

SHORT COMMUNICATION

Ayurvedic Management of Diabetes Peripheral Neuropathy: A Stage-Specific Dosha-Based Approach

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ABSTRACT

Diabetic peripheral neuropathy (DPN) is among the most prevalent and debilitating complications of type 2 diabetes mellitus, affecting nearly two-thirds of patients with prolonged disease duration. It is primarily driven by chronic hyperglycemia, which induces oxidative stress, formation of advanced glycation end-products, and progressive neurovascular compromise. These mechanisms result in damage to peripheral nerves, manifesting as sensory loss, pain, and autonomic dysfunction. Despite advances in pharmacotherapy, current treatments such as gabapentinoids, antidepressants, and non-steroidal anti-inflammatory drugs largely provide symptomatic relief and are often associated with significant adverse effects, thereby limiting long-term compliance and quality of life. In contrast, Ayurveda offers a comprehensive and individualized therapeutic framework grounded in the principles of dosha, dhatu, and srotas. Within this paradigm, DPN is understood as a manifestation of Prameha upadrava and Vatavyadhi, primarily involving avarana (obstruction) of Vata by Kapha or association with Pitta. This article presents a stage-specific Ayurvedic approach wherein DPN is categorized into Kaphavrta Vata and Pittavrta Vata phenotypes. Management follows a logical therapeutic sequence including agnidipana, dosha pratyakriti cikitsa, avarana nivrtti, sodhana, and rasayana. Special emphasis is placed on interventions such as Udvartana and Madhutailika Yapana Basti, which offer targeted action on microcirculation and neural tissue integrity. This integrative framework provides a clinically applicable model for the safe and effective management of DPN, warranting further validation through systematic research.

Keywords: Diabetes Peripheral neuropathy, Prameha upadrava, Kaphavrta vata, integrative diabetology

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INTRODUCTION

Diabetic peripheral neuropathy represents a major clinical challenge due to its high prevalence, chronic progression, and significant impact on patient quality of life. [1,2] Epidemiological data suggest that approximately 60–70% of individuals with long-standing diabetes develop some form of neuropathy, with distal symmetric polyneuropathy being the most common presentation. [1] The condition involves a complex interplay of metabolic, vascular, and inflammatory mechanisms. Chronic hyperglycemia activates multiple biochemical pathways, including the polyol pathway, protein kinase C activation, and oxidative stress cascades, all of which contribute to neuronal injury and microvascular dysfunction. [3,4] Additionally, ischemia of the vasa nervorum further exacerbates nerve damage, leading to progressive sensory and motor deficits. [5] Clinically, patients present with a spectrum of symptoms ranging from

numbness and tingling to severe burning pain and allodynia. Conventional management strategies primarily focus on glycemic control and symptomatic relief using pharmacological agents such as anticonvulsants and antidepressants. However, these treatments do not address the underlying pathophysiology and are frequently associated with adverse effects such as sedation, dizziness, gastrointestinal disturbances, and dependency. [6] Ayurveda, the traditional system of medicine, provides a fundamentally different approach by emphasizing systemic balance and individualized treatment. Diabetic neuropathy can be correlated with *Prameha upadrava* and *Vatavyadhi*, particularly involving *avarana* pathology where the normal movement of *Vata* is obstructed by other *doṣhas*. This conceptual framework allows for a stage-wise understanding of disease progression and facilitates targeted therapeutic interventions. [7] The present work aims to articulate a clinically applicable Ayurvedic model for DPN, integrating classical principles with contemporary biomedical understanding.

MATERIAL AND METHODS

The present study was conducted as a narrative conceptual review integrating Ayurvedic classical principles with contemporary biomedical understanding of diabetic peripheral neuropathy (DPN). Relevant Ayurvedic concepts related to *Prameha*, *Prameha upadrava*, *Vatavyadhi*, *avarana*, *supti*, *daha*, and *dhatukṣaya* were reviewed from classical texts including the Charaka Samhita, Sushruta Samhita, and Ashtanga Hridaya. Modern biomedical literature concerning diabetic neuropathy, oxidative stress, advanced glycation end-products, neurovascular dysfunction, inflammation, and microvascular ischemia was explored through indexed scientific databases including PubMed, Scopus Preview, and Google Scholar. The collected information was qualitatively analyzed and correlated with Ayurvedic pathophysiological concepts to develop a stage-specific dosha-based management framework for DPN. Therapeutic interventions were categorized according to *Kaphavṛta Vata*, *Pittavṛta Vata*, and *Dhatukṣaya Vata* presentations, and management principles were organized based on *agnidipana*, *rukṣaṇa*, *snehana*, *sodhana*, *basti*, and *rasayana* therapies. As the study was purely conceptual and literature-based, no human or animal participants were involved, and ethical clearance was not required.

Ayurvedic Interpretation

From an Ayurvedic perspective, diabetic peripheral neuropathy is not viewed as a single disease entity but rather as a manifestation of underlying systemic imbalance involving multiple *doṣhas* and *dhatu*s. It is primarily categorized under *Vatavyadhi* due to the involvement of neurological functions governed by *Vata*, while its association with diabetes places it within the spectrum of *Prameha upadrava*. The chronicity and complexity of the condition render it *kṛcchrasadhya* or *yapya*, indicating that while complete cure may be challenging, effective management and symptom control are achievable. The pathogenesis begins with *kleda vṛddhi*, a state of increased pathological fluidity associated with *Prameha*. This leads to *srotorodha*, or obstruction of microchannels, [8] which in modern terms may be correlated with microvascular impairment affecting the vasa nervorum. As *Kapha* accumulates and obstructs the normal flow of *Vata*, a condition of *Kaphavṛta Vata* arises, characterized clinically by numbness, heaviness, and reduced sensation. Over time, persistent obstruction and metabolic derangement result in *dhatukṣaya*, or tissue depletion, which further aggravates *Vata* and leads to degenerative changes in nerve tissue. [9] In certain patients, there is a significant involvement of *Pitta*, resulting in *Pittavṛta Vata* or *Pittanubandha Vata*. This manifests as burning sensation, redness, and inflammatory pain, reflecting underlying neuroinflammation and oxidative damage. [10] Thus, DPN can be clinically stratified into distinct phenotypes based on *doṣha* predominance, enabling a more precise and individualized therapeutic approach.

Treatment Principles [11]

The Ayurvedic management of diabetic peripheral neuropathy is guided by a systematic and hierarchical therapeutic approach aimed at addressing both the root cause and clinical manifestations. The first step involves *agnidipana*, or restoration of digestive and metabolic fire, which is essential in a *bahu-doṣha avastha* such as DPN. Impaired Agni contributes to the formation of *ama* and perpetuates metabolic dysfunction; hence, its correction is foundational to all subsequent therapies. Following this, treatment is directed towards the predominant *doṣha*. In cases of *Kaphavṛta Vata*, therapies aimed at reducing *Kapha* and relieving obstruction are prioritized, whereas in *Pittavṛta Vata*, interventions focus on pacifying *Pitta* and alleviating inflammation. The concept of *avarana chikitsa* is central, as it involves removing the obstruction to restore the normal function of *Vata*. Depending on the stage of disease and patient strength (*bala*), either *apatarpaṇa* (depleting therapies) or *bṛmhana* (nourishing therapies) are employed. *Sodhana* procedures, particularly *basti*, play a crucial role in managing *Vatavyadhi*, as they directly influence systemic *Vata* and facilitate the removal of accumulated toxins. Finally, *rasayana* therapy is

incorporated to promote tissue regeneration, enhance nerve function, and prevent disease progression. This stepwise approach ensures that treatment is both rational and tailored to individual patient needs.

Management Strategies [12]

In *Kaphavrta Vata* presentations, where numbness, heaviness, and mild edema predominate, the primary therapeutic objective is to reduce Kapha and eliminate obstruction. This is achieved through *rukṣaṇa* therapies, which counteract the excessive unctuousness and stagnation characteristic of *Kapha*. Internal medications such as *Bhunimbadi Kashayam* and *Asanadi Kashayam* help in metabolic correction and channel clearance. Among external therapies, *Udvartana* occupies a central role due to its combined mechanical and pharmacological effects. By employing dry herbal powders with *rukṣa* and *lekhana* properties, *Udvartana* enhances peripheral circulation, reduces tissue heaviness, and improves sensory perception. As the disease progresses and *Vata* becomes more prominent, *snehana* and *basti* therapies are introduced to restore lubrication and support nerve function. In contrast, *Pittavrta Vata* is characterized by burning sensation, redness, and sharp pain, indicating significant involvement of inflammatory processes. Here, treatment focuses on *Pitta-samana* and *rakta-prasadana*. Formulations such as *Maha Manjishthadi Kashayam* and *Guduchyadi Kashayam* are employed for their anti-inflammatory and detoxifying properties. External therapies including *Dhanyamla Dhara* and medicated oil massage provide symptomatic relief and reduce local inflammation. Internal administration of *Kshirabala Taila* offers both *Vata-pacifying* and neuroprotective effects. *Rasayana* drugs such as *Amalaki* further support tissue repair and antioxidant activity.

Integrated Treatment Flowchart

Step 1: Patient Assessment

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Evaluate: Glycemic status + Symptoms (*Supti vs Daha*) + *Bala*

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Step 2: Dosha Identification

Numbness → *Kaphavrta Vata*

Burning → *Pittavrta Vata*

Wasting → *Dhatukṣaya*

↓

Step 3: Agni Correction (*Agnidipana*)

Deepana–Pachana drugs

↓

Step 4: Primary Intervention

Kaphavrta → *Rukṣaṇa* (*Udvartana*, *Kashaya*)

Pittavrta → *Pitta shamana* (*Kashayam*, cooling therapies)

↓

Step 5: *Avaraṇa Chikitsa*

Remove obstruction and Restore *Vata* movement

↓

Step 6: *Sodhana* Therapy

Basti (*Lekhana* / *Yapana* / *Anuvasana* based on stage)

↓

Step 7: *Rasayana* Therapy

Amalaki, *Guduchi*, *Vasanthā Kusumakara rasa*

↓

Step 8: Maintenance Phase

Diet + Lifestyle + Long-term *Rasayana*

DISCUSSION

The Ayurvedic approach to diabetic peripheral neuropathy offers a paradigm shift from symptomatic management to holistic disease modification. By classifying DPN into distinct *doṣhik* phenotypes, it allows for precise and individualized treatment strategies that address the heterogeneity of clinical presentations. Unlike conventional pharmacotherapy, which primarily targets pain pathways, Ayurveda simultaneously addresses systemic metabolic imbalance, microvascular dysfunction, and neural degeneration. Interventions such as *Udvartana* demonstrate a unique integration of mechanical stimulation and pharmacological action, leading to improved circulation and sensory function without systemic side effects. Similarly, *basti* therapies exert systemic effects through modulation of *Vata*, influencing neurovascular pathways and promoting tissue nourishment. The inclusion of *rasayana*

further distinguishes Ayurvedic management by emphasizing regeneration and long-term disease control. Moreover, the safety profile of Ayurvedic interventions is favorable compared to conventional drugs, particularly in long-term use. This makes Ayurveda especially relevant in chronic conditions like DPN, where sustained therapy is required. However, the lack of large-scale clinical trials remains a limitation, highlighting the need for rigorous scientific validation.

LIMITATIONS

Despite presenting a structured and clinically applicable framework, this study has several limitations. Firstly, the proposed model is primarily conceptual and derived from classical Ayurvedic principles integrated with clinical interpretation, lacking validation through randomized controlled trials. Secondly, variability in formulations, dosage, and therapeutic protocols across different Ayurvedic practitioners may limit reproducibility. Thirdly, the absence of standardized outcome measures specific to Ayurvedic interventions in diabetic neuropathy poses a challenge in objectively assessing efficacy. Additionally, correlations drawn between Ayurvedic concepts such as *ama*, *srotorodha*, and modern biochemical processes remain interpretative and require experimental substantiation. Finally, the lack of large-scale comparative studies with conventional therapies limits the generalizability of this approach in mainstream clinical practice.

FUTURE SCOPE

Future research should focus on generating high-quality clinical evidence to validate the Ayurvedic management of diabetic peripheral neuropathy. Randomized controlled trials comparing Ayurvedic interventions such as *Udvartana* and *Madhutailika Yapana Basti* with standard pharmacological treatments are essential. Standardization of treatment protocols, including drug formulations, dosage, and duration, will enhance reproducibility and acceptance. Integration of objective assessment tools such as nerve conduction studies, quantitative sensory testing, and biomarkers of oxidative stress can provide measurable outcomes and strengthen evidence. Further exploration of mechanistic pathways through experimental studies may help establish correlations between Ayurvedic concepts and molecular biology, particularly in areas such as oxidative stress, inflammation, and neurodegeneration. Additionally, interdisciplinary research combining Ayurveda with modern neurology and endocrinology can pave the way for integrative treatment models. Longitudinal cohort studies evaluating the role of *rasayana therapy* in preventing progression of neuropathy may also provide valuable insights.

CLINICAL IMPLICATIONS

The proposed Ayurvedic model offers a practical framework for clinicians managing diabetic neuropathy, particularly in resource-limited settings where long-term pharmacotherapy may not be feasible. Its emphasis on personalized treatment, safety, and systemic correction makes it suitable for integration into holistic diabetes care. Early identification of *doṣha* predominance can significantly improve treatment outcomes and prevent progression to irreversible nerve damage.

CONCLUSION

Diabetic peripheral neuropathy is a complex and multifactorial condition that requires a comprehensive and individualized treatment approach. Ayurveda provides a robust framework for understanding and managing DPN through its concepts of *doṣha*, *dhatu*, and *srotas*, as well as its emphasis on *avarāṇa* pathology. By classifying patients into *Kaphavrta Vata* and *Pittavrta Vata* phenotypes and applying stage-specific interventions, Ayurveda enables targeted and effective management. Therapies such as *Udvartana*, *basti*, and *rasayana* not only alleviate symptoms but also address the underlying pathophysiology, offering potential for long-term improvement and prevention of complications. Integrating these approaches with modern diagnostic tools and conducting well-designed clinical studies will be essential for establishing Ayurveda as a credible component of integrative diabetology.

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DATA AVAILABILITY STATEMENT

Not applicable.

INFORMED CONSENT

Not applicable.

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