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School of Computer Science & Engineering

IILM University Greater Noida

Presents

1st National Conference

on

Technologies for Sustainable Development Goals 2025 (TECH4SDG-2025)

3rd March 2025

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Dear Author / Researcher,

On behalf of the *International Journal of Research in Modern Engineering & Emerging Technology (IJRMEET)*, I extend my heartfelt gratitude to all the authors and research scholars for choosing our platform to publish their valuable research contributions.

IJRMEET, a Refereed, Peer Reviewed, Indexed, and Monthly Journal in Electronic format, has been consistently dedicated since April 2013 to advancing scholarly work in the domains of Modern Engineering and Emerging Technologies. Your innovative and quality research is at the core of our mission to promote academic excellence and practical solutions in the ever-evolving field of engineering and technology.

We believe that publication should be based purely on the merit, originality, and relevance of the research, not on financial considerations. We ensure that every manuscript undergoes a thorough review process to maintain the integrity, reliability, and scholarly value of each published work.

Our journal aims not only to disseminate high-quality research globally but also to highlight critical engineering problems and their practical resolutions. I encourage researchers, academicians, faculty members, and industry professionals to continue contributing to IJRMEET and to inspire their peers and students to join us in this academic pursuit.

We sincerely thank our respected Editors, Reviewers, Technical Advisors, Authors, Web Developers, Subscribers, Supporters, and the extended academic community whose efforts and encouragement make each issue of IJRMEET a successful endeavor.

With warm regards,

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डॉ. मोहम्मद रिहान / Dr. Mohammad Rihan
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MESSAGE

I am happy to know about Tech4SDG-2025, a distinguished national conference that aims to explore and highlight the transformative power of technology in achieving the United Nations Sustainable Development Goals (SDGs). This event serves as a critical platform for fostering collaboration among experts, innovators, and leaders who are dedicated to creating solutions that drive sustainable change.

As we face global challenges ranging from environmental sustainability to social equity, it is clear that technological advancements will play a pivotal role in shaping our collective future. Tech4SDG-2025 presents a unique opportunity to examine how cutting-edge technologies can contribute to solving the most pressing issues of our time, from climate change to poverty alleviation.

I look forward to the engaging discussions and innovative ideas that will emerge from this conference. I believe that by working together, we can harness the potential of technology to drive meaningful progress towards a sustainable and equitable world.

I extend my best wishes to all the participants and organizers of Tech4SDG-2025.

27.02.25

(Dr. Mohammad Rihan)

Dated: 27th February, 2025
Place: Gurugram

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Ayurvedic Approaches to Menopausal Health and Rajonivritti

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Abstract : Rajonivritti denotes the cessation of menstruation within Ayurvedic discussions of reproductive ageing. Its contemporary interpretation requires distinction between historical explanatory concepts, supportive health practices, and clinically demonstrated treatment effects. This narrative review examines classical descriptions, selected randomized trials, observational research, measurement literature, and professional guidance relevant to menopausal health. Sources were identified through focused searches and verified against indexed publications or institutional records. Evidence was organized around symptom management, quality of life, methodological quality, and safety. An eight-week ashwagandha trial randomized 100 women, of whom 91 completed follow-up, and reported greater improvement in menopausal symptoms than placebo. A separate shatavari trial randomized 70 participants and reported favorable short-term symptom outcomes. However, limited sample sizes and follow-up restrict conclusions about sustained benefit and uncommon adverse effects. Evidence concerning yoga illustrates that improvements in sleep do not necessarily imply reductions in hot-flash frequency. Ayurvedic approaches warrant further investigation using standardized preparations, appropriate comparators, validated outcomes, and transparent safety reporting. Menopausal care should combine respectful consideration of traditional preferences with individualized clinical assessment and access to established treatments.

Keywords: Rajonivritti, Ayurveda, menopause, shatavari, ashwagandha, quality of life, women's health

Introduction

Menopause is a normal reproductive transition, although associated symptoms can substantially affect everyday functioning. Hot flashes, night sweats, sleep disturbance, vaginal discomfort, and changes in emotional well-being vary considerably between individuals. A clinically useful approach must recognize both this variation and the possibility that symptoms attributed to menopause have other causes.

For otherwise healthy people aged 45 years or older, NICE identifies menopause clinically when menstruation has been absent for at least 12 months and hormonal contraception is not being used. Diagnosis and investigation require different considerations in younger individuals or when menstrual history cannot be interpreted reliably (NICE, 2015, updated guidance). NICE

Ayurveda discusses reproductive ageing through Rajonivritti and broader concepts concerning changes across the lifespan. These accounts may offer culturally familiar ways to discuss health, nutrition, routine, and personal experience. Nevertheless, a historical explanation does not establish that a specific preparation improves symptoms or prevents later disease.

Interest in Ayurvedic approaches therefore presents an important research question: which components have credible clinical evidence, and which remain insufficiently evaluated? Addressing this question requires attention to the exact intervention, the population studied, and the outcomes measured.

Objectives

This review examines the historical interpretation of Rajonivritti, evaluates selected clinical evidence concerning Ayurvedic interventions, and considers their relationship with contemporary menopausal care. It also identifies requirements for reliable outcome measurement, safety assessment, and future research.

Materials and Methods

A focused narrative review was undertaken using searches of indexed biomedical literature, accessible journal records, translated classical material, and official guidance. Search terms included Rajonivritti, Ayurveda, menopause, shatavari, ashwagandha, vasomotor symptoms, yoga, menopausal symptom measurement, and herbal safety.

Sources were selected for relevance, identifiable publication details, and their contribution to conceptual interpretation or clinical evidence. Randomized trials were prioritized when evaluating intervention effects. Observational research was used to describe symptom duration, while guidelines provided a clinical context. Classical descriptions were examined as historical material rather than experimental evidence.

Extracted information included study design, sample size, intervention duration, comparison group, reported outcomes, and important limitations. Numerical results were retained

with their original populations and definitions. No new participant observations, treatment-success rates, or inferential analyses were generated.

Because interventions and endpoints differed, statistical pooling was not undertaken. This was not a registered systematic review, and exhaustive screening or independent duplicate selection was not performed. Consequently, the synthesis identifies relevant findings without claiming complete coverage of the literature.

Ayurvedic Understanding of Rajonivritti

Rajonivritti is commonly used to describe the cessation of menstrual activity. In the translated Sushruta Samhita, menstruation is described as continuing until approximately the fiftieth year before declining with bodily ageing. This reflects a historical observation rather than a universal biological deadline (Sushruta, 1911). wisdomlib.org



Contemporary interpretation should preserve this distinction. Chronological age alone does not establish menopausal stage, and cessation of menstruation can occur for reasons other than natural menopause. The STRAW+10 framework instead organizes reproductive ageing using menstrual characteristics, with supportive information where appropriate (Harlow et al., 2012). PMC

Ayurvedic care is often discussed as a combination of dietary advice, daily routine, individualized preparations, and practices intended to support well-being. Research must evaluate these components clearly. Evidence for one standardized botanical extract cannot automatically validate every preparation containing the same plant or an entire multicomponent treatment system.

Table 1 presents the distinctions necessary for interpreting Rajonivritti within contemporary research.

Area	Interpretive approach	Research requirement
Menstrual cessation	Historical account of reproductive ageing	Document menstrual history and menopausal stage
Individualized care	Attention to differing experiences	Record eligibility criteria and treatment decisions
Botanical preparations	Product-specific interventions	Identify species, plant part, extraction, and composition
Dietary and routine advice	Support for general well-being	Specify content, adherence, and intended outcomes
Long-term health	Separate from immediate symptom relief	Measure relevant clinical outcomes over adequate follow-up

These distinctions allow traditional terminology to inform communication while keeping therapeutic conclusions tied to measurable evidence.

Review of Literature

Menopausal Symptoms and Their Duration

Avis et al. (2015) examined 1,449 women with frequent vasomotor symptoms in the Study of Women's Health Across the Nation. Median total symptom duration was 7.4 years. Among 881 women included in the analysis of persistence after the final menstrual period, the median was 4.5 years. These findings concern women with frequent symptoms and should not be generalized to every menopausal individual. PubMed

The duration of symptoms has methodological implications. A short trial may detect immediate changes but cannot establish whether benefits persist for years. Follow-up after treatment discontinuation is particularly useful when evaluating interventions intended for sustained use.

Ashwagandha

Gopal et al. (2021) randomized 100 women with climacteric symptoms to ashwagandha root extract or placebo for eight weeks; 91 completed the study. The reported between-group improvement in total Menopause Rating Scale score was statistically significant, with $p < 0.0001$. Improvements were also reported in psychological, somato-vegetative, and urogenital domains. PubMed

These findings support further investigation of the studied preparation. However, statistical significance does not establish the magnitude of benefit that an individual patient will experience. Short follow-up also limits conclusions concerning sustained effectiveness, uncommon adverse

reactions, or applicability to populations excluded from recruitment.

Shatavari

Gudise, Dasari, and Kuricheti (2024) conducted a randomized, double-blind, placebo-controlled trial involving 70 participants, with 35 assigned to each group. Outcomes were assessed through day 60. The investigators reported improvements in several menopausal complaints and quality of life in the active-treatment group. PMC

The trial provides preliminary product-specific evidence. Its results cannot establish that all shatavari formulations are interchangeable. Moreover, a small study reporting no significant adverse events cannot exclude uncommon or delayed harms.

Yoga and Related Supportive Practices

Yoga is relevant as an adjacent mind–body practice frequently incorporated into integrative care, although it should not be treated as equivalent to Ayurveda. Newton et al. (2014) studied a 12-week intervention within a factorial randomized trial. Allocation included 107 women to yoga, 106 to exercise, and 142 to usual activity. Yoga did not significantly improve vasomotor symptom frequency or bother, although insomnia symptoms improved modestly. NIH

This distinction is clinically meaningful. Better sleep may be valuable even when hot flashes remain unchanged. An intervention should therefore be evaluated against its stated purpose rather than described as universally effective for menopausal symptoms.

Outcome Measurement

Heinemann et al. (2004) reviewed the methodological characteristics of the Menopause Rating Scale. The instrument contains 11 items spanning somato-vegetative, psychological, and urogenital domains, with each item scored from zero to four. The total score consequently ranges from zero to 44. PMC

A total score offers a broad symptom assessment but can conceal differences between domains. Trials should report prespecified outcomes clearly and use suitable language versions. Symptom scores should also be distinguished from biological measures, because neither automatically substitutes for the other.

Established Treatment Context

The 2022 North American Menopause Society position statement identifies hormone therapy as the most effective treatment for vasomotor symptoms and emphasizes individualized benefit–risk assessment. Treatment decisions depend on clinical history, timing, formulation, and other relevant factors. Its conclusions do not imply that hormone therapy is appropriate for everyone. PubMed

The Society's 2023 nonhormone statement did not recommend supplements or herbal remedies for vasomotor symptom treatment on the evidence it reviewed. It also did not recommend yoga specifically for this outcome. These conclusions concern symptom-specific efficacy and should not be interpreted as denying every possible general-health benefit of supportive practices. PubMed



Safety Evidence

Björnsson et al. (2020) described five cases of liver injury attributed to ashwagandha-containing supplements. A case series cannot estimate incidence or show that all preparations carry identical risk, but it establishes a safety signal requiring attention. PMC

Safety assessment must therefore accompany efficacy research. Traditional use, plant origin, and favorable results in a short trial are insufficient grounds for assuming unrestricted safety.

Results

The selected literature produced three main findings. First, Rajonivritti provides a historical framework for reproductive ageing rather than a validated diagnostic staging system. Second, selected botanical trials reported short-term symptom improvements. Third, the evidence does not justify extending these findings to long-term disease prevention or to all Ayurvedic preparations.

Table 2 summarizes verified numerical findings from the reviewed publications.

Publication	Design and population	Published numerical information	Main interpretation
Avis et al., 2015	Longitudinal observational analysis	1,449 women; median	Symptoms may persist well beyond

		frequent vasomotor symptom duration 7.4 years	short treatment periods
Avis et al., 2015	Post-final-menstrual-period analysis	881 women; median persistence 4.5 years	Distinct subgroup and timeframe
Gopal et al., 2021	Eight-week randomized trial	100 randomized; 91 completed	Limited duration despite favorable symptom findings
Gopal et al., 2021	Ashwagandha versus placebo	Total MRS comparison $p < 0.0001$	Statistical evidence of a difference, not its clinical magnitude
Gudise et al., 2024	Placebo-controlled trial through day 60	70 participants; 35 per group	Preliminary formulation-specific evidence
Newton et al., 2014	Twelve-week factorial trial	Yoga 107; exercise 106; usual activity 142	No significant yoga benefit for vasomotor frequency or bother
Björnsson et al., 2020	Safety case series	Five reported liver-injury cases	Safety signal without a population incidence estimate

The publications address different populations and questions; their sample sizes and outcomes must not be pooled informally. A p-value cannot be interpreted as the probability of treatment success.

The review also identified an important gap between symptom outcomes and disease outcomes. Reduced symptom scores do not demonstrate prevention of fractures, cardiovascular events, or cognitive decline. Such claims require separate studies with appropriate endpoints and follow-up.

Discussion

Interpreting Clinical Benefit

The central challenge is determining what a favorable finding actually establishes. Symptom improvement can reflect a treatment effect, contextual influences, natural fluctuation, or a combination of these factors. Placebo-controlled randomization helps distinguish these explanations, while transparent reporting allows readers to assess uncertainty.

For clinical interpretation, researchers should report the between-group difference and confidence interval, not merely whether improvement within the treatment group reached statistical significance. A large within-group change may coexist with a similar change under placebo. Likewise, a very small p-value does not reveal whether the difference matters to patients.

Ayurvedic trials should therefore define meaningful benefit before analysis. Depending on the research question, this might involve symptom interference, sleep, functional ability, or quality of life. The outcome must match the intervention's stated purpose.



Product Specificity and Individualization

Botanical interventions present challenges because preparations may differ in plant identification, extraction, constituent concentrations, and manufacturing. A result obtained with one extract should remain attached to that extract until equivalence is demonstrated.

Individualized treatment introduces further complexity. Personalization can be studied, but the decision process must be documented. Otherwise, replication becomes difficult and the active components remain unclear. Studies comparing an individualized package with usual care should specify practitioner qualifications, consultation frequency, permitted modifications, and co-interventions.

These requirements do not eliminate traditional practice characteristics. They make the intervention sufficiently clear for scientific evaluation and informed clinical discussion.

Supportive Care and Clinical Assessment

An integrated approach can accommodate patient preferences while maintaining diagnostic clarity. Nutrition, physical activity, rest, and emotional support may be discussed according to individual needs. Their general-health purposes should remain distinct from claims of proven hot-flash reduction.

Assessment should also consider whether another condition contributes to fatigue, sleep difficulty, mood change, or discomfort. Persistent or concerning symptoms warrant clinical review rather than automatic attribution to Rajonivritti. Bleeding after established menopause particularly requires assessment; it should not be interpreted as evidence of rejuvenation or restored reproductive function.

NICE guidance provides a framework for individualized discussion, symptom management, and follow-up. Applying such a framework alongside traditional preferences helps prevent uncertainty about which clinician is monitoring symptoms and treatment effects. NICE

Safety and Shared Decisions

Patients need a clear account of expected benefit, uncertainty, cost, and monitoring. Discussion should include all medicines and supplements being used, because simultaneous interventions complicate interpretation of both benefit and harm.

Research should document adverse events systematically, including withdrawals and events judged unrelated to treatment. Absence of a statistically significant safety difference in a small trial does not establish equivalence. Long-term surveillance is especially important when products are promoted for prolonged use.

Shared decisions should also preserve access to established therapies. A preference for traditional care need not prevent discussion of other options, and uncertainty should be communicated without dismissing the patient's experience.

Recommendations for Future Research

Future trials should distinguish perimenopausal and postmenopausal populations, define symptom severity at entry, and prespecify a primary outcome. They should also characterize the preparation and account for concurrent treatments.

Research component	**Recommended approach**
Recruitment	Clearly defined menopausal stage and symptom eligibility
Intervention	Reproducible preparation or documented individualization
Comparator	Appropriate placebo or clearly specified usual care
Primary outcome	Prespecified symptom or functional outcome
Analysis	Between-group estimates with confidence intervals
Missing data	Transparent reporting and justified analytical handling
Safety	Prospective adverse-event collection and appropriate monitoring
Follow-up	Assessment of sustained benefit and delayed harm

Sample size should be justified by a clinically meaningful target difference. Trial registration and publication of prespecified analyses would reduce the risk of selective outcome reporting.



Limitations

This narrative review used focused source selection and cannot exclude omission of relevant studies. It did not formally grade certainty across every outcome. Classical interpretation is influenced by translation, while clinical publications differ in preparation, population, and measurement. These limitations prevent a comprehensive pooled estimate of effectiveness.

Conclusion

Rajonivritti offers a culturally relevant historical account of menstrual cessation and reproductive ageing. Selected Ayurvedic botanical preparations have encouraging short-term trial findings, but sustained effectiveness and long-term safety remain insufficiently established. Responsible menopausal care requires individualized assessment, accurate outcome measurement, transparent discussion of uncertainty, and access to established treatment options.

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