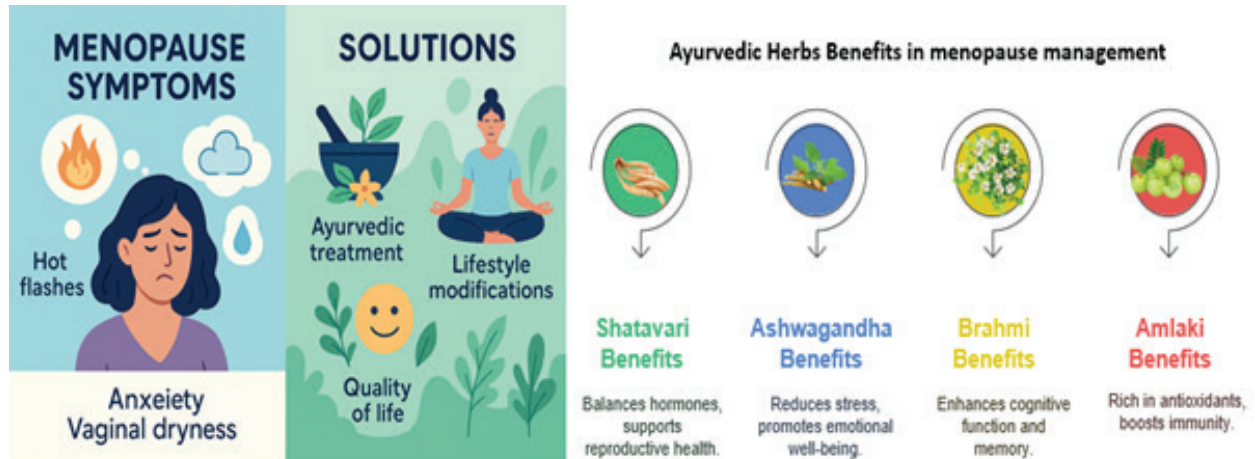


MINI REVIEW

Phytotherapeutic Strategies for Menopausal Syndrome: An Ayurvedic Perspective

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Highlights

- Review Ayurvedic approaches to managing menopausal syndrome through holistic and plant-based strategies.
- Summarize key medicinal plants (e.g., Shatavari, Ashwagandha, Brahmi, Amalaki) and their clinical relevance.
- Discuss Ayurvedic dietary guidelines, daily routines, and mind-body practices in symptom management.

Phytotherapeutic Strategies for Menopausal Syndrome: An Ayurvedic Perspective

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Abstract: Menopausal syndrome, characterized by symptoms such as hot flashes, night sweats, mood swings, and sleep disturbances, presents a significant challenge in women's health. While conventional therapies can be effective, they may have limitations and side effects. Ayurveda, the traditional system of medicine in India, offers a holistic approach to managing menopausal symptoms through natural, plant-based remedies. This review article examines the Ayurvedic viewpoints on menopause, with a specific emphasis on important medicinal plants such as Shatavari (*Asparagus racemosus*), Ashwagandha (*Withania somnifera*), Brahmi (*Bacopa monnieri*), and Amalaki (*Emblica officinalis*). Their traditional uses, phytochemical constituents, mechanisms of action, and clinical evidence are discussed. The review also highlights Ayurvedic, dietary and lifestyle recommendations, including the importance of diet, daily routines, and practices like yoga and meditation. Safety profiles, regulatory considerations, and future research directions are also discussed. The existing literature suggests that Ayurvedic treatments offer promising alternatives for managing menopausal symptoms, with potential benefits in enhancing overall well-being and quality of life.

Keywords: Ayurveda; Ayurvedic Medicine; Dietary Recommendations; Menopausal Syndrome; Phytotherapy

INTRODUCTION

Menopausal syndrome is a natural biological process signifying the end of a woman's reproductive years, typically occurring between the ages of 45 and 55. It is characterized by the cessation of menstruation for 12 consecutive months. Perimenopause, the period leading up to menopause, is characterised by substantial hormonal fluctuations that can result in various symptoms such as hot flashes, nocturnal perspiration changes in mood, irritation, dryness of the vagina, and sleep difficulties. These symptoms can significantly impact the quality of life, making effective management essential. The global prevalence of menopausal syndrome varies, but it is estimated that by 2030, 1.2 billion women worldwide experiencing menopause, highlighting the importance of

effective management strategies (Crandall et al., 2023).

Ayurveda, a traditional system of medicine originating from India over 5,000 years ago, is based on the principles of balancing the body's energies (doshas): Vata, Pitta, and Kapha. Ayurvedic medicine emphasizes an integrated approach. Historical texts give numerous treatments in detail using natural herbs and minerals, many of which are still in use today. Ayurveda's relevance to contemporary health issues, including menopausal syndrome, lies in its individualized treatment protocols, which aim to restore balance and alleviate symptoms through diet, lifestyle changes, and herbal remedies (Che et al., 2024).

The objective of this review is to explore Ayurvedic phytotherapeutic strategies for managing menopausal symptoms. By examining the historical context, principles, and specific herbs used in Ayurveda, this review aimed to provide a comprehensive understanding of how these natural remedies can be integrated into modern healthcare practices to improve the quality of life for women experiencing menopausal syndrome.

An overview of menopausal syndrome

Physiological changes during menopause

Menopause is characterised by a sequence of physiological alterations influenced by hormonal oscillations. As women get older, the ovaries progressively reduce their synthesis of oestrogen and progesterone, which are the hormones that control the cycle of menstruation and reproductive processes. The decrease in hormone levels results in the end of menstruation, usually happening in woman's late 40s to early 50s. The perimenopause phase, which can commence several years prior to the cessation of menstruation, is marked by erratic periods and symptoms related to hormonal imbalances. Aging also contributes to these changes, impacting overall health and the body's ability to regulate various functions (Talaulikar, 2022).

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Common symptoms

Menopause is characterised by hormonal shifts that cause a range of signs, which can differ in severity and length from person to person. Typical menopausal symptoms include hot flashes, which are sudden sensations of heat often accompanied by facial flushing and sweating; and night sweats, or excessive perspiration during sleep that can disturb rest. Mood swings, including irritability, anxiety, and depressive episodes, are common and often linked to hormonal fluctuations. Sleep disturbances may result from both hormonal changes and night sweats, causing fatigue. Vaginal dryness, due to decreased lubrication and tissue elasticity, can lead to discomfort during sexual activity. Additionally, many women experience cognitive changes, such as memory lapses and difficulty concentrating, which can affect daily activities (Vigneswaran&Hamoda, 2023). Main Symptoms and effects of Menopause are illustrated in figure 1.

Conventional treatment approaches and their limitations

Conventional treatments for menopausal symptoms given in the table 1, primarily focus on hormone replacement

therapy (HRT), which aims to replenish declining estrogen and progesterone levels. HRT can effectively alleviate many symptoms. However, it is not without risks and limitations. Long-term use linked with an augmented danger of breast tumor and heart disease (Langer et al., 2021). These potential side effects necessitate a cautious and individualized approach to HRT, with regular monitoring and adjustments by healthcare providers (Djapardy& Panay, 2022).

Other conventional treatments include non-hormonal medications such as antidepressants, which can help manage mood swings and sleep disturbances, and vaginal estrogen creams or lubricants to address vaginal dryness. While these treatments can provide symptom relief, they often address only specific aspects of menopausal syndrome rather than offering a holistic solution. Additionally, not all women are candidates for HRT or other pharmaceutical interventions, highlighting the need for alternative and complementary therapies.

In this context, exploring Ayurvedicphytotherapeutic strategies offers a promising avenue for managing menopausal symptoms through natural, holistic approaches that align with the body’s innate healing processes.



Figure 1: Common symptoms and physiological effects associated with menopause. The figure illustrates the key manifestations of menopausal syndrome, including vasomotor symptoms (hot flashes, night sweats), psychological effects (mood swings, anxiety, depression), urogenital symptoms (vaginal dryness, reduced libido), cognitive changes, and sleep disturbances, highlighting their overall impact on women’s health and quality of life.

Ayurvedic perspectives on menopausal syndrome

Ayurvedic concept of menopause

In Ayurveda, menopause is understood as a natural transition in a woman’s life, marked by the shift from the Pitta phase (middle age) to the Vata phase (old age). The Pitta phase, associated with transformation and metabolic activity, gradually gives way to the Vata phase, characterized by air and ether elements, which influence

movement, communication, and change. This transition can lead to an imbalance of the Vatadosha, manifesting as various menopausal symptoms. Ayurveda views this period as a time to restore balance and promote overall health through diet, lifestyle modifications, and herbal therapies (Solanki et al., 2023). The Table 2 provide a concise overview of fundamental Ayurvedic principles relevant to menopause management.

Table 1: Overview of menopausal symptoms and corresponding conventional treatments

Symptom	Description	Conventional Treatment	Limitations of conventional treatment	References
Hot Flashes	Sudden feelings of intense heat, often accompanied by sweating and flushing.	Hormone Replacement Therapy (HRT), SSRIs, SNRIs	HRT may increase the risk of cardiovascular diseases and breast cancer. SSRIs and SNRIs may have side effects like nausea and sexual dysfunction.	de Valois et al., 2022
Night Sweats	Excessive sweating during the night leads to disrupted sleep.	HRT, Clonidine, Gabapentin	Similar limitations such as HRT; Clonidine and Gabapentin may cause dry mouth and dizziness.	Goyal et al., 2025
Mood Swings	Emotional instability, including irritability and anxiety.	Antidepressants, Cognitive Behavioral Therapy (CBT)	Antidepressants may have side effects; CBT requires time and effort and may not be readily accessible.	Borozan et al., 2024
Sleep Disturbances	Difficulty falling asleep or staying asleep.	HRT, Sleep Aids, CBT	Sleep aids may cause dependency; HRT's effectiveness is variable, and behavioral therapies may not be universally effective.	Tandon et al., 2022
Vaginal Dryness	Dryness and discomfort in the vaginal area.	Vaginal Estrogen, Lubricants	Vaginal estrogen may increase risk of certain cancers; lubricants provide temporary relief but do not address underlying hormonal issues.	Brown, 2024
Cognitive Changes	Memory lapses and decreased concentration.	Cognitive enhancers, HRT	Cognitive enhancers may have limited efficacy and side effects; HRT may not address all cognitive concerns.	Sharma et al., 2023

HTR: hormone replacement therapy; SSRI: Selective Serotonin Reuptake Inhibitors; SNRI: Serotonin-Norepinephrine Reuptake Inhibitors; CBT: Cognitive Behavioral Therapy

Table 2: Fundamental Ayurvedic principles for the management of menopause.

Principle	Description	Relevance to Menopause	References
Doshas	Fundamental energies in Ayurveda govern bodily functions.	Menopause is associated with increased Vata and decreased Pitta. Balancing these doshas helps alleviate symptoms.	Inchara & Rachana, 2024
Agni	The digestive system's ability to process food and nutrients.	A strong Agni supports overall health and mitigates menopause symptoms by ensuring efficient digestion and nutrient absorption.	Mishra & Vuppu, 2023
Dhatus	Seven tissue layers in the body.	Balancing Dhatus is crucial for overall well-being and managing menopause symptoms like dryness and fatigue.	Bagga et al., 2025
Rasayana	Therapies and herbs are aimed at rejuvenation and longevity.	Rasayana helps in maintaining youthful vitality and mitigating symptoms associated with menopause.	Solanki et al., 2023
Panchakarma	A set of detoxification treatments designed to cleanse the body of toxins.	Panchakarma helps in detoxifying the body, balancing doshas, and rejuvenating overall health during menopause.	Akter, 2024

Causes and symptoms of menopausal syndrome according to ayurvedic texts

Ayurvedic texts describe menopausal syndrome as the result of natural aging processes and the consequent decrease in ShukraDhatu (reproductive tissue). The reduction in reproductive tissues and associated hormones leads to Vatadosha imbalances, which can cause dryness, instability, and irregularity in bodily functions (Meher et al., 2022).

In Ayurveda, menopausal symptoms are understood as manifestations of doshic imbalances, primarily involving Vata and Pitta. For instance, hot flashes (UshnaVeerya) and night sweats (Ratricharada) are considered outcomes of aggravated Pitta, which increases internal heat and moisture. Mood swings (ManasaVikara) and sleep disturbances (Anidra) are attributed to imbalances in Vata, which affects the nervous system and mental stability. Vaginal dryness (Yoni Shosha) reflects Vata's drying influence on reproductive tissues, while cognitive changes, such as difficulty in concentration or memory lapses (BuddhiBhrama), are also linked to aggravated Vata disrupting mental clarity.

Pathogenesis (samprapti) of menopause in ayurveda

In Ayurveda, menopause is understood as a natural transition marked by Vatadosha predominance and a decline in ShukraDhatu (reproductive tissue), leading to systemic imbalances. The Samprapti (pathogenesis) of menopause begins with the depletion of Rasa (nutritional fluids) and RaktaDhatu (blood tissue) due to aging, which disrupts hormonal balance. The reduction of ShukraDhatu leads to Vataprakopa (aggravation of Vatadosha), causing dryness, instability, and irregularity in bodily functions. Increased Vatadosha affects MajjaDhatu (nervous tissue), leading to cognitive disturbances, anxiety, and sleep disorders. The simultaneous decline of Pitta dosha results in reduced metabolic activity and thermoregulation, contributing to hot flashes and night sweats. In some cases, Kaphadosha depletion leads to loss of bone density, weakness, and fatigue. The overall process reflects a progressive depletion of essential bodily tissues and energy, leading to various menopausal symptoms. Ayurvedic management focuses on pacifying Vatadosha, nourishing depleted Dhatus, and restoring systemic balance through Rasayana therapy, diet, and lifestyle modifications (Rotti et al., 2022).

Diagnostic methods in ayurveda

Ayurveda utilizes a thorough diagnostic approach called NidanaPanchaka, which consists of five crucial elements to diagnose and comprehend various health issues, including menopausal syndrome. This involves identifying Hetu (causes) such as natural aging, lifestyle choices, and dietary habits that aggravate Vatadosha. It also encompasses Purvaroop (prodromal symptoms) like irregular menstrual cycles, mood changes, and mild hot flashes, which signal the onset of menopause. Roopa (symptoms) refers to the manifestation of full-blown symptoms, while Samprapti (pathogenesis) delves into the progression of dosha imbalance, specifically the depletion of reproductive tissues and an increase in Vatadosha during menopause.

Finally, Upashaya (therapeutic measures) focuses on devising effective treatments and management strategies, including tailored dietary recommendations, lifestyle adjustments, and herbal remedies, to alleviate symptoms and restore dosha balance based on an individual's Prakriti (constitution) and Vikriti (current imbalances). Through NidanaPanchaka, Ayurvedic practitioners can formulate personalized treatment plans that address the underlying causes of menopausal syndrome and foster holistic well-being throughout this transitional life stage (Rathod, 2023).

Ayurvedic principles and therapeutic strategies

Fundamental ayurvedic principles relevant to treating menopausal syndrome.

For treating menopausal syndrome, these principles are particularly significant: the balance of Doshas, Agni (Digestive Fire), and Dhatus (Body Tissues). Menopause is primarily associated with an imbalance in Vatadosha, although Pitta and Kapha imbalances may also contribute, and the aim is to restore the natural equilibrium of these doshas through diet, lifestyle, and herbal therapies. Agni is responsible for digestion, and during menopause, it can become weak or irregular, leading to digestive issues and toxin accumulation (Ama); thus, maintaining a strong and balanced Agni is crucial for overall health and symptom management. Furthermore, the decline in reproductive tissue (ShukraDhatu) during menopause affects overall vitality, making it essential to support the health of all seven Dhatus for maintaining strength and balance (Patel et al., 2023).

Role of Rasayana (rejuvenation) therapy in managing menopausal symptoms

Rasayana therapy is a cornerstone of Ayurvedic treatment aimed at rejuvenation and revitalization. It enhances longevity, immunity, and overall well-being. For managing menopausal symptoms, Rasayana therapy includes Herbs and formulations, diet and lifestyle, and rejuvenative practices as key components of Ayurvedic treatment. Certain herbs like Ashwagandha (*Withania somnifera*), Shatavari (*Asparagus racemosus*), and Brahmi (*Bacopa monnieri*) are considered Rasayanas, which help in balancing hormones, reducing stress, and improving vitality. A diet rich in fresh, wholesome, and easily digestible foods supports Agni and provides essential nutrients for tissue regeneration, while incorporating practices like yoga, meditation, and adequate rest further enhances the benefits of Rasayana therapy. Regular use of specific Rasayana herbs, Chyawanprash (an Ayurvedic herbal jam), and other tonics can help mitigate the symptoms of menopause by strengthening the body's systems and promoting mental clarity (Kalia et al., 2022).

Panchakarma (detoxification) and its relevance to menopause treatment

It is particularly relevant for menopause treatment due to its comprehensive approach, encompassing Vamana (Emesis Therapy), which involves cleansing the upper gastrointestinal tract to expel excess Kaphadosha and toxins. Virechana (Purgation Therapy) focuses on detoxifying the lower gastrointestinal tract to eliminate excess Pitta dosha and impurities. Basti (Enema Therapy)

involves the administration of medicated oils or decoctions. Nasya (Nasal Administration) uses medicinal lubricants or residues through the nasal routes to clear head and neck channels, thereby improving cognitive functions and relieving stress. Lastly, Raktamokshana (Bloodletting Therapy) entails removing small quantities of blood to purify and balance the blood tissue (RaktaDhatu) (Singh et al., 2022).

These therapies help in removing accumulated toxins, improving digestion, and balancing doshas, which can significantly alleviate menopausal symptoms. Panchakarma also rejuvenates the body's tissues, enhances mental clarity, and boosts overall immunity, making it a valuable component of menopausal care in Ayurveda.

Ayurvedic medicinal plants and formulations

Shatavari (*Asparagus racemosus*)

Shatavari, often referred to as the “queen of herbs,” holds significant traditional value in Ayurveda due to its rejuvenating properties, especially concerning female reproductive health. It has been historically employed to enhance fertility, regulate hormones, and mitigate symptoms associated with both menopause and menstruation. The therapeutic effects of Shatavari are attributed to its phytochemical composition, which includes steroidal saponins (shatavarins), flavonoids, alkaloids, and mucilage. Its mechanisms of action relevant to menopause treatment involve phytoestrogens that mimic estrogen, thereby aiding in hormonal balance. Furthermore, its adaptogenic qualities help to alleviate stress and anxiety, while its anti-inflammatory and antioxidant properties contribute to overall health and well-being. Both preclinical and clinical evidence supports its efficacy, with clinical trials demonstrating improvements in menopausal symptoms, increased libido, and enhanced overall well-being in women who have taken Shatavari supplements (Gudise et al., 2024).

Ashwagandha (*Withaniasomnifera*)

Ashwagandha, known as “Indian ginseng,” is a potent adaptogen in Ayurvedic tradition, valued for its ability to enhance energy, reduce stress, improve overall vitality, and support reproductive health while alleviating menopausal symptoms. Its therapeutic properties stem from phytochemical constituents such as withanolides, alkaloids, saponins, and sitoindosides. The mechanisms of action relevant to menopause treatment include modulating cortisol levels to reduce stress and anxiety, supporting hormonal balance through its effects on the endocrine system, and enhancing cognitive function to address mood swings and memory issues associated with menopause. Both preclinical and clinical evidence supports its efficacy, with studies indicating Ashwagandha's potential in reducing stress and balancing hormones, and clinical trials showing significant improvements in anxiety, stress levels, and cognitive function in menopausal women who have taken Ashwagandha supplements (Smith et al., 2023).

Brahmi (*Bacopamonnieri*)

Brahmi is renowned for its cognitive-enhancing and

neuroprotective properties. It is traditionally used to improve memory, reduce anxiety, and support mental clarity, making it beneficial for menopausal women experiencing cognitive changes and mood swings. Its medicinal effects are attributed to its phytochemical constituents, which include saponins (such as bacosides), alkaloids, and flavonoids. Regarding its mechanisms of action relevant to menopause treatment, Brahmi enhances cognitive function by promoting neuron communication and reducing oxidative stress, and it also possesses anxiolytic properties that help manage stress and anxiety associated with menopause. Preclinical and clinical evidence supports these claims, with preclinical studies highlighting Brahmi's neuroprotective and cognitive-enhancing effects, and clinical trials demonstrating that Brahmi supplementation improves memory, reduces anxiety, and enhances overall cognitive performance in menopausal women (Bhandari et al., 2022).

Amalaki (*Emblicaofficinalis*)

Amalaki, also known as Indian gooseberry, is a potent Rasayana valued for its rejuvenative and anti-aging properties. It is traditionally used to enhance immunity, support digestion, and balance the body's doshas. Its health benefits are attributed to its rich phytochemical constituents, including vitamin C, tannins, polyphenols, flavonoids, and other antioxidants. Regarding mechanisms of action relevant to menopause treatment, Amalaki's high antioxidant content helps combat oxidative stress, a common issue during menopause, while its adaptogenic and anti-inflammatory properties support overall health and alleviate various menopausal symptoms. Both preclinical and clinical evidence supports its efficacy, with preclinical studies showing Amalaki's potential in reducing oxidative stress and inflammation, and clinical trials demonstrating its effectiveness in improving overall health, reducing hot flashes, and enhancing the quality of life in menopausal women (Arya et al., 2023).

Other notable ayurvedic herbs and formulations

Licorice (*Glycyrrhizaglabra*) is used for its estrogenic properties, helping to balance hormones and alleviate hot flashes and night sweats (Tanideh et al., 2023). Guduchi (*Tinosporacordifolia*) is known for its immunomodulatory and adaptogenic properties, supporting overall health and reducing stress (Arunachalam et al., 2022). Additionally, Kumari (Aloe vera) is utilized for its cooling and anti-inflammatory effects, which help manage hot flashes and skin issues associated with menopause (Dey et al., 2022).

Mechanisms of action of ayurvedic herbs

Hormonal modulation and balance

Ayurvedic herbs are known for their ability to modulate and balance hormones, which is crucial during menopause when hormonal fluctuations are prominent. Key mechanisms include phytoestrogens and Endocrine Support. Herbs like Shatavari (*Asparagus racemosus*) contain phytoestrogens, which copycat the effects of estrogen (Mohapatra et al., 2024). Ashwagandha (*Withania somnifera*) supports the endocrine system by modulating the production of stress hormones such as cortisol. By reducing cortisol levels, Ashwagandha helps balance other hormones, contributing

to overall hormonal stability and reducing stress-related menopausal symptoms (Mikulska et al., 2023).

Antioxidant and anti-inflammatory effects

Menopause is often accompanied by increased oxidative stress and inflammation, which can exacerbate symptoms and lead to long-term health issues. Ayurvedic herbs provide potent antioxidants and anti-inflammatory effects: For instance, Amalaki (*Emblica officinalis*) is rich in vitamin C and other antioxidants that neutralize free radicals and support overall health and mitigating symptoms like fatigue and cognitive decline (Yadav & Singh, 2023). Many Ayurvedic herbs, including Brahmi (*Bacopamonnieri*) and Guduchi (*Tinosporacordifolia*), possess anti-inflammatory properties that help reduce systemic inflammation. This can alleviate symptoms such as joint pain and improve overall well-being (Dinh et al., 2023).

The selected Ayurvedic plants alleviate menopausal symptoms through various mechanisms. Shatavari (*Asparagus racemosus*) contains steroidal saponins that exhibit phytoestrogenic activity, mimicking estrogen to balance hormonal fluctuations, while also modulating the hypothalamic-pituitary-ovarian (HPO) axis (Rosenthal et al., 2022). Ashwagandha (*Withania somnifera*) regulates the hypothalamic-pituitary-adrenal (HPA) axis, reducing cortisol levels and stress-related symptoms, while its GABAergic modulation improves mood and cognition (Speers et al., 2021). Brahmi (*Bacopamonnieri*) enhances cholinergic transmission, supports neurotransmitter balance (dopamine, serotonin, and GABA), and provides neuroprotection, mitigating cognitive decline (Mondal et al., 2023). Amalaki (*Emblica officinalis*), rich in antioxidants, reduces oxidative stress, supports cardiovascular health, and prevents vaginal atrophy (Lim & Lim, 2012). Licorice (*Glycyrrhiza glabra*) has estrogenic activity due to glycyrrhizin, helping manage hot flashes and night sweats, while Guduchi (*Tinosporacordifolia*) acts as an adaptogen, reducing fatigue and boosting immunity (Semalty et al., 2012). y. Lastly, Kumari (*Aloe vera*) cools excess Pitta, reduces hot flashes, and provides phytoestrogens for hormonal balance. Collectively, these herbs offer an integrated approach to managing menopausal symptoms (Patel & Prajapati, 2017).

Neuroprotective and mood-stabilizing properties

Ayurvedic herbs offer neuroprotective and mood-stabilizing benefits. Brahmi is renowned for its ability to enhance cognitive function by promoting neuron communication and reducing oxidative stress in the brain, thereby improving memory, focus, and overall mental clarity to address cognitive changes during menopause. Additionally, both Ashwagandha and Brahmi possess anxiolytic properties, stabilizing mood and reducing stress, which significantly improves the mental health and quality of life for menopausal women (Costa & Vale, 2023).

Effects on bone health and cardiovascular function

Bone health and cardiovascular function are critical areas of concern during menopause due to the decline in estrogen levels, which can lead to osteoporosis and increased cardiovascular risk. Ayurvedic herbs can support these

aspects. For instance, ayurvedic herbs such as Shatavari and Ashwagandha contribute to bone health by maintaining bone density and strength through their phytoestrogenic effects, which mimic estrogen's crucial role in bone density maintenance, and their anti-inflammatory properties that reduce bone resorption and support overall skeletal health. Furthermore, Amalaki and Guduchi improve cardiovascular function due to their antioxidant and anti-inflammatory effects, helping to reduce cholesterol levels, improve blood circulation, and protect against oxidative damage to the heart and blood vessels, thereby lowering the risk of cardiovascular diseases (Lobo & Gompel, 2022).

Dietary and lifestyle recommendations in ayurveda

Ayurvedic dietary guidelines for managing menopausal symptoms.

Key dietary guidelines for managing menopausal symptoms include balancing Vata by focusing on warm, nourishing, and grounding foods while avoiding cold, dry, and raw foods which can aggravate Vata. Additionally, incorporating Pitta-pacifying foods like cooling, hydrating options is important to manage symptoms such as hot flashes and irritability, meaning spicy, acidic, and caffeinated foods should be avoided. Finally, supporting Agni (digestive fire) by eating freshly prepared meals at regular times and avoiding heavy, oily, and overly processed foods is crucial (Aarshageetha et al., 2023).

Role of specific foods and spices

Certain foods and spices play a significant role in managing menopausal symptoms due to their unique properties. Sesame seeds, rich in calcium, magnesium, and phytoestrogens, support bone health and hormonal balance, and can be incorporated into meals or consumed as tahini. Ghee, or clarified butter, is highly valued in Ayurveda for its ability to nourish and lubricate tissues, support digestion, and balance Vatadosha, and can be used in cooking or taken directly. Almonds and walnuts provide essential fatty acids that support hormone production and overall brain health and can be eaten as snacks or added to meals. Finally, emphasizing seasonal, locally grown fresh fruits and vegetables provide essential vitamins and minerals, with cooked vegetables being preferred to support Agni and reduce Vata (Erdélyi et al., 2023).

Importance of lifestyle modifications and daily routines (dinacharya)

Ayurveda advocates for a consistent daily routine (Dinacharya) to maintain balance and harmony in the body, with key lifestyle modifications including a consistent sleep program to regulate biological rhythms, drinking warm or room temperature water for hydration and digestion, daily self-massage (Abhyanga) with warm sesame or almond oil to balance Vatadosha, and moderate exercise like walking, swimming, or yoga for improved circulation, strength, and flexibility. Practices such as Yoga and Meditation are integral components for stress reduction and hormonal balance, with specific yoga poses (asanas) like Sukhasana benefiting menopausal women by balancing hormones and reducing stress. Pranayama techniques, such as Bhramari (Bee Breath), help calm the mind, reduce anxiety, and

balance the nervous system, while meditation techniques like mindfulness, guided imagery, and mantra chanting are effective. Furthermore, incorporating mind-body practices such as Tai Chi and Qi Gong can further enhance the mind-body connection (Tawalare et al., 2024).

Regulatory frameworks and guidelines for the use of ayurvedic treatments in menopause

Regulatory frameworks and guidelines vary by region but focus on ensuring the safety, efficacy, and quality of Ayurvedic treatments. Key aspects include standardization and quality control, which ensures that Ayurvedic products have consistent active ingredient levels and are free from contaminants like heavy metals and pesticides, with the WHO providing relevant guidelines. Furthermore, clinical trials and evidence-based use are encouraged to establish the efficacy and safety of Ayurvedic treatments, with regulatory bodies often requiring evidence from well-conducted studies to approve specific claims for menopausal symptom relief. Clear labeling and consumer information are also crucial, providing details on dosage, potential side effects, and contraindications to help consumers make informed decisions and use products safely. Additionally, professional training and certification for Ayurvedic practitioners are emphasized to ensure appropriate treatment use and monitoring for potential adverse effects. Finally, integration with conventional medicine is encouraged, fostering collaboration between Ayurvedic practitioners and conventional healthcare providers for comprehensive care, including recognizing potential interactions between Ayurvedic treatments and conventional medications (Venunadh& Patil, 2022).

Summary of previous research studies on ayurvedic management of menopause

Several studies highlight the efficacy of Ayurvedic herbs in managing menopausal symptoms. Shatavari exhibits estrogenic activity, reducing hot flashes and mood disturbances. Ashwagandha lowers cortisol, alleviating stress and anxiety (Shanmugaloga&Shilpa, 2024). Brahmi enhances cognition and memory through neuroprotection. Amalaki, rich in antioxidants, supports cardiovascular health and reduces oxidative stress (Modi et al., 2012). Licorice mimics estrogen, easing vasomotor symptoms. Guduchi boosts immunity and reduces fatigue, while Kumari provides cooling effects for Pitta-related symptoms. These findings support Ayurveda's role in menopause management, though large-scale trials are needed for further validation (Steels et al., 2018)

Future directions and research gaps

Areas needing further investigation.

To validate the efficacy and safety of Ayurvedic treatments for menopausal syndrome, large-scale clinical trials are necessary, as current promising findings are mostly from smaller studies, highlighting the need for robust, multicenter trials across diverse populations, considering long-term outcomes, and comparing Ayurvedic treatments with conventional therapies (Koch et al., 2024). Furthermore, mechanistic studies are crucial to elucidate the molecular mechanisms of action of Ayurvedic herbs and formulations,

as comprehensive insights into how these herbs affect hormonal balance, oxidative stress, and neuroprotection are still limited despite some existing research on individual herbs. Future research should therefore focus on investigating how specific phytochemicals interact with biological systems to contribute to symptom relief and overall well-being.

Dosage optimization and standardization:

To determine optimal dosages and standardize formulations for consistent therapeutic effects, current dosage recommendations for Ayurvedic treatments are based on traditional use and preliminary studies, yet standardized guidelines are still lacking. Therefore, future studies should focus on determining the most effective and safe dosages for different populations and developing standardized formulations for clinical use. Regarding safety and long-term effects, the objective is to assess the long-term safety and potential side effects of prolonged use of Ayurvedic treatments. While short-term studies indicate general safety, there is a need for long-term studies to understand the chronic effects and interactions of Ayurvedic treatments. Key areas of focus for these longitudinal studies should include evaluating the impact of long-term use on overall health, potential interactions with other medications, and cumulative effects (Patel and Dhillon, 2022).

CONCLUSIONS

The Ayurvedic approach to managing menopausal syndrome emphasizes phytotherapeutic strategies, offering a holistic and natural alternative to conventional treatments. Ayurveda views menopause as a transition from the Pitta to the Vata phase of life, characterized by increased Vata and decreased Pitta doshas. Ayurvedic interventions aim to restore balance by addressing these doshic imbalances, thereby alleviating menopausal symptoms. Several Ayurvedic herbs, such as Shatavari, Ashwagandha, Brahmi, and Amalaki, have demonstrated efficacy in clinical studies. These herbs offer a range of benefits, including hormonal modulation, antioxidant and anti-inflammatory effects, neuroprotection, and support for bone and cardiovascular health. They help alleviate common menopausal symptoms such as hot flashes, mood swings, and cognitive changes through these diverse mechanisms.

In addition to herbal remedies, Ayurveda emphasizes a balanced diet and lifestyle modifications to support menopausal health. Key recommendations include consuming warming and nourishing foods, maintaining a consistent daily routine, and incorporating practices such as yoga and meditation. These lifestyle adaptations create a supportive environment for managing symptoms and promoting overall well-being. The integration of Ayurvedic phytotherapeutic strategies into menopause management offers several advantages. Ayurveda provides a comprehensive and individualized approach that addresses physical, emotional, and mental dimensions of health. Ayurvedic herbs present natural alternatives to hormone replacement therapy (HRT) and other conventional treatments, potentially offering benefits with fewer side effects for women seeking natural solutions.

A core Ayurvedic principle is personalized treatment based on an individual's doshic constitution and symptom profile, which may enhance therapeutic effectiveness and patient satisfaction. Combining Ayurvedic treatments with conventional therapies could provide synergistic effects, improve outcomes, and reduce reliance on pharmaceuticals. The future of Ayurvedic phytotherapeutic strategies in menopause management is promising. Ongoing research and clinical trials will strengthen the evidence base for the efficacy and safety of these interventions, supporting their inclusion in mainstream healthcare. Exploring novel compounds and formulations rooted in Ayurvedic principles could lead to the development of new, effective treatments. Collaboration among Ayurvedic practitioners, researchers, and conventional healthcare providers will be essential for advancing integrative approaches. Moreover, the development of evidence-based guidelines and regulatory frameworks will help ensure the safe and effective use of Ayurvedic therapies within holistic healthcare systems. In conclusion, Ayurvedic phytotherapeutic strategies offer valuable tools for managing menopausal syndrome. By integrating traditional wisdom with modern scientific research, these approaches can contribute to more effective, individualized, and natural menopause care, ultimately enhancing the quality of life for women during this important life stage.

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DECLARATION OF CONFLICT OF INTEREST

All authors declare that there is no conflict of interest.

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REFERENCES

- Aarshageetha, P., Janci, P. R., & Tharani, N. D. (2023). Role of alternate therapies to improve the quality of life in menopausal women: A systematic review. *Journal of Mid-life Health*, **14**(3), 153-158. https://doi.org/10.4103/jmh.jmh_222_22
- Arunachalam, K., Yang, X., & San, T. T. (2022). *Tinospora cordifolia* (Willd.) Miers: Protection mechanisms and strategies against oxidative stress-related diseases. *Journal of Ethnopharmacology*, **283**, 114540. <https://doi.org/10.1016/j.jep.2021.114540>
- Arya, A., Kumar, S., Suryavanshi, A., & Kain, D. (2023). Ethnobotanical and ethnopharmacological studies of medicinal plants used for reproductive disorders: A review. *Medicinal Plants-International Journal of Phytomedicines and Related Industries*, **15**(4), 619-635. <https://doi.org/10.5958/0975-6892.2023.00063.1>
- Bhandari, A., Sunkaria, A., & Kaur, G. (2022). Dietary Supplementation With *Tinospora cordifolia* Improves Anxiety-Type Behavior and Cognitive Impairments in Middle-Aged Acyclic Female Rats. *Frontiers in Aging Neuroscience*, **14**, 944144. <https://doi.org/10.3389/fnagi.2022.944144>
- Che, C. T., George, V., Ijiru, T. P., Pushpangadan, P., & Andrae-Marobela, K. (2024). Traditional medicine. In *Pharmacognosy* (pp. 11-28). Academic Press. <https://doi.org/10.1016/B978-0-443-18657-8.00037-2>
- Costa, B., & Vale, N. (2023). Understanding Lamotrigine's role in the CNS and possible future evolution. *International Journal of Molecular Sciences*, **24**(7), 6050. <https://doi.org/10.3390/ijms24076050>
- Crandall, C. J., Mehta, J. M., & Manson, J. E. (2023). Management of menopausal symptoms: a review. *Jama*, **329**(5), 405-420. <https://doi.org/10.1001/jama.2022.24140>
- Dey, A., Dhadhal, S., Maharjan, R., Nagar, P. S., & Nampoothiri, L. (2022). Partially purified non-polar phytocomponents from *Aloe barbadensis* Mill. gel restores metabolic and reproductive comorbidities in letrozole-induced polycystic ovary syndrome rodent model-an "in-vivo" study. *Journal of Ethnopharmacology*, **291**, 115161. <https://doi.org/10.1016/j.jep.2022.115161>
- Dinh, T.P., Thuy, L.T., Thuy My, N.T., Nguyen, V.T., Tram, L.H., Nguyen, T.A., Toan D.H., Tran, T.H., Tran T.H., & Van Bach N. (2023). Phenyl glycosides from *Bacopamonnieri* with their antioxidant and anti-inflammatory activities. *Natural product research*, 1-6. <https://doi.org/10.1080/14786419.2023.2258544>
- Djapardy, V., & Panay, N. (2022). Alternative and non-hormonal treatments to symptoms of menopause. *Best Practice & Research Clinical Obstetrics & Gynaecology*, **81**, 45-60. <https://doi.org/10.1016/j.bpobgyn.2021.09.012>
- Erdélyi A, Pálfi E, Túú L, Nas K, Szűcs Z, Török M, Jakab A, & Várbiro S (2023). The Importance of Nutrition in Menopause and Perimenopause—A Review. *Nutrients*, **16**(1), 27. <https://doi.org/10.3390/nu16010027>
- Gudise, V. S., Dasari, M. P., & Kuricheti, S. S. K. (2024). Efficacy and Safety of Shatavari Root Extract for the Management of Menopausal Symptoms: A Double-Blind, Multicenter, Randomized Controlled Trial. *Cureus*, **16**(4). <https://doi.org/10.7759/cureus.57879>
- Kalia, B., Singh, S., Mishra, S., & Tiwari, R. (2022). Effect of Rasayan Therapy in Post-Menopausal Geriatric Females: A Holistic and Conceptual Approach. *International Journal of Medical Science and Clinical Research Studies*, **2**(11), 1281-1283. <https://doi.org/10.47191/ijmscrs/v2-i11-23>
- Koch, A. K., Patel, M., Gupta, S., Wullenkord, R., Jeitler, M., & Kessler, C. S. (2024). Efficacy and safety of the Ayurvedic herbal preparation Maharishi AmritKalash: a systematic review of randomized controlled trials. *Frontiers in Medicine*, **11**, 1325037. <https://doi.org/10.3389/fmed.2024.1325037>
- Lim, T. K., (2012). *Phyllanthusemblica*. Edible Medicinal

- and Non-Medicinal Plants: Volume 4, Fruits, 258-296. https://doi.org/10.1007/978-94-007-4053-2_37
- Lobo, R. A., & Gompel, A. (2022). Management of menopause: a view towards prevention. *The Lancet Diabetes & Endocrinology*, **10**(6), 457-470. [https://doi.org/10.1016/S2213-8587\(21\)00269-2](https://doi.org/10.1016/S2213-8587(21)00269-2)
- Meher, K., Pariksha, A., Priyadarshini, N., & Meher, S. (2022). Ayurvedic Approach to Menopause: A Review. *International Research Journal of Ayurveda and Yoga*, **5**(8), 167-171.
- Mikulska, P., Malinowska, M., Ignacyk, M., Szustowski, P., Nowak, J., Pesta, K., Szela, M., Szklanny, E., Kaczmarek, G., & Ejiohuo, O. P. (2023). Ashwagandha (*Withania somnifera*)—Current research on the health-promoting activities: a narrative review. *Pharmaceutics*, **15**(4), 1057. <https://doi.org/10.3390/pharmaceutics15041057>
- Mohapatra, S., Kumar, P. A., Aggarwal, A., Iqbal, A., Mirza, M. A., & Iqbal, Z. (2024). Phytotherapeutic approach for conquering menopausal syndrome and osteoporosis. *Phytotherapy Research*, **38**(6), 2728-2763. <https://doi.org/10.1002/ptr.8172>
- Mondal, S., Bhar, K., Mondal, P., Panigrahi, N., Sahoo, S. K., Swetha, P., Chakraborty, S., Teja, N. Y., & Parveen, N. (2023). In quest of the mysterious holistic vedic herb *Bacopamonnieri* (L.) Pennell. *Pharmacognosy Research*, **15**(3). <http://dx.doi.org/10.5530/pres.15.3.045>
- Patel, B., & Dhillon, W. S. (2022). Menopause review: Emerging treatments for menopausal symptoms. *Best Practice & Research Clinical Obstetrics & Gynaecology*, **81**, 134-144. <https://doi.org/10.1016/j.bpobgyn.2021.10.010>
- Patel, M., Vishnoi, S., & Neelima, A. (2023). An empirical review of fundamental principles of Ayurveda for women's reproductive health and diseases. *Journal of Ayurveda and Integrated Medical Sciences*, **8**(9), 105-111. <https://doi.org/10.21760/JAAMS.8.9.17>
- Patel, M. G., & Prajapati, D. (2017). Concept of polycystic ovarian syndrome: perspectives of ayurveda and modern science. *International Journal of Pharmacognosy and Phytochemical Research*, **9**(10), 1363-72. <https://doi.org/10.25258/phyto.v9i10.10462>
- Rathod, P. P. (2023). Ayurveda Intervention in Perimenopausal Syndrome. In *Recent Advances in Pharmaceutical Innovation and Research* (pp. 137-142). Singapore: Springer Nature Singapore. https://doi.org/10.1007/978-981-99-2302-1_6
- Rosenthal, L., Hernandez, P., & Vaamonde, D. (2022). Traditional Chinese medicine, Ayurveda, and fertility. In *Fertility, pregnancy, and wellness* (pp. 209-247). Elsevier. <https://doi.org/10.1016/B978-0-12-818309-0.00014-9>
- Rotti, K., Poornima, B., & Walikar, M. (2022). Conceptual study on the etiopathogenesis of Asthikshayawrsro Postmenopausal Osteoporosis. *Journal of Ayurveda and Integrated Medical Sciences*, **7**(9), 105-114. Retrieved from <https://jaims.in/jaaims/article/view/2084>
- Semalty, A., Semalty, M., Panda, V. S., Asrani, K. H., & Ashar, H. D. (2012). Herbal drugs in chronic fatigue syndrome: an overview. *Swiss Journal of Integrative Medicine*, **24**(3), 155-168. <https://doi.org/10.1159/000339011>
- Speers, A. B., Cabey, K. A., Soumyanath, A., & Wright, K. M. (2021). Effects of *Withania somnifera* (Ashwagandha) on stress and stress-related neuropsychiatric disorders anxiety, depression, and insomnia. *Current neuropharmacology*, **19**(9), 1468-1495. <https://doi.org/10.2174/1570159X19666210712151556>
- Singh, S. K., Kushawaha, A., Rajoria, K., & Dave, H. H. (2022). An Open-Label Randomized Comparative Clinical Study of Different Panchakarma Therapies in Female Infertility. *Journal of Ayurveda*, **16**(1), 11-16. https://doi.org/10.4103/joa.joa_167_21
- Smith, S. J., Lopresti, A. L., & Fairchild, T. J. (2023). Exploring the efficacy and safety of a novel standardized ashwagandha (*Withania somnifera*) root extract (Witholytin®) in adults experiencing high stress and fatigue in a randomized, double-blind, placebo-controlled trial. *Journal of Psychopharmacology*, **37**(11), 1091-1104. <https://doi.org/10.1177/02698811231200023>
- Solanki, J. K., Rajpurohit, S., & Bano, S. (2023). Menopausal Syndrome-Ayurvedic Review. *Journal of Ayurveda and Integrated Medical Sciences*, **8**(8), 190-195. <https://doi.org/10.21760/JAAMS.8.8.29>
- Talaulikar, V. (2022). Menopause transition: Physiology and symptoms. *Best practice & research Clinical Obstetrics & Gynaecology*, **81**, 3-7. <https://doi.org/10.1016/j.bpobgyn.2022.03.003>
- Tanideh, N., Daneshmand, F., Karimimanes, M., Mottaghipisheh, J., Koohpeyma, F., Koohi-Hosseinabadi, O., Tanideh, R., Irajie, C., & Irajie, A. (2023). Hydroalcoholic extract of Glycyrrhiza glabra root combined with Linum usitatissimum oil as an alternative for hormone replacement therapy in ovariectomized rats. *Heliyon*, **9**(5), e15557. <https://doi.org/10.1016/j.heliyon.2023.e15557>
- Tawalare, K., Wakde, S., Tawalare, K. A., Bhamkar, S., Bagde, R., Saoji, A., Gode, D., Chaudhari, S., Hazare, S., & Pusadekar, Y. (2024). Estimation of prakriti (body constitution) in women of Eastern Maharashtra tribal belt of central India featuring early and premature menopause. *Journal of Family Medicine and Primary Care*, **13**(5), 1665-1669. https://doi.org/10.4103/jfmpc.jfmpc_376_23
- Venunadh, A., & Patil, S. S. (2022). A clinical study to evaluate the efficacy of Dahaprashamana Gana in the management of Vasomotor Symptoms in Perimenopause and Menopause. *Journal of Ayurveda and Integrated Medical Sciences*, **7**(10), 01-08. <https://doi.org/10.21760/JAAMS.7.10.1>
- Vigneswaran, K., & Hamoda, H. (2023). The pathophysiology and management of menopausal symptoms. *Obstetrics, Gynaecology & Reproductive Medicine*, **33**(5), 135-140. <https://doi.org/10.1016/j.ogrm.2011.12.006>
- Yadav, N., & Singh, A. K. (2023). Amalaki (*Emblia officinalis* Gaertn.): A review on its therapeutic properties. *Journal of Ayurveda and Integrated Medical Sciences*, **8**(8), 155-162. <https://doi.org/10.21760/JAAMS.8.8.23>

- de Valois, B., Young, T., Thorpe, P., Degun, T., & Corbishley, K. (2022). Acupuncture in the real world: evaluating a 15-year NADA auricular acupuncture service for breast cancer survivors experiencing hot flushes and night sweats as a consequence of adjuvant hormonal therapies. *Supportive Care in Cancer*, **30**(6), 5063-5074. <https://doi.org/10.1007/s00520-022-06898-7>
- Goyal, A., Ekelmans, A., Cerjak, J., & Frishman, W. H. (2025). Nonhormonal Treatment of Vasomotor Symptoms of Menopause. *Cardiology in Review*, 10-1097. <https://doi.org/10.1097/CRD.0000000000000874>
- Borozan, S., Kamrul-Hasan, A. B. M., & Pappachan, J. M. (2024). Hormone replacement therapy for menopausal mood swings and sleep quality: The current evidence. *World Journal of Psychiatry*, **14**(10), 1605. <https://doi.org/10.5498/wjp.v14.i10.1605>
- Tandon, V. R., Sharma, S., Mahajan, A., Mahajan, A., & Tandon, A. (2022). Menopause and sleep disorders. *Journal of mid-life health*, **13**(1), 26-33. https://doi.org/10.4103/jmh.jmh_18_22
- Brown, P. C. (2024). Vaginal symptoms in the menopause: cause, impact and treatment combination options. *Practice Nursing*, **35**(2), 44-49. <https://doi.org/10.12968/pnur.2024.35.2.44>
- Sharma, A., Davies, R., Kapoor, A., Islam, H., Webber, L., & Jayasena, C. N. (2023). The effect of hormone replacement therapy on cognition and mood. *Clinical Endocrinology*, **98**(3), 285-295.
- Inchara, P., & Rachana, H. V. (2024). Perimenopause: A Gentle Transition through Ayurveda. *Journal of Ayurveda and Integrated Medical Sciences*, **9**(12), 116-122. Available from: <https://jaims.in/jaims/article/view/3895>
- Mishra, T., & Vuppu, S. (2023). Proposed Design and In-silico Studies of Functional Idli as a Prophylactic Measure to Reduce Post-Menopausal Adverse Effects in Women. *Food Science and Engineering*, 294-313. <https://doi.org/10.37256/fse.4220233121>
- Bagga, S. S., Tayade, S., Lohiya, N., Tyagi, A., & Chauhan, A. (2025). Menopause dynamics: From symptoms to quality of life, unraveling the complexities of the hormonal shift. *Multidisciplinary Reviews*, **8**(2), 2025057-2025057. <https://doi.org/10.31893/multirev.2025057>
- Solanki, J. K., Rajpurohit, S., & Bano, S. (2023). Menopausal Syndrome-Ayurvedic Review. *Journal of Ayurveda and Integrated Medical Sciences*, **8**(8), 190-195. <https://doi.org/10.21760/jaims.8.8.29>
- Akter, R. (2024). StreeVigyan and the role of panchakarma in female reproductive health. *Journal of Kaumarbhritya and StreeVigyan*, **1**(1), 16-18. <https://doi.org/10.33545/kaumarbhritya.2024.v1.i1.A.5>
- Langer, R. D., Hodis, H. N., Lobo, R. A., & Allison, M. A. (2021). Hormone replacement therapy—where are we now? *Climacteric*, **24**(1), 3-10. <https://doi.org/10.1080/13697137.2020.1851183>