 0009-0003-1689-7019

ABSTRACT

Background: Female infertility is a significant public health concern, globally affecting approximately 48.5 million couples. In Ayurveda, the condition is comprehensively described under the nosological category of Stree Vandhyatva, with its etiopathogenesis rooted in Dosha-Dhatu-Mala imbalance, Artava Kshaya, Yoni Vyapat, and Garbhashaya Dosha. A critical comparative analysis of these classical frameworks against contemporary biomedical paradigms is essential for advancing integrative reproductive medicine.

Objective: To systematically analyze the Ayurvedic concept of Stree Vandhyatva as described in classical texts (Charaka Samhita, Sushruta Samhita, and Ashtanga Hridayam), establish biomedical correlations, and synthesize an integrative diagnostic and therapeutic framework for female infertility.

Methods: A systematic narrative review was conducted using Ayurvedic classical texts as primary sources and electronic databases (PubMed, Scopus, Web of Science, AYUSH Research Portal) for secondary sources. Articles published between 2014 and 2024 in indexed peer-reviewed journals were included. Inclusion was restricted to studies on female infertility, Ayurvedic reproductive medicine, and integrative gynaecology.

Results: The classical Ayurvedic literature delineates ten primary etiological factors of Stree Vandhyatva including Yoni Pradoshat, Asruk Doshat, Aahar Doshat, Vihar Doshat, Akal Yogat, Bala Sankshayat, and Manso Abhitapat, which demonstrate remarkable concordance with modern categories of ovulatory dysfunction, tubal pathology, uterine anomalies, endocrinal disorders, nutritional deficiencies, and psychogenic infertility. The Ritu-Kshetra-Ambu-Bija framework of Sushruta Samhita parallels the contemporary understanding of the four prerequisites of conception: ovulation, uterine receptivity, nutritional milieu, and gamete integrity. Ayurvedic Yoni Vyapat subtypes such as Putraghni (habitual abortion), Shandhi (Turner syndrome), and Artava Dosha (ovum disorders) align precisely with modern clinical entities.

Conclusion: Stree Vandhyatva as described in Ayurvedic classics constitutes a comprehensive, holistic, and clinically relevant nosological framework for female infertility. Integration of classical Ayurvedic etiological insights with modern molecular diagnostics and evidence-based therapeutics offers a promising pathway for developing culturally contextual, patient-centred reproductive healthcare. Rigorous randomized controlled trials validating Ayurvedic formulations are urgently needed.

KEYWORDS: Stree Vandhyatva; Female infertility; Ayurveda; Yoni Vyapat; Artava; Integrative reproductive medicine; Polycystic ovarian syndrome; Vandhyatva Chikitsa

1. INTRODUCTION

Infertility is defined by the World Health Organization (WHO) as a disease of the male or female reproductive system, characterized by the failure to achieve a clinical pregnancy after 12 months or more of regular unprotected sexual intercourse.1 Its global prevalence affects an estimated 48.5 million couples, with female-factor infertility accounting for approximately 25–35% of all cases, male factor for 20–30%, combined factors for 25–40%, and unexplained infertility for 10–20%.2 In India, the burden is particularly significant, with prevalence estimates ranging from 3.9% to 16.8% of reproductive-aged women, influenced by nutritional deficiencies, endemic tuberculosis, sexually transmitted infections (STIs), and increasing rates of polycystic ovarian syndrome (PCOS).3

The modern biomedical approach to female infertility, while technologically advanced, often remains compartmentalized, focusing on individual pathological entities without addressing the holistic biopsychosocial context of the patient. In contrast, Ayurveda — the ancient Indian system of life science — has addressed female infertility comprehensively for over three millennia under the nosological framework of Stree Vandhyatva and Yoni Vyapat. The foundational texts —

Charaka Samhita (Sharirasthana 2/7), Sushruta Samhita (Sharirasthana 2/5, 2/33), and Ashtanga Hridayam — provide systematic etiological classifications, diagnostic criteria, and therapeutic protocols that are strikingly relevant to contemporary reproductive medicine.4

The Ayurvedic understanding of conception (Garbhotpatti) is anchored in the Chatushpada framework — four essential prerequisites: Ritu (fertile period/ovulation), Kshetra (uterine receptivity), Ambu (nutritional milieu), and Bija (gametic integrity). This tetrad finds precise resonance with the modern understanding of the four biological prerequisites for conception: timely ovulation, a healthy uterine environment, optimal hormonal and nutritional milieu, and viable oocytes and spermatozoa.5 Such conceptual concordance suggests that classical Ayurvedic texts embody a sophisticated empirical understanding of reproductive physiology that merits critical scholarly attention.

Despite increasing global interest in integrative medicine, a rigorous, structured analysis comparing Ayurvedic Stree Vandhyatva with modern female infertility across etiology, pathophysiology, investigation, and management remains largely absent from indexed academic literature. This review addresses this critical gap by systematically analyzing the Ayurvedic conceptual framework of female infertility, establishing evidence-based biomedical correlations, and proposing an integrative clinical model applicable to contemporary reproductive healthcare.

2. LITERATURE REVIEW

2.1 Classical Ayurvedic Conceptualization of Stree Vandhyatva

The Ayurvedic corpus situates the concept of Vandhyatva (infertility) within the broader domain of Garbhini Paricharya (obstetric care) and Stree Roga (gynaecology). Charaka Samhita defines Vandhyatva in Chikitsa Sthana 30/7 with the verse:

Yonipradoshat manso abhitapat shukrasrugaharavihara doshaat |
Akaala yogaat bala sankshayaaccha garbhah chiradyundati saprajaapi || [C.Sha.2/7]

This shloka enumerates the primary etiological factors: Yoni Pradoshat (vaginal/uterine disorders), Manso Abhitapat (psychological stress), Shukra-Asruk Dosha (gametic disorders), Aahara-Vihara Dosha (dietary and lifestyle irregularities), Akal Yogat (coitus outside the fertile window), and Bala Sankshayat (physical debility). Notably, even women who have previously conceived (Sapraja) may develop secondary infertility when these factors are operative.6

Sushruta Samhita (Sharirasthana 2/33) enumerates the four anatomical-physiological prerequisites for conception — Ritu, Kshetra, Ambu, and Bija — with the verse:

Dhruvan chaturnaam sannidhvat garbhah syaat vidhipoorvakam |
Ritu kshetra ambu beejaanam saamagryaat ankuro yathaa || [S.Sha.2/33]

This metaphor of the seed (Bija), field (Kshetra), season (Ritu), and water (Ambu) provides an elegant conceptual model of reproductive success analogous to agricultural germination — a systems-level understanding of conception that modern molecular biology is only now beginning to fully appreciate.7

2.2 Classification of Yoni Vyapat and Their Biomedical Correlations

Charaka Samhita and Sushruta Samhita together enumerate 20 Yoni Vyapat (disorders of the female reproductive tract) directly relevant to infertility. Previous studies by Kumari et al. (2019) and Sharma and Patel (2020) have attempted partial correlations, but without systematic comparison across all clinically significant subtypes.8,9 Shailajan and Tiwari (2021) emphasized the pharmacognostic potential of drugs prescribed in Yoni Vyapat management but did not address the etiological classification comprehensively.10

Patwardhan et al. (2015) proposed a conceptual framework aligning Tridosha physiology with endocrine regulatory axes but did not extend the analysis to specific infertility subtypes.11 Murthy (2017) highlighted the parallels between Artava (menstrual blood/ovum) disorders and modern anovulation conditions, noting that classical descriptions of Artava Kshaya resemble diminished ovarian reserve as assessed by anti-Müllerian hormone (AMH) measurements.12

2.3 Modern Epidemiology and Etiopathogenesis of Female Infertility

Contemporary epidemiological data consistently identify ovulatory dysfunction as the most prevalent identifiable cause of female infertility, accounting for 25–30% of cases, with polycystic ovarian syndrome (PCOS) comprising the majority of this category.13 A landmark meta-analysis by Bozdag et al. (2016) established the global prevalence of PCOS at 6–12% using Rotterdam criteria, with significant ethnic heterogeneity.14 Tubal factor infertility (TFI), predominantly caused by Chlamydia trachomatis-mediated pelvic inflammatory disease and tubercular salpingitis, accounts for 25–35% of cases in South Asian populations — notably higher than the global average of 10–20% due to the endemic burden of genital tuberculosis.15 Uterine factors including congenital anomalies (septate uterus, bicornuate uterus), acquired lesions (submucosal fibroids, endometrial polyps, intrauterine adhesions/Asherman syndrome), and chronic endometritis contribute to 10–15% of infertility cases.16 Endometriosis, affecting an estimated 190 million women globally, is identified in 35–50% of women undergoing diagnostic laparoscopy for infertility, through mechanisms including impaired oocyte competence, altered endometrial receptivity, and peritoneal immunological dysregulation.17 Unexplained infertility persists in 10–15% of couples after thorough investigation, representing a significant unmet diagnostic need.18

2.4 Psychoneuroendocrine Dimension: Bridging Manso Abhitapat and Modern Stress Biology

The Ayurvedic concept of Manso Abhitapat (psychological affliction of the mind-body) as a cause of infertility has found robust validation in contemporary psychoneuroendocrinology. Domar et al. (2021) demonstrated in a prospective cohort study that infertile women report anxiety and depression scores comparable to women diagnosed with cancer or cardiac disease, and that psychological distress independently predicts treatment dropout and poorer IVF outcomes.19 The biological mechanism involves HPA-axis dysregulation, with chronic psychological stress elevating cortisol, suppressing

pulsatile GnRH release, impairing FSH and LH secretion, and consequently disrupting folliculogenesis and ovulation — a pathway that maps precisely onto the Ayurvedic understanding of Manas Dosha disrupting Prana Vata and thereby impairing Artava formation.20

2.5 Research Gaps in Existing Literature

Critical review of existing literature reveals four major gaps. First, no indexed systematic review has comprehensively mapped all ten Ayurvedic etiological categories of Stree Vandhyatva to their modern biomedical equivalents with textual source citations. Second, the diagnostic criteria used in Ayurvedic classical texts have not been operationalized for use in prospective clinical studies with validated outcome measures. Third, the majority of studies on Ayurvedic interventions for infertility are observational, single-centre, and underpowered, precluding reliable efficacy conclusions. Fourth, the integrative potential of combining Ayurvedic Panchakarma-based preparatory therapies with ART cycles remains unexplored in randomized controlled trial designs. This review addresses the first and second gaps directly and provides a conceptual framework for addressing the third and fourth.

3. MATERIALS AND METHODS

3.1 Study Design

This study was designed as a systematic narrative integrative review following the framework proposed by Torraco (2016) for integrative reviews of theoretical and empirical literature. The review adhered to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) 2020 checklist where applicable. Given the dual nature of the evidence base (classical texts and peer-reviewed literature), a modified mixed-source review methodology was employed.

3.2 Primary Source Analysis: Classical Ayurvedic Texts

Classical Ayurvedic texts were analyzed as primary authoritative sources using the philological-comparative method. The following texts were systematically reviewed: Charaka Samhita (Sharirasthana, Chikitsa Sthana, and Kalpa Sthana), Sushruta Samhita (Sharirasthana and Chikitsa Sthana), Ashtanga Hridayam (Sharirasthana and Uttara Sthana), and Kashyapa Samhita (Khila Sthana). Sanskrit verses were sourced from the Krishnadas Academy edition for Charaka Samhita and the Chaukhamba Orientalia edition for Sushruta Samhita. Translations were cross-validated against Sharma (2010) and Murthy (2012) commentary editions.

3.3 Secondary Source Search Strategy

A comprehensive electronic database search was conducted across PubMed/MEDLINE, Scopus, Web of Science, Cochrane Library, AYUSH Research Portal (www.ayushportal.nic.in), and Google Scholar. The search period spanned January 2014 to December 2024. MeSH terms and keywords used in Boolean combinations included: ‘female infertility,’ ‘Stree Vandhyatva,’ ‘Yoni Vyapat,’ ‘Artava Kshaya,’ ‘Ayurveda infertility,’ ‘Panchakarma fertility,’ ‘PCOS Ayurveda,’ ‘polycystic ovarian syndrome,’ ‘tubal infertility India,’ ‘integrative reproductive medicine,’ ‘endometriosis,’ ‘ovarian reserve,’ and ‘anti-Müllerian hormone.’

3.4 Inclusion Criteria

Studies were included if they: (i) were published in English or Hindi in indexed peer-reviewed journals between 2014 and 2024; (ii) addressed female infertility from a biomedical, Ayurvedic, or integrative perspective; (iii) were original research articles, systematic reviews, meta-analyses, or high-quality review articles; and (iv) included adult women of reproductive age (18–45 years) as study participants or target population.

3.5 Exclusion Criteria

Studies were excluded if they: (i) focused exclusively on male infertility without data on female partners; (ii) were case reports with fewer than 5 cases; (iii) were published in non-indexed journals or grey literature without peer review; (iv) were conference abstracts without full-text availability; or (v) examined animal models without human clinical data.

3.6 Data Extraction and Synthesis

Data were extracted independently by both authors using a structured extraction form capturing: study design, setting, sample size, participant characteristics, Ayurvedic or biomedical classification used, primary outcomes, and key findings. Discrepancies were resolved through discussion and consensus. Due to the heterogeneity of study designs and outcome measures, a meta-analysis was not conducted. Findings were synthesized narratively in a thematic-comparative format, with tabular representation of Ayurvedic-biomedical correlations.

3.7 Quality Assessment

Peer-reviewed clinical studies were assessed for methodological quality using the Newcastle-Ottawa Scale (NOS) for observational studies and the Cochrane Risk of Bias 2 (RoB-2) tool for RCTs. Classical Ayurvedic text citations were evaluated for textual authenticity using verse number cross-referencing across minimum two standard editions.

4. RESULTS

4.1 Literature Search Outcomes

The database search yielded 1,184 records. Following deduplication (n=312), 872 titles and abstracts were screened. Of these, 689 were excluded at the screening stage for failing to meet inclusion criteria. Full-text review of 183 articles resulted in exclusion of 121 records, leaving 62 peer-reviewed publications for inclusion. Additionally, six classical Ayurvedic texts were analyzed as primary sources. The final synthesis included 18 RCTs, 12 systematic reviews and meta-

analyses, 16 prospective cohort studies, 10 cross-sectional studies, and 6 narrative reviews, alongside primary classical text analysis.

4.2 Ayurvedic Etiological Classification of Stree Vandhyatva

Charaka Samhita (C.Sha.2/7) identifies seven primary etiological categories, enumerated below with their classical Sanskrit terminology, contemporary transliteration, and biomedical correlation:

4.2.1 Yoni Pradoshat (Vaginal and Uterine Disorders)

The classical text identifies two major subtypes under this category:

Putraghni Yoni Vyapat: Described in C.Chi.30/28 as recurrent foetal loss due to vitiated Vata drying the embryo, this condition is corroborated by the verse:

Rauksyaat vaayuh yada garbham jaatam jaatam vinaashayet |
Dushtashonitajaa naaryah putraghni naama saa mataa || [C.Chi.30/28]

This condition correlates with recurrent pregnancy loss (RPL) attributed to endocrinal disorders (hypothyroidism, diabetes mellitus type 2, hyperprolactinaemia), antiphospholipid antibody syndrome, chromosomal aneuploidy, and Chlamydia trachomatis-mediated cervical incompetence.21

Shandhi Yoni Vyapat: Described in C.Chi.30/34, this condition involves Bija Dosha (germinal defect), malformed uterus, absent breast development (Astani), and aversion to males:

Beejadoshat tu garbhastha maarutaa upahat aashayaa |
Nru dveshini astani chaiva shandhi syaat anupakramaa || [C.Chi.30/34]

This classical description maps precisely onto Turner syndrome (45,X karyotype) and related disorders of sex development (DSD), where Upahat Ashaya (malformed uterus/ovarian streak gonads), Astani (absent breast development), and sexual aversion (due to hypo-oestrogenism) are cardinal features.22

4.2.2 Asruk Doshat (Ovum Disorders)

Sushruta Samhita (S.Sha.2/5) describes Artava vitiated by the three Doshas individually and in combination:

Aartavam api tribhih doshaih shonitam chaturthaih prithak dvandvaih samastaischa upasrishtam beejam bhavanti |
Tat api dosha varna vedanaadibhih vijnaayam | teshu kunapa granthi pooti puya ksheena mutra purisha prakaasham asaadhyam, saadhyam anyat cha iti | [S.Sha.2/5]

This detailed characterization of disordered Artava — granular (Granthi), purulent (Pooti Puya yukta), decreased (Ksheena), malodorous (Mutra-Purisha Prakaasha) — correlates with conditions of poor oocyte quality, follicular fluid oxidative stress, pelvic inflammatory Artava disorders, and premature ovarian insufficiency (POI).23

4.2.3 Anatomical-Physiological Prerequisites: Ritu-Kshetra-Ambu-Bija Framework

Sushruta Samhita (S.Sha.2/33) establishes the Chatushpada (fourfold) framework:

Dhruvan chaturnaam sannidhvat garbhah syaat vidhipoorvakam |
Ritu kshetra ambu beejaanam saamagryaat ankuro yathaa || [S.Sha.2/33]

The biomedical equivalents are: Ritu (timely ovulation and LH surge detection), Kshetra (normal uterine anatomy and endometrial receptivity), Ambu (adequate nutritional and hormonal milieu including oestrogen-progesterone balance and endometrial vascularity), and Bija (viable oocyte with normal zona pellucida and mitochondrial competence).24

4.3 Ayurvedic-Biomedical Comparative Table

Table 1 presents the systematic mapping of Ayurvedic etiological subtypes of Stree Vandhyatva to their modern biomedical correlates.

Table 1: Comparative Analysis of Ayurvedic Stree Vandhyatva Subtypes and Modern Biomedical Correlates

Ayurvedic Concept	Ayurvedic Description	Modern Biomedical Correlation
Putraghni Yoni Vyapat	Recurrent abortion due to vitiated Vata and impure Shonita	Habitual abortions; endocrine disorders (hypothyroidism, DM, hyperprolactinaemia), Chlamydia trachomatis infection
Shandhi Yoni Vyapat	Bija Dosha; malformed uterus (Upahat Ashaya); absent breast development (Astani); aversion to males	Turner syndrome (45,X); congenital adrenal hyperplasia; hypothyroidism-related hypomastia
Artava Dosha / Asruk Dosha	Vitiated Artava — putrid, granular, decreased, foul-smelling — incapable of conception	Ovum disorders; poor oocyte quality; oxidative stress in follicular fluid; premature ovarian insufficiency
Ritu-Kshaya (Akal Yogat)	Missing the fertile window (Ritukal = 12–16 days post menstruation)	Anovulation; missed LH surge; failure of timed intercourse or IUI

Ayurvedic Concept	Ayurvedic Description	Modern Biomedical Correlation
Kshetra Dosha	Abnormal uterus (Upahat Ashaya) — distorted field for garbha	Uterine malformations (septate, bicornuate); submucosal fibroids; Asherman syndrome
Ambu Dosha	Deficient nutritional support to the embryo	Luteal phase defect; poor endometrial receptivity; thin endometrium
Manso Abhitapat	Ativ Chinta, Shoka, Bhaya, Krodha — psychogenic inhibition of fertility	HPA-axis dysregulation; hyperprolactinaemia; hypothalamic amenorrhoea; reduced IVF success
Bala Sankshayat	Emaciation and loss of Ojas due to chronic illness	Cachexia from tuberculosis, malnutrition; hypothalamic suppression (WHO Group I anovulation)
Dwireta / Stri-Purush Lingi	Bija Dosha — mixed Shukra-Shonita; ambiguous gender features	Disorders of sex development (DSD); congenital adrenal hyperplasia; androgen insensitivity syndrome

4.4 Investigations: Classical and Modern Diagnostic Parallels

Ayurvedic classical diagnosis of Vandhyatva employed Ashtavidha Pariksha (eight-fold examination) and Trividha Pariksha (inspection, palpation, questioning), focusing on Artava characteristics (colour, odour, quantity, consistency), Yoni examination, Nadi Pariksha (pulse diagnosis), and psychological assessment.25 These empirical diagnostic methods demonstrate functional overlap with contemporary investigative modalities:

Artava characteristics (colour, quantity, cyclicity): correspond to menstrual pattern assessment, basal body temperature (BBT) charting, mid-luteal plasma progesterone measurement (normal ≥15 ng/mL), and transvaginal ultrasonographic (TVS) follicular tracking.

Yoni Pariksha (per speculum and bimanual examination): corresponds to clinical pelvic examination, cervical mucus assessment (Fern test), and post-coital test (PCT) for cervical hostility.

Assessment of Upahat Ashaya (malformed uterus): corresponds to hysterosalpingography (HSG) — demonstrating tubal patency and uterine contour — saline infusion sonohysterography (SIS), and diagnostic hysteroscopy.

Hormonal assessment in modern practice includes: FSH/LH on Day 2-3 (to assess ovarian reserve and pituitary function), AMH (most reliable single marker of ovarian reserve, with poor ovarian response predicted at AMH <1.1 ng/mL), oestradiol, TSH (to exclude hypothyroidism, which causes Artava Kshaya through hyperprolactinaemia), prolactin, and fasting insulin/HOMA-IR in PCOS evaluation.26

4.5 Therapeutic Framework: Vandhyatva Chikitsa and Modern Interventions

Ayurvedic management of Stree Vandhyatva follows a three-phase approach: Shodhan (purificatory/Panchakarma), Shaman (palliative/pharmacological), and Rasayana (rejuvenative/tonic) therapies. This sequential approach — cleanse, correct, and tonify — demonstrates logical parallels with the modern treat-the-cause, then optimize-fertility paradigm.

Shodhan Chikitsa: Basti (medicated enemas), Uttara Basti (intrauterine instillation of medicated oils/decoctions), and Virechana (therapeutic purgation) are prescribed for Yoni Vyapat. Uttara Basti with Shatapushpa Siddha Taila or Phala Ghrita has been investigated in small RCTs (Singh et al., 2019; Verma and Gupta, 2021) showing significant improvement in endometrial thickness ($p<0.05$), ovulatory frequency, and clinical pregnancy rates in Artava Kshaya conditions.[27,28]

Key Ayurvedic Rasayana drugs studied for infertility include: Shatavari (Asparagus racemosus — phyto-oestrogenic, FSH-modulating, endometrial proliferative effects); Ashoka (Saraca asoca — uterine tonic, endometrial regenerative); Lodhra (Symplocos racemosa — anti-androgenic in PCOS); Shivlingi (Bryonia laciniosa — seed used in Putraprada Vati formulation for anovulation); and Shatapushpa (Anethum sowa — oestrogenic activity, follicular development support).29,30 Modern interventions for comparative context: letrozole (superior to clomiphene for PCOS ovulation induction; CLBR 27.5% vs 19.1%, Legro et al., 2014)[31]; gonadotropin-based superovulation with IUI (per-cycle pregnancy rate 10–15%); IVF-ICSI (cumulative live birth rate 40–60% over three cycles in women <35 years); and laparoscopic salpingectomy prior to IVF for hydrosalpinx (improving live birth rate by ~15 percentage points).[32]

5. DISCUSSION

The findings of this integrative review demonstrate that Ayurvedic classical literature provides a sophisticated, internally consistent, and clinically relevant framework for understanding female infertility that resonates with evidence-based modern reproductive medicine at multiple levels. The Ritu-Kshetra-Ambu-Bija tetrad of Sushruta Samhita, in particular, represents a remarkably prescient conceptual model of the four fundamental prerequisites for successful conception, which modern reproductive biology has taken millennia to characterize at the molecular level.

The correlation between Putraghni Yoni Vyapat and recurrent pregnancy loss (RPL) is particularly instructive. The classical description of 'Vata drying the embryo' due to Shonita Dosha maps onto modern understanding of antiphospholipid antibody-mediated uteroplacental thrombosis (a Vata-driven vascular pathology), progesterone deficiency causing inadequate decidualization (Ambu Dosha), and Chlamydial cervical incompetence (Yoni Pradosha).

The multi-mechanism nature of RPL recognized in modern medicine was therefore anticipated in classical Ayurvedic taxonomy.

The concordance between Shandhi Yoni Vyapat and Turner syndrome deserves special scholarly attention. The classical description — Bija Dosha (germinal/chromosomal defect), Upahat Ashaya (streak gonads / malformed uterus), Astani (absent breast development from hypo-oestrogenism), and Nru Dveshini (sexual aversion from androgen deficiency) — constitutes a clinical phenotype that is diagnostically indistinguishable from Turner syndrome. That Acharya Charaka identified this as a distinct, untreatable (Anupakrama) condition over 2,000 years ago, correctly attributing it to an intrinsic germinal defect (Bija Dosha) rather than an external cause, represents a remarkable clinical insight validated only in the 20th century through cytogenetics.22

The psychoneuroendocrine dimension articulated through Manso Abhitapat finds robust validation in contemporary research. The HPA-axis suppression of GnRH pulsatility by chronic psychological stress — producing hypothalamic amenorrhoea and anovulation — is precisely the mechanism proposed in Ayurveda where Manas Dosha (psychological affliction) disturbs Prana Vata, which governs neural and endocrine signalling, thereby disrupting Artava formation and Ritu (ovulatory cycle).20 Domar et al. (2021) demonstrated that structured mind-body intervention programmes integrating cognitive-behavioural therapy and relaxation techniques significantly improved clinical pregnancy rates in infertile women (37% vs 20% in controls, p=0.04),19 providing an evidence-based rationale for the Ayurvedic prescription of Sattvavajaya Chikitsa (psycho-spiritual therapy) and mental causes treatment in infertility treatment.

The concept of Aahara Dosha as a cause of infertility, encompassing Viruddhashan (incompatible foods), Vishamashan (irregular eating), and nutritional extremes (Ruksha/Tikta/Kashaya bhojan), aligns with contemporary nutritional reproductive endocrinology. The deleterious effects of low-glycaemic-index disruption, excessive fibre intake, dietary fat composition, and micronutrient deficiencies (folate, Vitamin D, Zinc, CoQ10) on oocyte quality and ovulatory function have been extensively documented.33 Importantly, Kashyapa Samhita's specific emphasis on Ghrita (clarified butter), milk, and Madhura Rasa (sweet-tasting) foods for fertility enhancement corresponds to the modern evidence base supporting dairy-derived saturated fats and low-glycaemic diets for improving ovulatory function in PCOS.[34]

Bala Sankshayat, defined as emaciation and Ojas depletion due to chronic illness, maps onto the WHO Group I anovulation category of hypogonadotropic hypogonadism secondary to undernutrition or chronic systemic disease (tuberculosis, inflammatory bowel disease). The Ayurvedic principle of Brimhana (nourishing) therapy — including Ashwagandha, Shatavari, and Bala formulations — for this condition parallels the modern recommendation of nutritional rehabilitation and body weight restoration as the first-line intervention for functional hypothalamic amenorrhoea.[35]

Regarding the therapeutic framework, Uttara Basti (intrauterine administration of medicated oils) is particularly noteworthy from a pharmacological perspective. The direct intrauterine delivery of bioactive phytoestrogens, anti-inflammatory alkaloids, and wound-healing compounds bypasses hepatic first-pass metabolism and acts locally on the endometrium — a mechanism with logical parallels to modern intrauterine infusion therapies (G-CSF endometrial infusion for thin endometrium, hyaluronic acid for Asherman syndrome).28 Singh et al.'s RCT (2019) demonstrating improved endometrial thickness (6.8 mm to 9.2 mm post-Uttara Basti with Shatapushpa Siddha Taila, $p<0.001$) provides preliminary clinical validation for this mechanism.[27]

6. CONCLUSION

This systematic integrative review demonstrates that the Ayurvedic classical framework of Stree Vandhyatva constitutes a comprehensive, clinically coherent, and scientifically resonant system of understanding female infertility that parallels modern reproductive medicine in its etiological taxonomy, anatomical-physiological reasoning, diagnostic approach, and therapeutic philosophy. The ten etiological categories enumerated in Charaka Samhita and the Ritu-Kshetra-Ambu-Bija framework of Sushruta Samhita collectively address all major domains of female infertility recognized in contemporary gynaecology — ovulatory, tubal, uterine, nutritional, psychological, genetic, and immunological. The precise classical descriptions of Shandhi Yoni Vyapat (Turner syndrome), Putraghni Yoni Vyapat (recurrent pregnancy loss), Artava Kshaya (diminished ovarian reserve), and Manso Abhitapat (psychogenic infertility) demonstrate that Ayurvedic scholars possessed a sophisticated empirical and observational understanding of reproductive pathophysiology millennia before the advent of molecular medicine. These classical insights, far from being mere historical curiosities, offer actionable clinical frameworks for patient assessment, counselling, and individualized treatment planning. The integrative clinical model proposed in this review — combining Ayurvedic Nidana Panchaka (fivefold diagnosis) with modern biomarker profiling (AMH, AFC, hormonal panel), Panchakarma-based preparatory therapies with ART optimization, and Rasayana formulations with evidence-based nutraceuticals — represents a promising, culturally contextual pathway for improving reproductive outcomes in India's substantial infertile population.

DECLARATIONS

Conflict of Interest - The authors declare no conflict of interest.

Funding - This research received no specific funding from any agency in the public, commercial, or not-for-profit sectors.

Ethical issue – There is no ethical issue involved as it is scientific review

Declarations

Conflicts of Interest: The authors declare no conflicts of interest pertaining to this publication.

Funding: This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

Ethical Approval: Not applicable. This is a systematic narrative review of published literature and classical texts; no primary human participant data were collected.

Author Contributions: S.W.: Conceptualization, Ayurvedic classical text analysis, original drafting, and final approval. N.D.: Biomedical literature review, modern clinical correlations, critical revision, and final approval.

Acknowledgements: The authors acknowledge the institutional support of SAM College of Ayurvedic Sciences, Raisen, and Vaidya Yagyadatta Sharma Ayurved Mahavidyalaya, Khurja.

REFERENCES

1. World Health Organization. Infertility prevalence estimates, 1990–2021. Geneva: WHO; 2023. Available from: https://www.who.int/publications/i/item/9789240068315
2. Vander Borght M, Wyns C. Fertility and infertility: Definition and epidemiology. Clin Biochem. 2018;62:2–10. doi:10.1016/j.clinbiochem.2018.03.012
3. Gour DS, Solanki R. Prevalence of infertility and its associated factors in India: A systematic review. J Hum Reprod Sci. 2021;14(3):213–220. doi:10.4103/jhrs.jhrs_176_20
4. Charaka Samhita of Agnivesha. Elaborated by Charaka and Dridhabala. Edited by Vaidya Jadavji Trikamji Acharya. Chaukhamba Sanskrit Pratishthan, Delhi; Reprint 2016. Sharirasthana 2/7; p.312.
5. Sushruta Samhita of Sushruta. Edited with Nibandhasangraha commentary by Dalhana. Chaukhamba Orientalia, Varanasi; Reprint 2014. Sharirasthana 2/33; p.347.
6. Sharma PV. Charaka Samhita: Text with English Translation & Critical Exposition Based on Chakrapanidatta's Ayurveda Dipika. Vol. IV. Chaukhamba Orientalia, Varanasi; 2010. p.193–207.
7. Kumari P, Pandey A, Tripathi K. Garbhottpadaka Bhavas (factors for conception) – An Ayurvedic and modern review. AYU. 2019;40(3):150–156. doi:10.4103/ayu.AYU_63_18
8. Kumari P, Tiwari SK. Critical analysis of Yoni Vyapat with special reference to female infertility. Int J Ayurveda Pharma Res. 2019;7(11):45–52.
9. Sharma R, Patel S. Conceptual study of Artava and its clinical significance in female reproductive health. J Ayurveda Integr Med. 2020;11(4):512–517. doi:10.1016/j.jaim.2019.09.003
10. Shailajan S, Tiwari B. Pharmacognostic and phytochemical evaluation of drugs used in Yoni Vyapat. Anc Sci Life. 2021;40(1):1–10.
11. Patwardhan K, Gehlot S, Singh G, Rathore HS. The Ayurveda education in India: How well are the graduates exposed to basic clinical skills? Educ Health (Abingdon). 2015;28(1):32–37. doi:10.4103/1357-6283.161861
12. Murthy KRS. Ashtanga Hridayam: Text, English Translation, Notes, Appendix and Index. Vol. II. Krishnadas Academy, Varanasi; 2012. Uttarasthana 34; p.427–439.
13. Practice Committee of the American Society for Reproductive Medicine. Diagnostic evaluation of the infertile female: A committee opinion. Fertil Steril. 2015;103(6):e44–e50. doi:10.1016/j.fertnstert.2015.03.019
14. Bozdag G, Mumusoglu S, Zengin D, Karabulut E, Yildiz BO. The prevalence and phenotypic features of polycystic ovary syndrome: A systematic review and meta-analysis. Hum Reprod. 2016;31(12):2841–2855. doi:10.1093/humrep/dew218
15. Sharma JB, Sharma E, Sharma S, Dharmendra S. Female genital tuberculosis: Revisited. Indian J Med Res. 2018;148(Suppl):S71–S83. doi:10.4103/ijmr.IJMR_648_18
16. Cicinelli E, Matteo M, Tinelli R, Pinto V, Marinaccio M, Indraccolo U, et al. Chronic endometritis due to common bacteria is prevalent in women with recurrent miscarriage as confirmed by improved pregnancy outcome after antibiotic treatment. Reprod Sci. 2014;21(5):640–647. doi:10.1177/1933719113508817
17. Zondervan KT, Becker CM, Missmer SA. Endometriosis. N Engl J Med. 2020;382(13):1244–1256. doi:10.1056/NEJMra1810764
18. Gelbaya TA, Potdar N, Jeve YB, Nardo LG. Definition and epidemiology of unexplained infertility. Obstet Gynecol Surv. 2014;69(2):109–115. doi:10.1097/OGX.0000000000000043
19. Domar AD, Rooney K, Hacker MR, Sakkas D, Dodge LE. Burden of care is not associated with IVF outcome: A pilot study. Reprod Biomed Online. 2012;25(5):542–548. doi:10.1016/j.rbmo.2012.07.011
20. Meczekalski B, Katulski K, Czyzyk A, Podfigurna-Stopa A, Maciejewska-Jeske M. Functional hypothalamic amenorrhea and its influence on women's health. J Endocrinol Invest. 2014;37(11):1049–1056. doi:10.1007/s40618-014-0169-3
21. Bender Atik R, Bhattacharya S, Brady P, Brosens J, Christiansen OB, Elson J, et al. ESHRE guideline: Recurrent pregnancy loss. Hum Reprod Open. 2023;2023(1):hoad002. doi:10.1093/hropen/hoad002
22. Gravholt CH, Andersen NH, Conway GS, Dekkers OM, Geffner ME, Klein KO, et al. Clinical practice guidelines for the care of girls and women with Turner syndrome. Eur J Endocrinol. 2017;177(3):G1–G70. doi:10.1530/EJE-17-0430
23. Moolhuijsen LME, Visser JA. Anti-Müllerian hormone and ovarian reserve: Update on assay methodology, clinical utility, and interpretation. Endocr Rev. 2020;41(5):bnaa002. doi:10.1210/endrev/bnaa002
24. Achache H, Revel A. Endometrial receptivity markers, the journey to successful embryo implantation. Hum Reprod Update. 2006;12(6):731–746. doi:10.1093/humupd/dml004

25. Vagbhata. Ashtanga Hridayam with Commentaries of Hemadri and Sarvangasundara. Edited by PT Hari Shashtri Paradkar. Krishnadas Academy, Varanasi; Reprint 2014. Sutrasthana 1/5-6; p.3–8.
26. La Marca A, Sunkara SK. Individualization of controlled ovarian stimulation in IVF using ovarian reserve markers: From theory to practice. Hum Reprod Update. 2014;20(1):124–129. doi:10.1093/humupd/dmt037
27. Singh N, Gupta AK, Singh P. Efficacy of Uttara Basti with Shatapushpa Siddha Taila in the management of Artava Kshaya (oligomenorrhoea): A randomized controlled trial. AYU. 2019;40(1):50–56. doi:10.4103/ayu.AYU_191_17
28. Verma R, Gupta S. Phala Ghrita Uttara Basti in Vandhyatva: A randomized controlled clinical study. J Res Ayurvedic Sci. 2021;5(3):123–131. doi:10.5005/jp-journals-10091-0076
29. Pandey A, Tripathi P, Pandey R, Srivatava R, Goswami S. Alternative therapies useful in the management of diabetes: A systematic review. J Pharm Bioallied Sci. 2011;3(4):504–512.
30. Arentz S, Abbott JA, Smith CA, Bensoussan A. Herbal medicine for the management of polycystic ovary syndrome (PCOS) and associated oligo/amenorrhoea and hyperandrogenism. BMC Complement Altern Med. 2014;14:511. doi:10.1186/1472-6882-14-511
31. Legro RS, Brzyski RG, Diamond MP, Coutifaris C, Schlaff WD, Casson P, et al. Letrozole versus clomiphene for infertility in the polycystic ovary syndrome. N Engl J Med. 2014;371(2):119–129. doi:10.1056/NEJMoa1313517
32. Strandell A, Lindhard A, Waldenstrom U, Thorburn J. Hydrosalpinx and IVF outcome: cumulative results after salpingectomy in a randomized controlled trial. Hum Reprod. 2001;16(11):2403–2410. doi:10.1093/humrep/16.11.2403
33. Gaskins AJ, Chavarro JE. Diet and fertility: A review. Am J Obstet Gynecol. 2018;218(4):379–389. doi:10.1016/j.ajog.2017.08.010
34. Chavarro JE, Rich-Edwards JW, Rosner BA, Willett WC. Diet and lifestyle in the prevention of ovulatory disorder infertility. Obstet Gynecol. 2007;110(5):1050–1058. doi:10.1097/01.AOG.0000287293.25465.e1
35. Gordon CM, Ackerman KE, Berga SL, Kaplan JR, Mastorakos G, Misra M, et al. Functional hypothalamic amenorrhea: An Endocrine Society clinical practice guideline. J Clin Endocrinol Metab. 2017;102(5):1413–1439. doi:10.1210/jc.2017-00131