

AYURVEDIC APPROACH IN THE MANAGEMENT OF DIABETIC NEUROPATHY- A REVIEW

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ABSTRACT

Background: Diabetes mellitus is a multifactorial disorder of metabolism which affects approximately 246 million people all over the world. According to WHO, India has been projected as the country with the fastest growing population of diabetic patients. Diabetic neuropathy is one of the most common complications associated with diabetes mellitus, affecting approximately 30% of the diabetic patients. It is characterized by symptoms such as pain, tingling sensation, numbness, and loss of feeling in hands, arms, feet and legs. It can be compared with *Prameha Janya Updrava*, as it manifests secondary to diabetes mellitus. **Objectives:** This study will provide an analysis of the efficiency of Ayurvedic remedies in the management of Diabetic neuropathy by the review of already published clinical trials conducted on it. **Data sources:** Data was searched by using databases, which included Google

scholar, PubMed and Ayush research portal, for explanation of the topic. **Study eligibility criteria:** In this review, only randomized controlled trials [RCTs] were kept under inclusion. Studies published within the timeframe of 2018-2024 were included. Studies focussed only on *Panchkarma* treatment without any medications were kept under exclusion. **Results:** Outcome was assessed on the basis of reduction in various scales like diabetic neuropathy symptom score, Neuropathy disability score, and complaints of pain, numbness, tingling and burning sensation. Most of the ayurvedic interventions showed significant symptomatic improvement. **Conclusion:** From this review, it can be concluded that diabetic neuropathy

can be effectively managed with Ayurveda.

KEYWORDS: Diabetic neuropathy, randomized controlled trials, ayurvedic remedies.

INTRODUCTION

BACKGROUND

Diabetes mellitus is a multifactorial disorder of metabolism that affects millions of people, approximately 246 million people all over the world. According to WHO, India has been projected as the country with the fastest growing population of diabetic patients. It is estimated that India would cross the figure of 57 million by 2025.^[1] Chronic hyperglycemia causes irreversible damage over time to a number of tissues, particularly the small blood vessels of the retina [retinopathy], the glomerulus[nephropathy] and peripheral nerves [peripheral neuropathy]. These microvascular complications are amongst the commonest causes of visual loss, end stage renal failure, and foot ulceration and have a major adverse impact on the quality of life. Diabetic neuropathy is one of the most common complications associated with diabetes mellitus, which affects approximately 30% of the diabetic patients.^[2] Poor glycemic control, prolonged duration of diabetes, cardiovascular diseases, hyperlipidemia, hypertension, family history, stress, anxiety etc are considered as the major risk factors for diabetic neuropathy.^[3] It is characterized by symptoms such as pain, numbness, tingling sensation and loss of feeling in hands, arms, feet, and legs.^[4] According to Ayurveda, the symptomatology of diabetic peripheral neuropathy is scattered in *Purvarupa* [premonitory symptoms], *Lakshana* [symptoms] and *Updrava* [complications] of *Prameha*. It can be compared and kept under *Prameha Janya Updrava*, as it manifests secondary to diabetes mellitus.^[5] In Ayurvedic texts, *Suptata* [numbness] and *Daha* [burning sensation] in the body parts, particularly the hands and feet are described as *Purvarupa* of *Prameha*. *Daha* is one of the *Updravas* of *Prameha*.^[6] A review of various clinical trials on Diabetic neuropathy was conducted, which emphasizes the importance of Ayurvedic medications and *Panchkarma* treatment in its management. Therefore this study aims to show the efficacy of evidence based Ayurvedic remedies in managing diabetic neuropathy by the review of already published clinical trials.

AIMS AND OBJECTIVES

This review provides a systematic analysis of already published clinical trials that have been conducted on diabetic neuropathy and it aims to explore the efficiency of Ayurvedic remedies, including both oral medications as well as *Panchkarma* treatment in the

management of diabetic neuropathy. It aims to elaborate the results obtained by Ayurvedic interventions in the reduction of various scales used for assessment of diabetic neuropathy, like Diabetic neuropathy symptom score, Neuropathy disability score, and Michigan neuropathy screening instrument. It also highlights the level of improvement in the symptoms like pain, numbness, tingling and burning sensation.

MATERIALS AND METHODS

Information sources

In order to ensure a detailed explanation of the topic, various databases like Google Scholar, PubMed, Ayush research portal, Scopus, were employed. Various terms were searched for this review, such as ayurvedic management, diabetic neuropathy, clinical study, randomized controlled trials [RCTs], oral medications, etc. In addition, searches were also done manually for associated relevant journals and articles to avoid missing any potentially eligible studies. Researches showing the beneficial effects of oral medications as well as a combination of both oral medications and *Panchkarma* therapies were analysed separately.

PROTOCOL AND REGISTRATION

Eligibility criteria

Inclusion Criteria

These criteria collectively aims in enhancing the significance of the studies included in this review to ensure a good quality analysis of the efficiency of Ayurveda in the management of diabetic neuropathy. In this review, only randomized controlled trials [RCTs] were kept under inclusion. Studies which were in English language were included for ensuring smooth data accessibility. Studies published in the timeframe of 2018-2024 were kept under inclusion as the incidence of lifestyle disorders like Diabetes mellitus and its complications has increased in the recent years. Studies incorporating grading on the basis of diabetic neuropathic symptom score were selected. Studies incorporating complaints of pain, numbness, tingling sensation, and burning sensation were considered under inclusion. Only studies with full-text availability for the research articles were kept under inclusion, thereby ensuring access to detailed information necessary for the review.

Exclusion Criteria

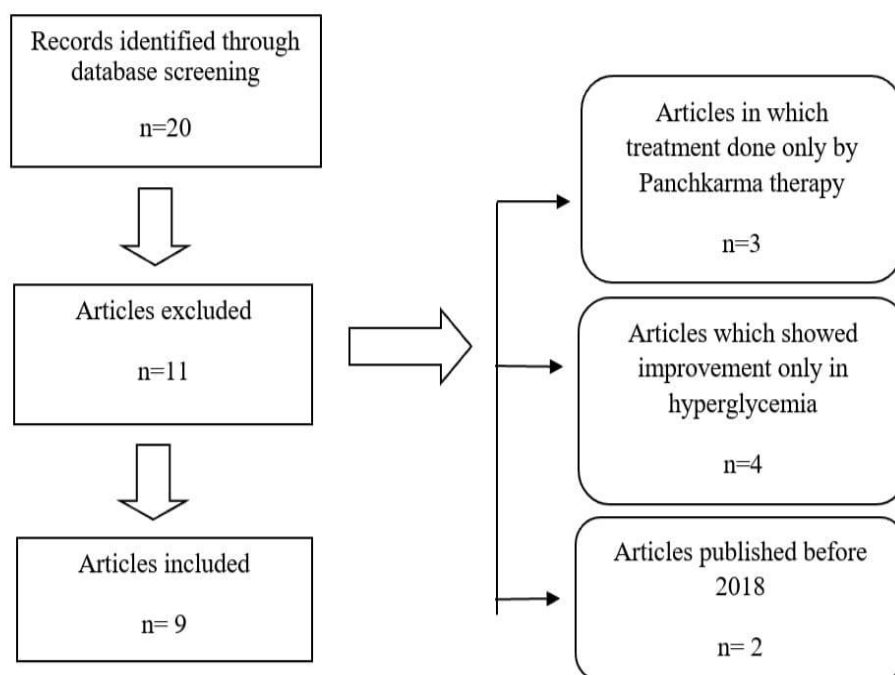
In order to enhance the precision of the review, non-RCT designs such as case studies and literature reviews were excluded. Research studies focused only on *Panchkarma* treatment without the use of Ayurvedic medications were also kept under exclusion. Studies involving

surgical intervention, such as in diabetic foot ulcers, were also excluded. Studies showing improvement only in hyperglycemia were considered under exclusion.

Selection process

On the basis of inclusion and exclusion criteria, the reviewers decided the screening and selection process. They screened the titles, abstracts and full-text search results to identify potentially eligible studies. For studies appearing in more than one publication, we considered the most recent and extensive studies. After a thorough review, only those RCTs which showed the effect of either oral Ayurvedic medications or oral medications along with *Panchkarma* therapies were taken into consideration by the reviewers.

RESULTS



Study selection- For this scientific review, around 20 articles on the RCTs conducted on diabetic neuropathy were screened through PubMed, Google Scholar, Scopus, and Ayush research portal. Among these, 11 articles were excluded in which treatment was done only by *Panchkarma* therapies and also which showed improvement only in hyperglycemia and not in other symptoms of diabetic neuropathy.

Study characteristics- The studies showing improvement in the symptoms of diabetic neuropathy, like pain, numbness, tingling and burning sensation, as well as improvement in

various scales like diabetic neuropathy symptom score, neuropathy disability score, Michigan neuropathy screening instrument, etc. were taken into consideration. Studies involving interventions in the form of both Ayurvedic medications and *Panchkarma* therapies were included.

Study synthesis and outcome- Therefore, a total of 9 articles were selected for this review. The detailed review of these articles revealed that ayurvedic medications along with *Panchkarma* therapies showed results which were highly significant [$P < 0.001$] in improving the symptoms of diabetic neuropathy.

Table 1: The details of selected RCT's for the scientific review on diabetic neuropathy.

Clinical study	Treatment Principle		Major outcomes
	Oral medications	Panchkarma therapy	
Singh SK et al. ^[7]	1. <i>Madhumehari Churna</i> - 5gram BD 2. <i>Ashwagandha Churna</i> - 500 mg BD 3. <i>Dashmool Kwath</i> -40 ml BD 4. <i>Kaishor Gugglu</i> -500 mg BD 5. <i>Shiva Gutika</i> - 500 mg BD	1. <i>Shashti Shali Pinda Sweda</i> - 28 days 2. <i>Saghrta Panchtikta Panchprasritiki Basti</i> -16 days	Reduction in Neuropathy Disability score from 8 to 3 within one month and to 2 within two months of treatment
Rao et al. ^[8]	1. <i>Balaguduchi Ksheera Kashaya</i> -100 ml BD 2. <i>Ksheerbala</i> 101 capsule-1 BD 3. <i>Nishamalaki Churna</i> -5 gram BD 4. <i>Erand Taila</i> -10 ml at bedtime 5. <i>Hinguvachadi Churna</i> -5 gram BD	1. <i>Udvaartana</i> with <i>Triphala Churna</i> – 4 days 2. <i>Abhyang</i> with <i>Vatasini Taila</i> -6 days 3. <i>Ksheerbasti</i> with [honey, <i>Dhanwantaram Mezhlukupakam</i> , <i>Gugglu Tiktaka Ghrita</i> and milk processed in <i>Bala</i>]-1 day 4. <i>Abhyang</i> with <i>Vatasini Taila</i> + <i>Triphala Churna</i> - 3 days 5. <i>Patrapottali Sweda</i> with <i>Vatasini Taila</i> -6 days	Diabetic neuropathy symptom score [reduced from 4 to 2] • Unsteadiness in walking reduced from 1 to 0 • Mild reduction in numbness • Mild reduction in burning and aching pain • Pricking pain reduced from 1 to 0
Ramadas Maganti et al. ^[9]	1. <i>Lasunadi vati</i> – 500 mg BD	1. <i>Abhyang</i> with <i>Balaguduchyadi Taila</i> 2. <i>Swedana</i> with <i>Nadi Sweda</i> prepared with <i>Dashmool Kwath</i>	Reduction in numbness by 89.7% Improvement in walking time by 54.5% Reduction in tingling sensation by 81.3% Reduction in pain on

			VAS scale from 8 to 1
Anjaly et. al. ^[10]	1. Diabetic water-40 ml 2. Varanadi Kwath -40 ml in morning 3. Kanchnar Gugglu- 1tablet in morning 4. Dhanwantara Gutika- 1tablet in evening 5. Kasturyadi Gutika- 1 tablet in evening 6. Sukumara Kwath- 60 ml in evening 7. Punarnavadi Kwath -60 ml in evening 8. Hingu Triguna Taila- 15 ml in morning	1. Patra Pinda Sweda [Sigrupatra for Pinda, Karpuradi Taila and Cincadi Taila for Abhyanga]- 6 days 2. Abhyanga with Cincadi Taila and Narayana Taila- 4 days 3. Sashtika Sali Pinda Sweda – 1 day	Reduction in Michigan Neuropathy Screening Instrument Vibration perception at the great toe reduced from 1 to 0 in bilateral lower limbs Improvement in monofilament from 6/10 to 8/10 in right leg
Sathe et. al. ^[11]	1. Guduchi Satva- 500 mg with Ghrita 2. Jasad Bhasma -250 mg with Ghrita for 15 days	-	Reduction in tingling sensation from 3 to 0 Reduction in numbness from 3 to 0 Reduction in burning sensation from 3 to 0
Waghchaure et. al. ^[12]	1. Trikatu Churna [for Deepana Pachana]-1 st -4 th day 2. Dhanwantara Ghrita Snehapana-5 th -10 th day 3. Shilajitwadi Vati -1 TDS- 15 th -17 th day 4. Mustadi Kwath – 15 ml BD	1. Sarvang Abhyanga with Murchit Tila Taila - 11 th -13 th day 2. Bhashpa Swedana with Dashmool Kwath- 11 th -13 th day 3. Virechana Karma with Kalyanaka Guda – 14 th day	Reduction in burning sensation from 3 to 1 Reduction in numbness from 3 to 0 Reduction in pain in bilateral foot from 3 to 0
Sachinkumar Sahebrao Patil et al. ^[13]	1. Suvarna Malini Vasanta – 125 mg OD with Goghrita 2. Panchtikta Loha Gugglu- 500 mg TDS with Koshna Jala	1. Sarvang Swedan with Kottamchukadi Taila 2. Sarvang Swedan with Bala Ksheera Shashtishalik Pinda Sweda 3. Yoga Basti A]Niruha- Sahacharadi Yapana Basti B]Anuvasana – Sahchar Taila -150 ml	Reduction in tingling sensation from 3 to 0 Reduction in burning sensation from 3 to 1 Reduction in pain from 10 to 2 on VAS scale
Shweta Kodre et. al. ^[14]	1. Capsule palsineuron- 500 mg TDS 2. Madhumehahar Vati- 250 mg BD 3. Erand Taila-10 ml at bedtime 4. Capsule Ksheerbala-500	1. Snehana with Mahanarayan Taila-28 days 2. Swedana with Shashti Shali Pinda Sweda – 28 days 3. Yoga Basti- 8 days	Diabetic neuropathy symptom score [reduced from 4 to 1] Unsteadiness on walking reduced from 1 to 0 Mild reduction in

	mg BD 5. <i>Balarishta</i> -20 ml BD	A] <i>Matra Basti</i> using <i>Dashmool Taila</i> B] <i>Niruha Basti</i> using <i>Dashmuladi Niruha</i> 4. <i>Panchtikta Ksheera</i> <i>Basti</i> -16 days	numbness Burning and aching pain reduced from 1 to 0 Pricking sensation reduced from 1 to 0
Lekshmi P S et al. ^[15]	1. <i>Sahacharadi Kashaya</i> -60 ml BD 2. <i>Chandraprabha Gutika</i> -1BD with <i>Kashaya</i> 3. <i>Nishakathakadi Toyam</i> – 15 gm+1/2 litre water BD 4. <i>Pinda Tailam</i> -external application on bilateral foot	1. <i>Dhanyakizhi Rooksham</i> -3 days 2. <i>Lepa of Jadamayadi Choornam</i> + <i>Dhanyamalam</i> on Rt foot- 7 days 3. <i>Dhanyakizhi Snighdham</i> using <i>Murivenna</i> -4 days 4. <i>Patrapottali Swedam</i> with <i>Murivenna</i> - 7 days 5. <i>Shashtikasali Pinda Sweda</i> using <i>Murivenna</i> -3 days 6. <i>Ksheera Basti</i> with <i>Panchtikta Ghrita Saindhava</i> , honey, <i>Ksheera</i> -2 days	Diabetic neuropathy symptom score [reduced from 4 to 0]
			Unsteadiness in walking reduced from 1 to 0 Numbness reduced from 1 to 0 Burning and aching pain reduced from 1 to 0 Tenderness in bilateral legs and feet reduced from 1 to 0

DISCUSSION

The above section provides detailed information regarding the clinical trials conducted on the patients with diabetic neuropathy. It clearly emphasizes the role of various ayurvedic drugs and *Panchkarma* therapies in the improvement of chief complaints of diabetic neuropathy like pain, numbness, tingling sensation, and burning sensation. The above conducted studies also show significant improvement in VAS score, Diabetic neuropathy symptom score, Neuropathy disability score, and Michigan neuropathy screening instrument. According to Ayurveda, diabetic neuropathy can be correlated with *Prameha Janya Updrava*. *Kapha*, *Pitta*, *Rakta*, *Meda*, and *Mamsa* causes *Avarana* in *Vata Gati*. In *Sushruta Samhita*, it is mentioned that *Updravas* of *Prameha* lie more in lower part of the body as *Rasayanis* are closed. Diabetic neuropathy is treated by administration of *Pramehahara Aushada* internally as well as externally removing the *Avarana* of *vata* and by adopting *Vatavyadhihara Chikitsa*.^[16] The beneficial effects of the Ayurvedic interventions are described below.

In Singh SK et al. *Madhumehari Churna*, *Ashwagandha Churna*, *Dashmool Kwath*, *Shiva Gutika*, and *Kaishor Gugglu* along with *Panchkarma* procedures like *Shashti Shali Pinda Sweda* and *Saghrta Panchtikta Panchprasritiki Basti* were administered. *Madhumehari*

Churna contains 10 components which include *Jambu*, *Amrasthimajja*, *Karavellaka*, *Meshashringi*, *Methika*, *Bilva Patra*, *Nimba*, *Shunthi* and *Misreya*. Since *Kapha* aggravation is often a provoking factor in the pathogenesis of *Prameha*, the above drugs pacify *Kapha*, thereby addressing the root cause of the disease.^[17] *Ashwagandha Churna*, due to its neuroprotective effect, is beneficial in relieving symptoms like burning sensation and tingling sensation. It helps in relieving hypertension, nervous disorders, poor eyesight and weakness developed as a result of diabetes.^[18] *Dashmool Kwath* acts as *Tridosha Shamaka*, *Shothhara*, *Nadibalya* and *Vedanasthapaka*.^[19] *Shiva Gutika* contains *Shilajatu* which is proved to be very effective in the management of diabetic neuropathy.^[20] *Kaishor Gugglu* is useful in *Vata* predominant diseases due to its pain relieving property. *Mridu Snehana* and *Swedana* was given by using *Shashti Shali Pinda Sweda*. *Basti* breaks the pathogenesis of *Vatavyadhi* and removes *Margavarodha* by purification of channels and treats *Dhatukshaya* due to its *Brihmana* property. The *Basti* used in this case was made of *Tikta* and *Madhura Rasa*. *Tikta Rasa* has *Sothaghana* and *Pittahara* properties, while *Ghrita* and honey have *Madhura Rasa* dominance, which helps in pacifying *Vata*.^[21]

In **Rao et al.** *Balaguduchi Ksheera Kashaya*, *Ksheerbala* 101 capsule, *Nishamalaki Churna*, *Eranda Taila*, and *Hinguvachadi Churna* along with *Panchkarma* procedures like *Udvartana*, *Abhyang*, *Patrapottali Sweda* and *Ksheerbasti* were administered. *Balaguduchi Ksheer Kashaya* is mentioned in *Supthi Vata Chikitsa*.^[22] *Bala* possesses *Madhura Rasa*, *Ushna Veerya*, and is *Vatahara* in nature, whereas *Guduchi* possesses *Tikta Rasa* and helps in reducing the glycemic level.^[23] *Ksheerbala* is considered as one among the best *Vatapitta Shamak Taila*. It relieves burning sensation and helps in facilitating the sensory perception of sense organs that are hampered in DPN.^[24] Combination of *Nisha* and *Amalaki* is mentioned by *Acharya Vagbhatta* as *Agrya Aushadas* of *Prameha*.^[25] *Eranda Taila* was used for relieving constipation. *Udvartana* with *Triphala Churna* decreases *Kapha* and causes liquefaction of *Meda* which provides *Sthirata* to the body and helps in *Twak Prasadana*^[26] and increases blood circulation. *Abhyang* with *Vatasini Taila*, indicated in *Prameha* reduces *Vata*, thereby improving the sensory perception of the skin.^[27] *Patrapottali Sweda* is a type of *Ushna Sweda* which uses leaves having *Vatahara* property such as *Eranda*, *Arka*, *Shigru*, *Nirgundi* etc. It is *Vatakaphahara* by nature and reduces the difficulties in movement and joint pain.^[28] *Ksheerbasti* was used as the patient was debilitated with *Krurkoshtha*.

In **Ramadas Maganti et al.** *Lasunadi Vati* as *Shaman Aushadi* along with *Panchkarma*

procedures like *Abhyang* with *Balaguduchyadi Taila* and *Swedana* with *Nadi Sweda* prepared with *Dashmool Kwath* were administered. *Lasuna* is an excellent alleviator of *Vata* disorders. The main ingredients in *Balaguduchyadi Taila* are *Bala*, *Guduchi* and *Devdaru*. All these three ingredients have the property of *Vatashamana*. *Snehana* and *Swedana* administered simultaneously produces synergistic effect in managing symptoms like weakness of muscles, cramps and tingling sensation.^[29]

In **Anjaly et al.** *Shaman Aushadis* like *Varanadi Kwath*, *Kanchnar Gugglu*, *Dhanwantara Gutika*, *Katuryadi Gutika*, *Sukumara Kwath*, *Purarnavadi Kwath*, and *Hingu Triguna Taila* along with *Panchkarma* procedures like *Patra Pinda Sweda*, *Abhyanga* with *Cincadi Taila* and *Narayana Taila*, and *Shastika Sali Pinda Sweda* were administered. The common properties of the above oral medications are *Kapha-Vata Shamana*, *Deepana*, *Pachana*, *Srotoshodhan* and *Lekhana*. These medicines possess antioxidant, antibacterial, and anti-diabetic properties, which help to re-establish homeostasis and metabolism, and supply nutrition to the nerves. *Patra Pinda Sweda* enhances vasodilation and promotes the activity of the parasympathetic nervous system by its *Ushna* property. The medicines used for *Abhyang* were *Vatahara* in nature. Role of *Shashti Sali Pinda Sweda* was to nourish the nervous system.^[30]

In **Sathe et al.** administration of *Guduchi Satva* and *Jasad Bhasma* with *Ghrita* for 15 days without any *Panchkarma* treatment was done. Due to its *Tikta*, *Kashaya Guna* and *Sheeta Veerya*, *Guduchi Satva* when given with *Jasad Bhasma*, it acts as *Pittashamaka* and helps stop *Hastapada Chimchimayan* [Tingling sensation], *Daha* [Burning sensation], *Suptata* [numbness] in the feet and hands. It also acts as an anti-diabetic drug, so helpful to treat diabetes mellitus type 2 and some of its *Upadrava* [side effects] like diabetic neuropathy.^[31]

In **Waghchaure et al.** *Trikatu Churna*, *Dhanwantara Ghrita*, *Shilajatwadi Vati*, and *Mustadi Kwath* along with *Panchkarma* intervention like *Sarvang Abhyang*, *Bhashpa Swedana*, and *Virechan Karma* were administered. *Trikatu Churna* was given for the purpose of *Deepana-Pachana* before *Sanshodhana*. *Dhanwantara Ghrita* is recommended mainly in *Prameha* and its complications. *Tikta Pradhan Dravya* affects *Pitta*, *Rakta* and *Kapha*, whereas *Ghrita*, successfully reaches the target cell. *Virechana Karma* [Therapeutic purgation] causes transport of unwanted metabolites [AGEs and Sorbitol] from the plasma and tissues to the intestine for elimination. Through the elimination of *Kapha* and *Pitta*, *Vata*'s path is cleared of obstructions. *Mustadi Kwath* contains *Musta* which possesses *Lekhana*, *Shoshak*, and

Pachaka properties, while *Shilajatwadi Vati* contains *Shilajatu* which contains fulvic acid as the active principle. It significantly increases superoxide dismutase activity and thereby slows down the onset and progression of diabetes.^[32]

In **Sachinkumar Sahebrao Patil et al.** *Suvarna Malini Vasanta* along with *Panchtikta Loha Gugglu* and *Panchkarma* procedures like *Sarvang Swedana* with *Kottamchukadi Taila*, *Shashtishalik Pinda Sweda*, and *Yoga Basti* [*Niruha Basti* with *Sahacharadi Yapana Basti* and *Anuvasana Basti* with *Sahachar Taila*] were administered. *Kottamchukadi Taila* has *Lekhaniya* effect when used externally for *Sarvang Swedana*. It does *Doshavilayana* and *Srotoshodhana* which helps in relieving *Margavarana* of *Vata*.^[33] The main properties of *Shastika* used for *Shashti Shalik Pinda Sweda* are *Snigdha*, *Guru*, *Sthira*, *Sheeta* and *Tridoshaghna*.^[34] The drugs used in *Sahcharadi Yapana Basti* might be able to break the pathophysiology of Diabetes mellitus. Its *Laghu*, *Ruksha Guna* and *Ushna Virya* might be able to break the *Avarodha* of *Meda Kleda*, as it is given in the form of *Basti*, it will also normalise the *Vyana Vayu*. Its other contents like *Bala*, *Sariva*, Milk, ghee and oil provide nourishment to the degenerated joint.^[35] Similarly, *Swarn Malini Vasanta* and *Panchtikta Loha Gugglu* provide strength and help in relieving pain.

In **Shweta Kodre et al.** Capsule *palsineuron*, *Madhumehari Vati*, *Erand Taila*, Capsule *Ksheerabala*, and *Balarishta* along with *Panchkarma* therapies like *Snehana* with *Mahanarayan Taila*, *Shashti Shali Pinda Sweda*, *Yoga Basti* which included *Matrabasti* with *Dashmool Taila* and *Niruha Basti* with *Dashmuladi Niruha* and *Panchtikta Ksheera Basti* were administered. Capsule *palsineuron* improves metabolic processes in both CNS and PNS, activates neuromuscular communication, improves oxidation in tissues, regulates blood supply in affected areas, improves healing of damaged nerves and vessels, thereby helps in providing nutritional support for fast healing of damaging tissues.^[36] *Madhumehari Vati* helps in improving cardinal symptoms of *Prameha* like burning sensation and numbness in lower limbs, polydipsia and flaccidity of body parts.^[37] Capsule *Ksheerbala* provides relief in burning sensation and improves sensory perception. It has neuroprotective properties and thereby helps in reducing nerve irritation as well as inflammation.^[38] *Balarishta* contains drugs that relieve pain and regenerate nerve destruction. *Erand Taila* was used for constipation. *Mahanarayan Taila* used for *Snehana* possesses *Katu*, *Tikta Rasa* and is *Ushna Virya* in nature. By virtue of these properties, it reduces *Vata*, increases blood circulation and thereby helps in providing a soothing effect for neurological pain.^[39] For *Matra Basti*,

Dashmoola Taila was used which is *Tridoshashamaka*. It also causes *Anulomana* of *Vata*, thereby reduces symptoms like pain, numbness and tingling sensation.^[40] *Panchtikta Ksheera Basti* is used for alleviating *Pitta Dosha* related symptoms like burning sensation as it possesses *Tikta Rasa* and *Ksheera* [milk].

In **Lekshmi P S et al.** *Sahacharadi Kashaya*, *Chandraprabha Gutika*, *Nishakathakadi Toyam* as internal medication, and *Pinda Tailam* for external application along with *Panchkarma* procedures like *Dhanyakizhi Rooksham*, *Dhanyakizhi Snigdham*, *Lepanam*, *Patrapottali Swedam*, and *Shashti Shali Pinda Swedam* with *Murivenna*, *Ksheerbasti* were administered. *Nishakathakadi* is indicated specially in *Prameha* and its complications, as it is an antioxidant and has anti-inflammatory action. Since it contains *Amalaki*, thereby it shows a mild purgation effect.^[41] *Chandraprabha Vati* has circulatory and neurological action related to diabetes along with anti-inflammatory action. It increases the insulin secretion, therefore acting as an anti-diabetic.^[42] *Dhanyakizhi Rooksham* removes the inflammation and *Avarana*. *Lepana* done with *Jadamyadhi Choorna* in *Dhanyamla* on the right foot reduces pain and swelling. *Dhanyakizhi Snigdha Sweda* was done with *Murivenna*, which is *Vatahara* in nature as it contains *Lavana Amla Madhura Pradhana Vatahara* leaves. It relaxes and nourishes the affected area. *Shashtishali Pinda Sweda* with *Murivenna* and *Ksheerbasti* are very beneficial in the case of *Krishna Pramehi* who is more prone for *Vata- Pitta Pradhana Prameha Updrava*.^[43]

LIMITATIONS

The study lacks in describing the type of diabetes involved in the pathogenesis of diabetic neuropathy, which could induce errors by finding untrue substantial associations when combining such studies affected by confounding. Also, doing a subgroup analysis for study done among patients with type 1 and type 2 diabetes mellitus would be challenging. In addition to this, the defining criteria for diabetic neuropathy differed from one study to another. It could be a reason for biasness in the review.

CONCLUSION

From the above review study, which has been conducted using randomized clinical trials in the field of Ayurveda in diabetic neuropathy, it is suggested that administration of Ayurvedic medications alone or along with *Panchkarma* therapies has a great efficiency in managing the symptoms of diabetic neuropathy. This review aims to provide primary data to the researchers who are interested in studying the role of Ayurveda in diabetic neuropathy and

thus would be helpful in conducting further research in this field.

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हिंदी सारांश

मधुमेह न्यूरोपैथी के प्रबंधन में आयुर्वेदिक दृष्टिकोण- एक समीक्षा

पृष्ठभूमि- मधुमेह मेलिटस चयापचय का एक बहुक्रियात्मक विकार है जो लाखों लोगों को प्रभावित करता है, दुनिया भर में लगभग 246 मिलियन लोग। डब्ल्यूएचओ के अनुसार, भारत को मधुमेह रोगियों की सबसे तेजी से बढ़ती आबादी वाला देश माना गया है। मधुमेह न्यूरोपैथी मधुमेह मेलिटस से जुड़ी सबसे आम जटिलताओं में से एक है, जो लगभग 30% मधुमेह रोगियों को प्रभावित करती है। यह दर्द, झुनझुनी सनसनी, सुन्नता और हाथ, बाजू, पैर और टांगों में संवेदना की कमी जैसे लक्षणों की विशेषता है। इसकी तुलना प्रमेह जन्य उपचार के तहत की जा सकती है, क्योंकि यह मधुमेह मेलिटस के बाद प्रकट होता है।

उद्देश्य- यह अध्ययन मधुमेह न्यूरोपैथी के प्रबंधन में आयुर्वेदिक उपचारों की दक्षता का विश्लेषण इस पर पहले से प्रकाशित नैदानिक परीक्षणों की समीक्षा द्वारा प्रदान करेगा।

डेटा स्रोत- विषय की व्याख्या के लिए Google विद्वान, PubMed और आयुष अनुसंधान पोर्टल सहित डेटाबेस का उपयोग करके डेटा खोजा गया था।

अध्ययन पात्रता मानदंड- इस समीक्षा में, केवल यादृच्छिक नियंत्रित परीक्षण [RCT] को शामिल किया गया था। वर्ष 2018-2024 के समय-सीमा के भीतर प्रकाशित अध्ययनों को शामिल किया गया। बिना किसी दवा के केवल पंचकर्म उपचार पर केंद्रित अध्ययनों को बहिष्कृत रखा गया।

परिणाम- मधुमेह न्यूरोपैथी लक्षण स्कोर, न्यूरोपैथी विकलांगता स्कोर, और दर्द, सुन्नता, झुनझुनी और जलन की शिकायतों जैसे विभिन्न पैमानों में कमी के आधार पर परिणामों का मूल्यांकन किया गया।

अधिकांश आयुर्वेदिक हस्तक्षेपों ने महत्वपूर्ण लक्षणात्मक सुधार दिखाया।

निष्कर्ष- इस समीक्षा से, यह निष्कर्ष निकाला जा सकता है कि मधुमेह न्यूरोपैथी को आयुर्वेद के साथ प्रभावी ढंग से प्रबंधित किया जा सकता है।