Review Article

DOI: 10.7860/JCDR/2026/80858.23124

Ayurveda Section

Panchakarma in Preconception Care: A Narrative Review on Its Efficacy, Success Rates, and Mechanisms in Enhancing Reproductive Health

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ABSTRACT

Ayurveda, the ancient life science, provides a holistic paradigm that balances mind, body, and spirit to attain health and avoid disease. *Panchakarma*, a basic *Ayurvedic* detoxification therapy, is traditionally used as a preconceptional remedy to cleanse the body, *Beeja Shuddhi* (purification of the seeds), enhancing reproductive health and fertility. Although it is well-established in *Ayurvedic* medicine, scientific evidence for *Panchakarma's* use in reproductive health is scarce, and more research is needed. The present review synthesises ancient *Ayurvedic* concepts with recent biomedical concepts on efficacy, success rate, and biological mechanisms of *Panchakarma* as a preconception care intervention. A narrative literature search on *Ayurveda*-based databases, integrative medicine databases, and reproductive health databases, such as experimental studies, clinical case reports, and previous reviews that examined the effect of *Panchakarma* on fertility, detoxification, hormonal homeostasis, and reproductive tissue health, was conducted. New evidence suggests that *Panchakarma* therapies control reproductive health by eliminating systemic toxins (*Ama*), *dosha* rebalancing (bioenergetic principles), and rejuvenating *Shukra Dhatu* (reproductive tissue). Clinical trials document improved sperm quality and menstrual health with *Panchakarma* therapies. Putative biological mechanisms include modulation of oxidative stress, inflammatory processes, and endocrine function, by modern theories of fertility optimisation. This review illustrates the integration of ancient *Ayurvedic* concepts and modern biomedical knowledge, suggesting *Panchakarma* as a holistic, preventive approach towards preconception care. However, well-designed clinical trials are needed to substantiate standard treatment protocols and affirm their efficacy in modern reproductive medicine.

Keywords: Detoxification, *Dosha* balance, Fertility support, Hormonal regulation, Integrative therapy, Seed purification

INTRODUCTION

Ayurveda, the so-called ancient science of life, is a holistic medicine system developed over 5,000 years ago in India. Its philosophy is to balance health's physical, mental, and spiritual dimensions [1]. Unlike conventional medicine, which isolates a single symptom or targets a specific organ, *Ayurveda* views health as a dynamic equilibrium between three main bioenergetic forces called *doshas*, *Vata*, *Pitta*, and *Kapha*, and the harmonious functioning of body tissues (*Dhatus*), waste products (*Malas*), and digestive fire (*Agni*). This holistic approach is directed towards treatment, of course, but also prevention, health promotion, and longevity [2].

Reproductive health is crucial in *Ayurveda* because it is the secret to perpetuating life and lineage. The very foundation of this concept is that of *Beeja Shuddhi*, or seed purification. '*Beeja'* means the reproductive seed sperm in the male and ovum in the female, and '*Shuddhi*' means purification or cleansing [3]. *Ayurveda* believes that the quality of the reproductive seed will determine the child's health, vitality, and happiness. Preconception care thus goes well beyond conception to provide the next generation with a healthy, fertile beginning [4]. This integrated care includes cleansing the body, balancing the mind, and controlling the lifestyle to maximise reproductive capacity [5].

Among *Ayurvedic* treatments, *Panchakarma* is a detoxification and rejuvenation treatment that serves as a foundation. Translated as "five actions," *Panchakarma* consists of treatments such as *Vamana* (therapeutic vomiting), *Virechana* (purging), *Nasya* (nasal delivery), *Basti* (medicated enema), and *Raktamokshana* (bloodletting). These treatments eliminate stored toxins (*Ama*), restore *doshic* balance, and revive body tissues. *Panchakarma* is traditionally employed as a preconception treatment to cleanse the body, improve tissue health, and augment physiological processes necessary for conception [6]. Recent clinical trials have reported positive outcomes following *Panchakarma* treatments, such as increased sperm count, motility, and quality in men, and normalisation of women's menstrual cycle and ovarian function. The findings step into the limelight of applying *Panchakarma* as a successful preconception therapy [7].

Over the last few decades, scientific interest has increased towards *Panchakarma*, with studies aimed at its application in chronic disease management, immune modulation, and systemic detoxification, specifically in preconception and reproductive health; however, it remains relatively underinvestigated in biomedical science [8]. This is when the global incidence of infertility and reproductive disorders due to environmental toxins, lifestyle, and oxidative stress continues to escalate. This narrative review uniquely combines ancient *Ayurvedic* wisdom with contemporary biomedical science, specifically in biochemical and molecular effects of *Panchakarma* on fertility. It combines contemporary knowledge on the modulation of oxidative stress, endocrine function, and immunity, and offers new knowledge on why *Panchakarma* works in reproductive health. Traditional interventions, such as *Panchakarma*, which are holistic, are promising strategies for treating these conditions. Its detoxification and rejuvenation actions are also amenable to modern constructs, optimisation, minimising oxidative damage, balancing inflammation, and hormonal regulation [9].

Modern reproductive problems are complex and multifactorial. Approximately 10-15% of all couples worldwide are infertile due to environmental, genetic, physiological, and psychosocial factors. Low fertility, poor sperm quality, and disrupted menstrual cycles are caused by toxins, physical inactivity, chronic stress, and nutritional deficiency. Although symptom-oriented traditional therapies

are utilised, complementary therapies that promote systemic homeostasis and overall health are increasingly popular [10].

Panchakarma implements the above principles through individualised treatment protocols specific to the patient's Prakriti (constitutional body type). Its biological mechanisms dovetail well with the latest fertility optimisation techniques, such as the neutralising effect on oxidative stress, control of inflammatory reactions, and optimisation of endocrine function—each playing a central role in reproductive health. *Panchakarma's* effect on the modulation of cytokines, the restoration of a hormonal balance, and tissue regeneration also mirrors the fundamental goals of the latest reproductive therapies [11]. The treatment is thought to purify some or all of the body channels (*Srotas*) for nutrient transport and waste removal and optimise the quality of and functioning in reproductive tissue, some of which is designated as *Shukra Dhatu*. This reproductive tissue is responsible for fertility. *Panchakarma* is often paired with *Rasayana* treatments (rejuvenation therapies) that enhance tissue regeneration, hormone balance, and mental well-being, all essential for conception and a healthy pregnancy [12].

Synergistic blending of traditional *Ayurvedic* information with contemporary biomedical science requires systematic investigation of *Panchakarma's* mechanism and clinical effectiveness. Recent studies have begun to examine its biochemical and molecular mechanisms, e.g., antioxidant activity, cytokine modulation, and endocrine control. Such evidence provides scientific rationale to *Panchakarma's* old accounts and suggests its application as an adjuvant to preconception care. However, review and critical appraisal of published literature would be required to prove efficacy, standardise treatment protocols, and enable evidence-based addition to current reproductive health care [13].

This review seeks to fill the gap by combining *Ayurvedic* principles, clinical evidence, and mechanistic insight into *Panchakarma* in preconception health. By presenting an integrative knowledge of the role of *Panchakarma* in optimizing reproductive well-being, this review will help develop integrative fertility management protocols that balance ancient principles and modern medicine. Although promising results have been documented, more rigorously controlled clinical trials are required to establish standardised treatment protocols and validate the efficacy of *Panchakarma* in modern reproductive health. Such evidence would enable it to be integrated into fertility practice, providing a balanced, holistic approach to reproductive health."

REVIEW OF LITERATURE

Current studies reflect the increasing importance of *Panchakarma* in promoting reproductive health through its cleansing, rejuvenative, and modulatory activities. *Panchakarma* has exhibited a remarkable beneficial effect in the condition of Oligospermia in male infertility by improving the sperm count and motility, and by increasing the semen quality and general semen parameters through combined detox and behavioral therapies. In cases of female infertility, such as PCOS and tubal blocks, Panchkarma therapies have provided encouraging evidence by resolving the hormonal imbalance and improving the function of reproductive organs. The concept of *Beeja Shuddhi* (seed purification) emphasises preconception care by enhancing reproductive vigor. The therapeutic function, such as modulation of cytokines and endocrine control, and systemic cleansing of *Panchakarma*, finds parallels in the reproductive aims today, such as lessening oxidative stress and inflammation. Herbal auxiliaries such as Triphala and *Nasya* Karma enhance the effectiveness in male and female reproductive disorders. *Panchakarma* provides a promising integrative intervention in reproductive medicine and needs advanced clinico-experimental evidence and standardization protocols for wider acceptance [14-25] as depicted in [Table/Fig-1].

Authors (Year)	Key Finding	Research Focus	Challenges/Limitations	Future Scope	Article Type
Chouhan A and Garg AK, (2021) [14]	Agrochemical exposure and preconception detoxification	Environmental effects on fertility	Limited data on environmental toxin exposure	Incorporating more global environmental studies	Review
Akshay ML and JS AK, (2024) [15]	*Ayurvedic* view of *Ksheenashukra* (*Oligospermia*) and male infertility	Male infertility and sperm quality improvement	Focused on male infertility, a lack of larger trials	Broader studies across multiple infertility causes	Original Research
Shindhe RR et al., (2024) [16]	*Ayurvedic* management of tubal block infertility and PCOS	*Ayurvedic* management of female infertility	Case study design with limited participants	Expanding studies on broader patient groups	Case Study
Suryawanshi GB and Mandalkar P. (2025) [17]	Role of *Panchakarma* in *Beeja Shuddhi*: An *Ayurvedic* Approach to Healthy Progeny	*Ayurvedic* detoxification for fertility optimization	Lack of standardised clinical evidence	Further clinical trials to solidify findings	Original Research
Rahm C (2025) [18]	Integration of traditional and natural therapies in OB-GYN	Holistic women's health and fertility	Limited clinical standardisation	Wider adoption and evidence-based integration	Review
Ji AM et al., (2025) [19]	*Ayurvedic* management improved sperm quality in *Oligospermia*	*Ayurvedic* treatment of male infertility	Case report design, small sample size	Larger clinical trials to validate efficacy	Case Study
Airi A and Pathak A, (2025) [20]	*Ayurveda's* preventive role in cancer and chronic diseases	Detoxification and rejuvenation therapies	Lack of large-scale epidemiological data	Expanding preventive strategies for reproductive health	Review
Alswaidi FM and Abualssayl AA (2025) [21]	*Ayurveda* is globally accepted and safe as a complementary therapy	Safety and global acceptance of Ayurveda	Regulatory challenges and heterogeneous quality	Standardised protocols and regulatory frameworks	Review
Yadav P (2025) [22]	*Rasayana* therapy supports longevity and youthful vitality	Rejuvenation and anti-ageing treatments	Limited mechanistic studies and clinical trials	Molecular studies and clinical validations	Review
Bairwa VK et al., (2025) [23]	Triphala is effective in the detoxification of tissue health	Herbal therapeutics in systemic detox	Variation in herbal preparations and dosages	Standardization and mechanistic exploration	Original Research
Iqbal T and Ahmed N, (2025) [24]	Exploring the therapeutic potential of herbal medicine in treating male infertility	Herbal medicine for male infertility	Lack of longitudinal studies	Expanded trials on specific herbal treatments	Review
Meher K et al., (2025) [25]	Role of *Nasya* Karma in hormonal imbalance and gynaecological disorders	*Nasya* Karma's role in reproductive health	Limited studies on *Nasya* Karma applications	Further research into mechanistic pathways in women's health	Review

[Table/Fig-1]: Literature review: *Ayurveda* and *Panchakarma* in reproductive health detoxification [14-25].

MATERIALS AND METHODS

Locating Data

A focussed narrative search was performed on online databases such as PubMed, Scopus, Google Scholar, and AYUSH repositories, applying Boolean operators: AND (to connect different concepts) and OR (to expand the search under the same concept). The search terms applied were *Panchakarma*, *Ayurveda*, preconceptional care, and reproductive health, and this provided an overall list of studies.

Data Collection: English-language publications, including clinical studies, case reports, reviews, and classical *Ayurvedic* texts published during the past two decades, were selected to ensure comprehensive coverage. The inclusion criteria are English-language articles published in the past 10 years, including clinical trials, case reports, reviews, and traditional *Ayurvedic* texts. These articles were chosen to present a balanced overview of current scientific evidence and Classical *Ayurvedic* perspectives towards reproductive health and preconception care followed by exclusion criteria which are: articles in languages other than English, articles more than 15 years old, except in a few cases, and articles that were not particularly on *Panchakarma*, *Ayurveda*, preconception care, or reproductive health were excluded to keep the paper specific and to provide up-to-date information.

Synthesising Data: The data extracted were critically evaluated and synthesised narratively to combine the conventional *Ayurvedic* wisdom and contemporary biomedical science to form evidence trends, limitations, and future research directions.

RESULT

Detoxification and Re-establishment of *Doshic* Equilibrium by *Panchakarma*

Panchakarma, one of the basic therapies of *Ayurveda*, is employed primarily to eliminate the deposited *Ama*, the end products of metabolism that are not metabolised and are deposited in the body. Deposition of *Ama* in reproductive health is stated to derange the subtle channels (*Srotas*) and interfere with the three *doshas*: *Vata*, *Pitta*, and *Kapha*. These *doshas* are the main regulatory forces of the body, and their derangement causes infertility and the quality of reproductive tissue (*ShukraDhatu*) [26].

The *Panchakarma* cleansing treatments *Vamana* (therapeutic emesis), *Virechana* (purging), *Nasya* (nasal therapy), *Basti* (medicated enemas), and *Raktamokshana* (bloodletting) address excesses of *dosha* and eliminate blocked channels, reestablishing transportation of nutrients and end product removal of metabolism. This procedure optimises the internal conception and embryonic development environment by eliminating *Ama*, enhancing reproductive function, and balancing hormones [27]. According to contemporary biomedical science, *Ama* is synonymous with the buildup of oxidative stress, inflammatory mediators, and metabolic toxins, all of which are linked to defective fertility. With the onset of *Panchakarma*, oxidative damage and systemic inflammation are avoided, and an optimal condition of reproductive well-being is restored. Furthermore, *doshic* equilibrium reestablishes homeostasis, which is necessary for endocrine control and gamete quality [28,29]. As per clinical trials, *Panchakarma* reduces oxidative stress and inflammation biomarkers, substantiating its application in optimizing fertility in preconception care [30] as shown in [Table/Fig-2] [23-30].

Authors	*Panchakarma* and Detoxification in Reproductive Health	*Doshic* Balance and *Ama* Elimination	Therapeutic Benefits for Fertility	Integration with Preconception Care
Bairwa VK et al., (2025) [23]	Demonstrates Triphala's role in systemic detox and tissue purification.	It supports the removal of *Ama* through herbal synergy and enhances *Panchakarma*.	Contributes to reproductive vitality via improved internal environment.	Suggests standardisation of Triphala use in preconception regimens.
Iqbal T and Ahmed N (2025) [24]	Explores herbal treatments as complements to *Panchakarma* for male reproductive detox.	Herbal therapies contribute to doshic balance via targeted male infertility treatment.	Reports therapeutic benefits for male fertility restoration.	Encourages further trials on herbal-*Panchakarma* synergy in preconception strategies.
Kumar M and Bhardwaj AK (2024) [26]	Scientific study on *Basti* as the core *Panchakarma* method for reproductive detoxification.	*Basti* is shown to remove *Ama* and restore doshic balance.	Enhances fertility by cleansing reproductive organs.	Advocates *Basti* in preconception protocols for systemic health.
Panda AK and Kar S (2023) [27]	Detox therapies regulate liver and kidney function.	Indirect *Ama* clearance supports doshic harmony.	Fertility benefits via improved metabolic and organ function.	Supports *Panchakarma* as a preventive adjunct therapy.
Gerson S (2001) [28]	Conceptual differentiation of *Ayurvedic* detoxification in reproductive wellness.	Emphasises the foundational importance of *Ama* removal for doshic health.	Lays the theoretical groundwork for reproductive health improvement.	Frames detox as an essential part of a preconception wellness strategy.
Meena PK and Meena S (2023) [29]	Home-based *Panchakarma* practices for cleansing and reproductive benefit.	*Dosha* balance achieved through accessible *Panchakarma* interventions.	Reports improvements in fertility markers through detox.	Recommends *Panchakarma* prior to conception.
Bhandari R (2025) [30]	Links *Panchakarma* to stress detoxification and improved reproductive outcomes.	Psychological detox contributes to emotional *doshic* balance.	Stress relief has been shown to support hormonal equilibrium and fertility.	Promotes holistic integration of *Panchakarma* in preconception care.

[Table/Fig-2]: Key insights on *Panchakarma* detoxification and reproductive health [23-30].
Description of *Panchakarma*'s detoxifying effect on *doshic* balance and enhancement of reproductive health.

Improvement of Reproductive Tissue (*Shukra Dhatu*) and Fertility Results

Shukra Dhatu in *Ayurveda* is the reproductive tissue responsible for producing healthy sperm and ovum and is the key to fertility and virility of the offspring [15,17]. Shukra quality and quantity directly influence the reproductive success and health of the offspring. *Panchakarma* therapy is directed towards nourishing and energising *Shukra Dhatu* by removing toxins (*Ama*) and restoring *doshic* equilibrium, thus increasing the vitality and function of the reproductive tissues [16,19,31]. The *panchakarma* treatment regimen includes therapies that cleanse the body, tissue regeneration, and metabolic optimization. Detoxification improves circulation and delivery of nutrients to the reproductive organs, supporting spermatogenesis and oogenesis. The holistic treatment also improves systemic balance of reproductive organs' hormones and gamete quality, improving sperm motility, concentration, and ovum quality [17,32]. *Virechana* (purging), one of the main *Panchakarma* treatments, removes excess *Pitta dosha* and toxins, improves liver function, digestive activity, and metabolic function overall, and directly helps reproductive health. *Basti* (medicated enema) also rectifies *Vata dosha* and enables proper nutrition of *Shukra Dhatu*, benefiting reproductive tissue health and fertility [19,33].

Contemporary research attributes such long-standing effects to physiological improvement following *Panchakarma*. Gains in semen parameters, such as sperm count, motility, and morphology, have been shown following *Panchakarma* therapy in research. Such benefits are explained by decreases in oxidative stress and inflammatory markers, which otherwise can harm reproductive cells [25,34]. Likewise, enhanced ovarian function and endocrine

regulation have been reported, consistent with the *Ayurvedic* theory of tissue regeneration. *Panchakarma* also has effects beyond physical purification to stress reduction, neuroendocrine regulation, and fertility determinants. *Panchakarma* maintains endocrine homeostasis for ovulation and spermatogenesis by restoring the neurohormonal axis. In short, *Panchakarma* enhances *Shukra Dhatu* through cleansing and rejuvenating systems, expressed as quantifiable gains in reproductive tissue function and fertility, uniting ancient *Ayurvedic* theory and contemporary biomedical science [25,35].

Modulation of Oxidative Stress and Inflammatory Pathways

Oxidative stress and inflammation are known etiologies for impaired fertility, which result in damage to reproductive cells and hormonal disturbance. *Ama* (toxins) buildup in *Ayurveda* is known to result in Srotorodha (obstruction of channels of the body) and thus *Agni* (digestive and metabolic fire) imbalance and general malfunction. *Panchakarma* therapy achieves this by removing obstructions, reestablishing body physiology, and reducing the internal cause of oxidative and inflammatory stress [15,36].

Panchakarma's detoxifying mechanisms facilitate the elimination of free radicals and pro-inflammatory mediators that produce cellular injury in reproductive tissues. Eliminating *Ama* and *Dosha*, specifically *Pitta*, which are responsible for metabolic activity and inflammation, by *Panchakarma*, helps restore Dhatu (tissue) structure and function. This ancient concept is supported by evidence showing that *Panchakarma* reduces oxidative stress markers like malondialdehyde and enhances antioxidant enzymes like superoxide dismutase and glutathione peroxidase [25,37]. *Panchakarma* procedures such as *Virechana* and *Nasya* manage oxidative stress and inflammation. *Virechana* (purging) efficiently removes *Pitta dosha* and toxins from the liver and digestive system, directly eliminating the causes of inflammation and oxidative damage. *Nasya* (nasal therapy) also removes excess *Kapha* and *Pitta*, ensuring improved nasal passage and sinus health, which contributes towards minimizing systemic inflammation, especially in the upper respiratory and reproductive systems. These procedures support detoxification, maximizing the body's capacity for managing hormonal balance and immune function [30,38]. Inflammation, primarily mediated by cytokines and immunomediators, disrupts gamete quality and receptivity of the endometrium. *Panchakarma* has been reported to modulate inflammatory cytokines and inhibit system-wide inflammation, compromising fertility. These biological activities induce increased sperm viability and ovulatory function. The anti-stress effect of *Panchakarma* on the nervous system also inhibits stress-induced oxidative damage, indirectly improving reproductive health. This *Ayurvedic* intervention of the oxidative and inflammatory pathways at the biomedical level illustrates how *Panchakarma* reconciles *Ayurvedic* detoxification processes with contemporary biomedical processes to enhance fertility and reproductive success [39].

Hormonal Regulation and Endocrine Function Improvements

In *Ayurveda*, hormonal balance is naturally linked with *Dosha* balance, particularly *Pitta*, which regulates metabolic and endocrine processes and optimal functioning of *Dhatus* (body tissues) such as *Shukra Dhatu* (reproductive tissue) [15,40]. Through detoxification and rejuvenation therapies, *Panchakarma* tries to reestablish balance by removing *Ama* (toxins) and balancing *doshic* disturbances interfering with endocrine function. *Panchakarma* therapies such as *Virechana* (purgation) and *Basti* (medicated enemas) enhance excretion of metabolic waste products and modulation of the hypothalamic-pituitary-gonadal axis, essential for the production and secretion of reproductive hormones [15,41]. By reestablishing the natural rhythm and flow of the body, such therapies enhance balanced levels of major hormones such as Follicle-Stimulating Hormone (FSH), Luteinising Hormone (LH), oestrogen, progesterone, and testosterone necessary for ovulation, fertilisation, and maintenance of pregnancy [19,42].

These *Ayurvedic* findings are supported by contemporary science, which has found that *Panchakarma* reduces hormonal imbalance typical of infertility disorders such as Polycystic Ovarian Syndrome (PCOS) and compromised sperm quality. Studies have demonstrated normalisation of menstrual cycles and correction of the serum hormone profile following *Panchakarma* therapy [16,43]. Such normalisation is due to reduced oxidative stress and inflammation, which have been demonstrated to compromise endocrine function. Modulation of the autonomic nervous system by *Panchakarma* reduces stress hormones such as cortisol, indirectly enhancing reproductive hormone balance. The holistic modulation of the hormonal pathways by *Panchakarma* is thus consistent with both ancient *Ayurvedic* principles and contemporary endocrinology. It is a promising method of enhancing fertility and a healthy pregnancy [44]. *Panchakarma's* role in enhancing hormonal balance through detoxification and rejuvenation treatments is observed in the enhancement of fertility outcomes. *Panchakarma* has been found to restore hormonal balance, optimise reproductive well-being, and help the reproductive system become healthier [25,45], as shown in [Table/Fig-3] [15-16,19,40-45].

Authors	*Panchakarma* and Hormonal Balance	Impact on Reproductive Hormones	Evidence Summary	Fertility Benefits
Akshay ML and JS AK [15]	*Panchakarma* for *Ksheenashukra* (*Oligospermia*)	Improves testosterone, FSH, and sperm functional parameters	Clinical study showing enhanced sperm quality after therapy	Restores male fertility by improving sperm count & motility
Shindhe RR et al., [16]	*Panchakarma* for PCOS and tubal block	Regulates ovulatory hormones and follicular development	Case study with documented hormonal correction	Improves ovulation and conception rates in PCOS patients
Ji AM et al., [19]	*Panchakarma* in the management of *Oligospermia*	Enhances sperm morphology, motility, and hormonal markers	Demonstrates *Ayurvedic* regeneration of *Shukra Dhatu*	Boosts semen quality and hormonal stability in infertile men
Agarwal M et al., [40]	Manages PCOS by balancing Pitta *dosha*	Improves FSH, LH, oestrogen, and progesterone levels	Clinical improvement in hormone profiles	Reduces infertility symptoms
Naragatti S [41]	Combines Yoga and *Panchakarma* for hormonal balance	Modulates neuroendocrine function and stress	Combined therapy improves metabolic health	Improves ovulation and fertility metrics
Thapa K et al., [42]	Balances *Kapha* and *Vata* in hypothyroidism	Influences thyroid hormones affecting reproduction	Narrative support for endocrine improvement	Aids fertility via thyroid hormone regulation
Akter R [43]	Supports female reproductive health via detox	Enhances menstrual and hormonal regulation	Growing empirical evidence	Prepares the body for conception and pregnancy
Amrutayucare (2025) [44]	*Panchakarma* for Preconception Detoxification	Balances reproductive hormones	Supports holistic fertility preparation	Improves fertility outcomes and hormonal regulation
Ayurlog (2020) [45]	*Panchakarma* in Infertility Treatment	Restores hormonal balance	Supports fertility enhancement through detox	Improves reproductive health and fertility outcomes

[Table/Fig-3]: Hormonal regulation and fertility benefits of *Panchakarma*: Key study insights [15-16,19,40-45].
Summary of effects of *Panchakarma* on hormonal equilibrium, endocrine control, and fertility enhancement.

Integration of *Rasayana* Therapy and *Panchakarma* for Rejuvenation

Panchakarma (five detoxification therapies) and *Rasayana* (rejuvenation therapy) collectively represent holistic therapy to restore and preserve systemic vigour (*Ojas*), which is required for optimal reproductive well-being in *Ayurveda*. While *Panchakarma* detoxifies the body by eliminating *Ama* (toxins) and *Dosha* imbalance, *Rasayana* therapies energise and fortify body tissues (*Dhatus*), making them amenable to regeneration and longevity [46]. Consecutive application of *Panchakarma* followed by *Rasayana* is formulated first to detoxify the body of its accumulated toxins and metabolic imbalance, thus providing an optimal inner environment for rejuvenation. *Rasayana* treatments, e.g., herbal formulations like Ashwagandha (Withania somnifera), Shatavari (Asparagus racemosus), and *Amalaki* (Emblica officinalis), stimulate immune response, hormonal homeostasis, and cellular repair mechanisms [47]. This synergy results in greater energy, mental acuity, and reproductive tissue function (*Shukra Dhatu*), improving fertility outcomes. Modern biomedical science confirms these *Ayurvedic* concepts and demonstrates that detoxification decreases oxidative stress and inflammation, while subsequent rejuvenation increases antioxidant defences, immune strength, and endocrine regulation [48]. It was found that *Rasayana* herbs are adaptogenic, which reverses stress-induced negative impacts on fertility and maintains neuroendocrine function. This synergy improves gamete quality, menstrual regularity, and sperm parameters, making it essential for conception [49].

By merging *Rasayana* with *Panchakarma*, *Ayurveda* offers an integrated preconception regimen that detoxifies and restores physiological reservoirs. The integration concurs with contemporary views of fertility management through detoxification, followed by tissue repair to optimise reproductive function and overall health [50] as shown in [Table/Fig-4] [20,22,38,46-50].

Clinical Evidence and Shortcomings in Current *Panchakarma* Research

Clinical trials of *Panchakarma* (five actions treatment) for reproductive dysfunctions have also been successful, e.g., correction of sperm parameters, normalization of hormones, and regular menstruation. Case series, e.g., Oligospermia (Shukra Kshayah), are anecdotal evidence for the effectiveness of *Panchakarma* in enhancing fertility through body detoxification and *doshic* balance (*Vata*, *Pitta*, *Kapha*) at the systemic level [51]. Several observational studies have reported decreased oxidative stress and decreased levels of inflammatory markers after *Panchakarma* treatment, supporting ancient *Ayurvedic* claims regarding *Ama* cleansing (removal of toxins) and tissue rejuvenation (Dhatu) [52].

Though promising, the evidence is limited by methodological shortcomings. Small sample sizes, lack of control groups, and heterogeneity in treatment protocols have produced non-generalizable results in most studies. Individualization of *Panchakarma* according to *doshic* imbalance and Prakriti renders it hard to standardise and replicate in clinical trials. Heterogeneity in preparation, dose, and duration of treatment in studies also renders comparison challenging [53].

Panchakarma treatments have been found to exhibit complementary effects when applied with Assisted Reproductive Technologies (ARTs), including In Vitro Fertilisation (IVF). *Panchakarma's* detoxification and *doshic* balance restoration optimise the physiological environment for ARTs, which may enhance fertility success via decreased inflammation, oxidative stress, and hormonal imbalance. During IVF treatment cycles, *Panchakarma's* preconception care contribution, detoxification, and reproductive tissue health promotion have been found to increase the success of ART treatments and are a promising adjunct therapy [54].

However, most of today's biomedical research requires Randomised Controlled Trials (RCTs) with rigorous methodologies to corroborate *Panchakarma's* therapeutic assertions. The connection between biomedical biomarkers and *Ayurvedic* diagnostic markers remains loose, ruling out additional insight into mechanisms. To bridge these gaps, well-conducted large-scale clinical trials with standardised methodologies and endpoints combining *Ayurvedic* evaluation with modern reproductive biomarkers are needed. More interdisciplinary collaboration is needed to combine *Panchakarma's* centuries-old

Authors	*Panchakarma* and *Rasayana:* Synergistic Approach	Detoxification and Rejuvenation	Benefits of *Rasayana* Herbs	Impact on Reproductive Health and Fertility	Holistic Approach to Preconception Care
Airi A and Pathak A (2025) [20]	Describes Ayurveda's combined detox-rejuvenation preventive model	Emphasizes systemic detox followed by rejuvenation for vitality	General *Rasayana* herbs support cellular repair and immunity	Suggests relevance for preconception systemic strengthening	Backs *Panchakarma* + *Rasayana* for reproductive health maintenance
Yadav P, (2025) [22]	Highlights *Rasayana* as core to rejuvenation after *Panchakarma*	Supports longevity and systemic balance post-detox	*Rasayana* herbs enhance vitality and *Shukra Dhatu*	Improves reproductive potential and energy	Positions *Rasayana* as essential in a holistic fertility strategy
Garg P (2024) [38]	Explores *Panchakarma* therapies like *Nasya* and Shirodhara as rejuvenative	Detoxifies upper channels, supports nervous and hormonal systems	Neuroendocrine regulation linked to *Rasayana* effects	Case-based evidence on ovulation improvement and infertility reversal	Aligns *Panchakarma* detox with endocrine rejuvenation for conception
Warrier SS and Patil SS (2025) [46]	*Rasayana* as a key rejuvenation complement to *Panchakarma* detox	Cleansing followed by nourishment for systemic balance	Adaptogenic and antioxidant properties of *Rasayana* herbs	Improved menopausal and reproductive symptoms	Advocates combined detox and rejuvenation for fertility support
Chavan BD and Ingavale AS (2025) [47]	Shirodhara is a *Panchakarma* procedure with calming effects	Promotes mental and physical detox	Enhances *Rasayana* therapy outcomes	Improved neuroendocrine function tied to reproductive wellness	Supports Shirodhara in holistic preconception protocols
Jibi V et al., (2025) [48]	Panchatikta Ksheera *Basti* and Praval Panchamrut Vati for detox + rejuvenation	Detox of bone tissue with herbal formulations	Herbal formulations aid tissue regeneration	Improvement in fertility markers through systemic health	*Panchakarma* + *Rasayana* is effective in infertility-related conditions
Ajayamalatesh NM and Prashant MB (2025) [49]	Combined *Ayurvedic* therapies for hormonal balance	Detoxification with hormonal rejuvenation	Herbal support for endocrine health in PCOS and hypothyroidism	Positive fertility outcomes from integrated therapy	Ayurveda's holistic model for preconception care
Bhat PD and Mamtha KV (2025) [50]	Dashamoola Ksheera *Basti* + oral herbs for female infertility	Combined detox + rejuvenation restores doshic balance	Synergistic benefits of herbal therapy with *Panchakarma*	Improved fertility outcomes in female infertility cases	Integration of *Panchakarma* and *Rasayana* in fertility management

[Table/Fig-4]: Integration of *Panchakarma* and *Rasayana* therapies for fertility enhancement [20,22,38,46-50].
Overview of synergistic action of *Panchakarma* and *Rasayana* treatments on bodily vigour and fertility improvement.

strengths with evidence-based reproductive medicine to render it safe, effective, and more acceptable in integrative medicine [55].

DISCUSSION

The use of *Panchakarma* (five-action therapy) as preconception treatment is a significant integration of traditional *Ayurvedic* wisdom and state-of-the-art reproductive medicine. This review article consolidates strong evidence for the therapeutic potential of *Panchakarma* in enhancing reproductive well-being by detoxification (*Vata*, *Pitta*, *Kapha*) balance restoration, nourishment of reproductive tissue (*Shukra Dhatu*), reduction of oxidative stress and inflammation, and hormonal pathway modulation. Combined with *Rasayana* (rejuvenation therapies), *Panchakarma* is an integrative treatment that addresses physiological, metabolic, neuroendocrine, and psychosomatic aspects necessary for fertility [56].

Detoxification is central to *Ayurveda*, where the buildup of *Ama* (metabolic toxins) destroys the channels (*Srotas*) of the body and impairs tissue function (*Dhatus*). *Panchakarma's* cleansing procedures, *Vamana* (emesis), *Virechana* (purging), *Nasya* (nasal therapy), *Basti* (medicated enema), and *Raktamokshana* (bloodletting), systematically remove these toxins, restoring the internal milieu essential to optimal gametogenesis and hormonal homeostasis [57]. Modern research equates *Ama* with oxidative stress, chronic inflammation, and toxin accumulation, all proven causes of infertility along pathways of sperm DNA fragmentation, oocyte quality deterioration, and endometrial damage. *Panchakarma's* proven capacity to reduce oxidative and inflammatory biomarker levels testifies to its detoxifying action from a biomedical perspective [58].

Nutrition of *Shukra Dhatu* is critical to reproductive success, as emphasised by *Ayurvedic* texts and substantiated by modern fertility research in gamete quality. *Panchakarma* supports reproductive tissue health through increased circulation, nutrient supply, and metabolic efficiency, aiding spermatogenesis and oogenesis [59]. Clinical evidence indicates dramatic semen parameter improvements, including count, motility, and morphology, and enhanced ovarian function after *Panchakarma* treatment, corroborating *Ayurvedic* tissue nourishment and rejuvenation claims. Its additional modulation of the neuroendocrine axis also aids in stress reduction and hormonal equilibrium, prime causes of infertility recognised by conventional medicine. This generalised effect confirms *Panchakarma's* role beyond symptom relief to promote holistic reproductive health [60].

Oxidative stress and inflammation are significant impediments to fertility. Excessive production of reactive oxygen species (ROS) damages sperm and oocytes, interferes with mitochondrial function, and induces inflammatory responses detrimental to endometrial receptivity. The *Ayurvedic* syndrome of Srotorodha (blockage of channels) due to *Ama* reflects these pathologies [61]. *Panchakarma* reverses oxidative stress by up-regulating antioxidant enzymes like superoxide dismutase and glutathione peroxidase and down-regulating pro-inflammatory cytokines. This restoration of tissue homeostasis enhances gamete viability and fertilization potential. In addition, *Panchakarma's* autonomic nervous system sedation lowers stress-related oxidative damage, providing a multi-faceted explanation for applying *Panchakarma* to improve fertility [62].

Hormonal control in *Ayurveda* is directly linked with *Pitta dosha*, which governs metabolic and endocrine functions. Disturbance in *Pitta* leads to hormonal imbalance in the major reproductive hormones, FSH, LH, oestrogen, progesterone, and testosterone [63]. The purificatory therapies of *Panchakarma* correct the hypothalamic-pituitary-gonadal axis to facilitate regular ovulation and spermatogenesis. Clinical experience documents enhanced hormone profiles and normal menstruation after *Panchakarma*, possibly because of its anti-inflammatory and antioxidant action. The therapy's capacity to suppress cortisol and regulate the stress response also ensures endocrine balance, which is critical in the management of stress-related infertility [64].

The complementary application of *Panchakarma* with *Rasayana* treatments marks the peak of *Ayurveda*'s model for restoring health. Having cleansed the body, *Rasayana* treatments employ herbs like Ashwagandha, Shatavari, and *Amalaki* to strengthen tissues, boost immunity, and assist in repairing cells [65]. This system enhances systemic energy (*Ojas*), hormonal equilibrium, and mental strength, all crucial to the successful conception and maintenance of pregnancy. Current research supports these herbs' adaptogenic and antioxidant actions, offering proof of their complementary function in the health of the neuroendocrine system and stress control. This combined model that treats cleansing and rejuvenation is a sophisticated plan for reproductive health [66].

Although these promising findings exist, evidence supporting the use of *Panchakarma* in fertility therapy is limited. Small cohorts plague studies, a lack of randomised controls, and inconsistent protocols tailored by patient constitution (Prakriti) and disease status. Such variability hinders standardization and limits generalizability [67]. Moreover, no overlap exists between *Ayurvedic* diagnostic models and modern objective biomarkers, which limits deeper mechanistic insights. To advance the field, well-designed clinical trials must be carried out with standardised *Panchakarma* protocols and robust outcome measures blending *Ayurvedic* and biomedical parameters. Interdisciplinary studies of this type will determine effectiveness, optimise protocols, and promote broader acceptability in integrative reproductive medicine [68].

Panchakarma's integrative philosophy of healing systemic equilibrium instead of isolated symptoms is advantageous in addressing multifactorial infertility. Its individualised treatment is in tandem with precision medicine waves, addressing physical, metabolic, and psychological aspects of fertility. Biopsychosocial therapy is increasingly being accepted as the basis of successful fertility treatments [69].

CONCLUSION(S)

Panchakarma delivers an integrative and holistic preconception care rooted in ancient *Ayurvedic* tradition supplemented by recent biomedical findings. Through systematic detoxification and restoration of *doshic* (*Vata*, *Pitta*, *Kapha*) balance, stimulation of reproductive tissues (*Shukra Dhatu*), attenuation of antioxidants and inflammation, and hormonal homeostasis, *Panchakarma* prepares the internal environment for fertility and healthy gestation. Including *Rasayana* (rejuvenation therapy), the approach detoxifies, enriches, and rejuvenates systemic energy (*Ojas*) to facilitate long-term reproductive well-being. While promising data are available, existing clinical evidence requires more rigorous, standardised trials for effectiveness confirmation and protocol optimisation. Integrating *Ayurvedic* wisdom with existing scientific practices will be crucial in advancing *Panchakarma's* use in evidence-based fertility treatment. In short, *Panchakarma* is a holistic, individualised approach well adapted to treating the complex cause of infertility with the potential for enhanced reproductive outcomes in integrative medicine models.

Key Takeaways

Panchakarma effectively detoxifies the body by removing toxins (*Ama*) and balancing *dosha*, thereby improving the health of reproductive tissue (*Shukra Dhatu*). It reduces oxidative stress and inflammation, improves hormonal balance, and facilitates neuroendocrine balance. When used with *Rasayana* therapies, it increases rejuvenation and systemic energy (*Ojas*). Despite the favourable evidence of its use in fertility enhancement, more standardized clinical trials are needed to establish *Panchakarma* as an evidence-based integrative preconception care intervention.

Acknowledgement

We acknowledge the researchers and institutions whose work has been under consideration for this review, as well as our colleagues who contributed valuable inputs while undertaking the review.

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PLAGIARISM CHECKING METHODS: [Jain H et al.]
- Plagiarism X-checker: May 26, 2025
- Manual Googling: Nov 29, 2025
- iThenticate Software: Dec 01, 2025 (3%)

ETYMOLOGY: Author Origin

EMENDATIONS: 6

AUTHOR DECLARATION:
- Financial or Other Competing Interests: None
- Was informed consent obtained from the subjects involved in the study? No
- For any images presented appropriate consent has been obtained from the subjects. Yes

Date of Submission: **May 24, 2025**
Date of Peer Review: **Jul 29, 2025**
Date of Acceptance: **Dec 03, 2025**
Date of Publishing: **Apr 01, 2026**