Indonesian Journal of Global Health Research
Volume 9 Number 1, February 2027
e-ISSN 2715-1972; p-ISSN 2714-9749
https://jurnal2.globalhealthsciencegroup.com/index.php/IJGHR

A NARRATIVE REVIEW OF AROMATHERAPY FOR PAIN MANAGEMENT IN DIABETIC PERIPHERAL NEUROPATHY

I Gede Eka Handrean[1]*, Rindha Dwi Sihanto[2]
[1]Department of Internal Medicine, Faculty of Medicine, Universitas Mahasaraswati Denpasar, Jl. Kamboja No.11A, Dangin Puri Kangin, Denpasar Utara, Denpasar, Bali 80233, Indonesia
[2]Department of Neurology, Faculty of Medicine, Universitas Mahasaraswati Denpasar, Jl. Kamboja No.11A, Dangin Puri Kangin, Denpasar Utara, Denpasar, Bali 80233, Indonesia
*I Gede Eka Handrean, handrean@unmas.ac.id

ABSTRACT
Painful diabetic peripheral neuropathy can disturb sleep, limit daily activities and reduce quality of life. Aromatherapy has attracted interest as an adjunct to usual care, although its specific benefits remain uncertain. To critically examine evidence on aromatherapy for pain and quality of life in diabetic peripheral neuropathy. PubMed, Europe PMC and OpenAlex searches on 10 until 16 October 2026 retrieved 354 raw records. Twenty-six sources published in 2008–2026 were cited, including 11 clinical reports. Reports were appraised for design, intervention, comparator, outcomes and reporting consistency, then synthesised thematically. Seven massage studies generally reported short-term pain improvement. Usual-care comparisons could not separate essential-oil effects from massage and attention. Three topical trials produced mixed findings; one study contributed a small diabetic subgroup. Quality-of-life findings varied. Limited blinding, inconsistent reporting and short follow-up restricted interpretation. Aromatherapy massage may provide adjunctive short-term pain relief. Evidence does not establish benefits attributable specifically to essential oils, a standard regimen, lasting improvement or nerve regeneration.

Keywords: aromatherapy; diabetic neuropathy; essential oil; neuropathic pain; quality of life

First Received	Revised	Accepted
19 October 2026	21 October 2026	24 October 2026
Final Proof Received		**Published**
01 November 2026		01 February 2027

How to cite (in APA style)
Handrean, I. G. E., & Sihanto, R. D. (2027). A Narrative Review of Aromatherapy for Pain Management in Diabetic Peripheral Neuropathy. *Indonesian Journal of Global Health Research*, *9*(1), 65–76. https://doi.org/10.37287/ijghr.v9i1.2882.

INTRODUCTION

Painful diabetic peripheral neuropathy (DPN) can affect how patients sleep, move and manage everyday activities. Burning pain, tingling and sensitivity to touch may occur alongside a loss of protective sensation. This combination creates distinct treatment needs. Reducing pain can improve comfort, while impaired sensation may continue to expose the foot to unnoticed injury. A lower pain score therefore does not demonstrate recovery of protective sensation or reversal of nerve damage. These distinctions are essential when evaluating complementary treatments whose reported benefits often concern symptoms measured over a short period (Elafros et al., 2022).

The study population also matters. Diabetes in a patient with limb pain does not establish that all pain arises from DPN. Clinical assessment considers the distribution and course of symptoms, neurological findings and alternative causes. Studies of musculoskeletal pain or injection-related pain in people with diabetes address different questions from trials of painful DPN. Differences in diagnostic criteria and screening instruments can change who enters a study and how its findings apply to clinical practice. A review must therefore distinguish evidence from a clearly defined neuropathy population from broader research involving people with diabetes (Elafros et al., 2022).

Management aims to relieve symptoms and improve function while maintaining diabetes care and foot protection. The American Academy of Neurology recommends assessing sleep and mood alongside pain. Treatment choices also depend on comorbidities, tolerability and the patient's response to previous therapy. The American Diabetes Association similarly places symptom management within comprehensive neuropathy and foot care. Interest in complementary approaches is best understood in this clinical context: an additional intervention needs to offer meaningful benefit alongside established care. Studies should document concurrent medication and changes in treatment so that symptom improvement can be interpreted appropriately (American Diabetes Association Professional Practice Committee for Diabetes, 2026; Price et al., 2022).

Aromatherapy commonly involves inhaling essential oils or applying them to the skin, often during massage. However, products described as plant oils differ substantially. An essential oil contains volatile plant constituents, whereas an extract or infused oil may have a different composition. Botanical species, preparation method, concentration, carrier and route of administration all influence the intervention being tested. Evidence for lavender alone cannot automatically be extended to a blend of several oils or to a different topical botanical product. Clear product descriptions are therefore necessary for both interpretation and replication (Ridouh & Hackshaw, 2022).

Massage introduces further complexity. Patients receive the oil together with touch, time with a therapist and an experience that may influence relaxation and expectations. A trial against usual care can assess the value of adding this complete intervention. A comparison with the same massage using a carrier oil is more informative about the added contribution of the essential oil. Even then, a distinctive smell may reveal treatment allocation. The trials of an oil blend by Gok Metin et al. (2017), lavender by Rivaz et al. (2021) and nutmeg by Motilal and Maharaj (2013) illustrate why products and comparators need to be examined before their results are combined into a general claim about aromatherapy.

The choice of outcome is equally consequential. Pain relief may help a patient sleep or walk more comfortably, but quality of life also reflects mood, comorbid illness and social circumstances. Improvement in one domain need not produce a measurable change in all others. Trials aimed at analgesia should recruit patients with assessable pain at baseline and distinguish symptom outcomes from measures of sensory function. The IMMPACT recommendations provide a useful basis for considering whether a change in chronic pain is meaningful to patients, beyond its statistical significance (Dworkin et al., 2008).

Previous reviews have considered aromatherapy for pain in people with diabetes or for quality of life across different diabetic complications. Their scope extends beyond painful DPN, and some draw on the same primary trials. The Cochrane review of herbal preparations for neuropathic pain also covers a specific set of products and an earlier search period (Aykemat et al., 2026; Boyd et al., 2019; Cho & Kim, 2024). Indonesian studies add a relevant care context, although their design and reporting still require careful appraisal. Local relevance alone does not establish that a treatment will produce the same results in other services (Kholifah et al., 2025; Meutia et al., 2023).

This narrative review examines aromatherapy for pain and quality of life in DPN, with related topical botanical preparations considered separately. It focuses on the clinical population, intervention components, comparator, relevance of outcomes and safety. The aim is to clarify what the available studies show about symptom relief, how far their results support a specific effect of essential oils, and which questions remain unresolved for clinical use and future research.

METHOD

This narrative review used targeted searches, purposive source selection and a qualitative, comparative synthesis. SANRA informed the clarity of the review question, search description, scientific reasoning and presentation of relevant outcomes; it was not used as a risk-of-bias tool for the included trials (Baethge et al., 2019). Comparative clinical reports in DPN formed the primary evidence. Secondary reviews, mechanistic studies and broader diabetes populations provided context and were interpreted according to their populations and methods.

The documented electronic searches were completed on 16 October 2026 and covered publications available up to that date, without a substantive lower year limit. PubMed combined MeSH terms with title and abstract terms for diabetic neuropathy, aromatherapy, essential oils, lavender, chamomile, nutmeg and turpentine. Europe PMC used corresponding title and abstract terms. No randomised-trial or outcome filter was applied, allowing non-randomised studies to be identified.

The searches retrieved 31 records from PubMed, 23 from Europe PMC and 300 from OpenAlex, giving 354 raw records. OpenAlex queries were “diabetic neuropathy aromatherapy”, “diabetic neuropathy lavender” and “diabetic neuropathy essential oils”. Retrieval was limited to the first 100 results for each query in the service's default order. These counts may include the same report across queries or databases and do not represent 354 unique studies. Reference checking and consultation of one relevant Cochrane review supplemented the searches. The work did not include a comprehensive CENTRAL search or direct searches of Scopus and Google Scholar.

Sources were selected purposively for their relevance to the population, clarity of the intervention and comparator, and information on pain or quality of life. Selection involved examining titles and available abstracts, followed by accessible full reports. English and Indonesian reports were considered. Titles, authors and DOIs were cross-checked to recognise repeated reports. Studies of foot wounds, antimicrobial activity or non-neuropathic pain were not treated as direct evidence of analgesia in DPN. The manuscript cites 26 sources, including 11 clinical reports forming the focus of the synthesis and 15 supporting sources. Selection was not independently duplicated.

For each selected clinical report, an evidence table recorded design, population, sample size, oil formulation, administration, massage schedule, comparator, concurrent treatment where reported, outcome instrument, assessment time and findings. Available full texts were used where accessible. Indexed abstracts provided the principal information for Rivaz et al. (2021) and Amiri et al. (2025); unverified details were left unspecified. Participant counts and the direction of reported changes were checked against the available results and tables before interpretation.

Critical appraisal used a structured narrative comparison of allocation and blinding, comparator equivalence, description of the oil and massage, outcome measurement and timing, follow-up, adverse-event reporting, and internal consistency of sample counts and results. Missing full-text information was treated as an access limitation rather than proof that a safeguard was absent. Usual-care comparisons were interpreted as evidence about the combined intervention, whereas matched placebo or active-comparator trials informed the additional contribution of a formulation. Numerical or directional discrepancies were retained as limitations, without imputing corrections or calculating new effects from conflicting values. Tables 1 and 2 summarise these appraisal findings.

The synthesis then grouped the clinical reports into aromatherapy massage, related topical preparations and mixed-neuropathy subgroup evidence. Pain and quality-of-life findings were compared separately within these groups, relating differences to formulation, comparator, duration and methodological limitations. Negative findings and inconsistent quality-of-life results were retained. Secondary reviews were used for context without counting their participants as new

primary evidence, and preclinical studies informed biological plausibility only. The findings were organised into the themes presented in the Discussion and Tables 1–3. No numerical quality score, formal risk-of-bias or GRADE rating, pooled sample size or meta-analysis was produced.

RESULT

The 26 cited sources were published between 2008 and 2026. The 11 clinical reports central to the synthesis dated from 2010 to 2026. Ten directly involved diabetic neuropathy and were published in 2013–2026: seven evaluated aromatherapy massage and three evaluated topical botanical preparations. One further trial enrolled patients with neuropathy of different causes and reported a diabetic subgroup. The 15 supporting sources included guidelines, reviews, mechanistic research, an inhalation study in diabetes with insomnia, and methodological references. Secondary reviews were not counted as additional primary studies.

Aromatherapy massage

The seven massage reports evaluated lavender alone or oil blends, usually over one to four weeks (Table 1). They generally reported favourable pain outcomes, although most compared the intervention with usual care. Three described randomised designs, while four used or reported quasi-experimental designs. Sample sizes were not pooled because some reports contained inconsistent denominators and the studies differed in design and intervention.

Table 1.
Aromatherapy massage studies in diabetic peripheral neuropathy

Study	Design and sample	Intervention and comparator	Findings and limitations
Gok Metin et al. (2017)	Open randomised trial; n = 46	Five-oil blend; 3 sessions/week for 4 weeks; usual care	Pain and NePIQoL improved; oil effects could not be separated from massage.
Mohammed et al. (2019)	Quasi-experimental; n = 60	Rosemary, eucalyptus and lavender; 3 sessions/week for 1 month; conventional treatment	Pain improved; the report also mentions random allocation without sufficient procedural detail.
Rivaz et al. (2021)	Three-arm randomised trial; abstract reports 75 overall and 26/arm	Lavender 3%, 2.5 mL; 10 minutes/night for 1 month; placebo and control	Pain and SF-36 improved; group sizes and placebo details require clarification.
Abdel Hamid Hawash et al. (2023)	Open randomised trial; 120 allocated, 115 completed	Lavender or chamomile; 3 sessions/week for 4 weeks; usual care	Pain improved; neither oil showed clear superiority; quality-of-life reporting was inconsistent.
Meutia et al. (2023)	Quasi-experimental; n = 70	Lavender; 3 sessions/week for 4 weeks; usual care	Final VAS 3.17 versus 4.66; $p < 0.001$; residual confounding remains possible.
Kholifah et al. (2025)	Quasi-experimental; sample count inconsistent	Lavender; 30 minutes/day for 7 days; conventional treatment	Pain $p = 0.017$; quality of life $p = 0.274$; inconsistent values limit effect estimation.
Beshara et al. (2026)	Quasi-experimental; n = 60	Lavender and chamomile; 3 sessions/week for 4 weeks; standard care	Final NPS 14.77 versus 28.30; $p < 0.001$; purposive sampling limits causal interpretation.

Note: Findings follow the source reports. Treatment schedules describe the studies and are not prescribing recommendations. NePIQoL = Neuropathic Pain Impact on Quality of Life Questionnaire; VAS = visual analogue scale; NPS = Neuropathic Pain Scale; SF-36 = Short Form 36.

Topical preparations and diabetic subgroup evidence

Results differed across the three topical trials (Table 2). Nutmeg showed no significant additional benefit over an active formulation. Chamomile showed favourable findings alongside gabapentin, but the available abstract did not provide enough detail to confirm the formulation or treatment

duration. The turpentine trial found no significant efficacy difference from capsaicin; this did not establish equivalence. Li (2010) reported acute outcomes in 18 participants with diabetes within a mixed-neuropathy sample, providing subgroup evidence rather than a trial exclusively in DPN.

Table 2.
Related topical trials and the applicability of their findings

Study	Population and design	Product and comparator	Findings and limitations
Motilal and Maharaj (2013)	Diabetic neuropathy; double-blind randomised trial; n = 74	Nutmeg and mace added to menthol/methyl salicylate; active comparator without nutmeg/mace	No significant additional benefit at 4 weeks.
Musharraf et al. (2017)	Diabetic neuropathy; randomised trial; n = 300	Turpentine versus capsaicin; 3-month assessment	Efficacy comparison p = 0.399; non-inferiority was not established.
Amiri et al. (2025)	Diabetic neuropathy; double-blind randomised trial; n = 72	Chamomile versus placebo; gabapentin in both groups	Sensory indices, MNSI and DN4 improved; formulation and duration remain unverified.
Li (2010)	Mixed neuropathy; randomised crossover trial; n = 60, including 18 with diabetes	Neuragen PN, containing essential oils and homeopathic ingredients, versus placebo	Acute improvement in the subgroup; product composition and manufacturer involvement limit attribution.

Note: The first three trials directly involved diabetic neuropathy; the final trial provides subgroup evidence. MNSI = Michigan Neuropathy Screening Instrument; DN4 = Douleur Neuropathique 4. These botanical products are not necessarily equivalent to essential oils used in massage.

DISCUSSION

Interpreting the effects of aromatherapy massage

Most comparisons in this review estimate the effect of adding aromatherapy massage to usual care. They offer less information about how much of any improvement comes from the oil itself. Massage, therapist contact and treatment expectations can all influence the experience of pain. These effects may still matter to patients, but they need to be recognised when interpreting an apparent treatment benefit. The blends used by Gok Metin et al. (2017) and Mohammed et al. (2019) also differ in composition, preventing a clear judgement about which individual oil contributed to the reported changes.

A credible control is difficult to design because smell can reveal allocation. Adding fragrance to a comparator may improve its sensory similarity, yet the added substance may itself have biological effects. Reports should explain who was blinded, how preparations were matched and whether participants could identify their group. Blinding outcome assessors or analysts can address some sources of bias even when therapists cannot be blinded. The presence of a placebo group alone is insufficient to establish that the treatment experiences were comparable.

Rivaz et al. (2021) used three groups, offering a potentially informative comparison. However, the abstract gives a total of 75 participants and also states 26 in each group. The full report is needed to resolve that discrepancy and confirm the placebo composition and massage procedures. Abdel Hamid Hawash et al. (2023) found pain improvement in both oil groups relative to control, without establishing that lavender was superior to chamomile. A non-significant difference between oils does not show equivalence. In addition, the text and tables do not consistently indicate the same direction of quality-of-life change, making that outcome difficult to interpret.

The non-randomised studies add information from routine care settings but remain vulnerable to differences between groups. The findings of Meutia et al. (2023) may reflect unmeasured confounding as well as the intervention. In Kholifah et al. (2025), inconsistent sample counts and reported values prevent dependable effect estimation. Beshara et al. (2026) reported favourable findings for a blend of lavender and chamomile, although purposive sampling and the quasi-experimental design limit causal interpretation. These limitations reduce the confidence with which the findings can support a specific treatment effect.

The topical trials answer somewhat different questions. Motilal and Maharaj (2013) tested whether nutmeg added benefit to a formulation containing active ingredients. Their negative finding is informative about that additional contribution. Musharraf et al. (2017) found no statistically significant efficacy difference between turpentine and capsaicin. This does not establish non-inferiority, which requires a design and margin chosen for that purpose. Amiri et al. (2025) reported improved neuropathy indices with chamomile alongside gabapentin; the available abstract does not establish whether the product is compositionally comparable to an essential oil used in massage. Li (2010) provides acute subgroup findings for a product containing several ingredients, with manufacturer involvement. Its results cannot be assigned to a single essential oil or assumed to predict sustained benefit in DPN.

Pain relief and quality of life

Pain and quality of life should remain distinct outcomes in the synthesis. A patient may report less pain before experiencing a measurable improvement in physical function or wider wellbeing. Conversely, relaxation and therapeutic contact may improve perceived wellbeing without demonstrating a change in nerve function. Kholifah et al. (2025), for example, reported a significant pain result but no significant quality-of-life difference. This pattern should be reported as it stands rather than reduced to an overall statement that the intervention improved both outcomes.

The instruments used across studies also differ. A questionnaire measuring the impact of neuropathic pain, a general health survey such as the SF-36 and another quality-of-life scale do not provide interchangeable scores. Interpretation requires the instrument version, direction of scoring and domains that changed. A rise in a score is not necessarily an improvement. The reporting inconsistencies in Abdel Hamid Hawash et al. (2023) illustrate why the direction and meaning of a change need to be checked against the underlying tables.

Statistical significance alone cannot establish clinical importance. A p value gives no direct indication of how large a benefit patients experienced or how many improved meaningfully. Group averages may also hide substantial variation in individual response. IMMPACT recommends considering several approaches to clinical importance, including function and patients' overall assessments of change (Dworkin et al., 2008). Table 3 sets out information needed to interpret the outcomes used in this literature. Changes in symptom questionnaires or sensory thresholds do not, on their own, demonstrate structural nerve repair.

Table 3.
Information needed to interpret treatment outcomes

Outcome	What it measures	Information needed for interpretation
Pain intensity	Symptom severity at a defined time	Between-group difference, confidence interval, individual response and persistence of benefit.
Neuropathic symptoms	Pain characteristics or screening findings	Validity for repeated assessment and the meaning of score changes.
Quality of life	Impact on the domains covered by the instrument	Instrument version, scoring direction and changes that patients consider important.
Sensory function	Response to a specified stimulus	Standardised methods, measurement variability, blinded assessment and clinical relevance.
Adverse events	Observed tolerability during follow-up	Event definitions, denominators, monitoring methods, withdrawals and follow-up duration.

Source: Review synthesis informed by Dworkin et al. (2008) and the limitations identified in the clinical reports.

Assessment timing further shapes the meaning of a result. Measurement immediately after massage may capture temporary comfort. Assessment before the next session and after treatment ends is needed to determine whether improvement persists. Concurrent analgesics, diabetes treatment and adherence should also be reported. Nasiri Lari et al. (2020) studied inhaled lavender in type 2 diabetes with insomnia. That study informs discussion of sleep and wellbeing, but it does not directly establish analgesic efficacy in DPN or a dose for topical massage.

Reliable interpretation also requires the sample, time point and type of score to match. An end-of-treatment value differs from a change-from-baseline value, and their standard deviations cannot be substituted for one another. When reports provide only p values or contain conflicting numerical data, the range of plausible benefit remains unclear. Such limitations favour a cautious qualitative account rather than a pooled estimate constructed from incompatible values.

Comparison with previous reviews

Cho and Kim (2024) reported favourable pooled pain findings with substantial heterogeneity, but their review included pain in diabetes that was not exclusively neuropathic. Its pooled estimate therefore cannot be interpreted as a specific effect of lavender in DPN. Aykemat et al. (2026) examined quality of life across a small number of trials involving different diabetic complications. Some primary studies overlap between these reviews. Repeated inclusion in a newer synthesis does not provide an independent replication of the original findings.

The Cochrane review by Boyd et al. (2019) searched to 2018 and consequently predates several lavender and chamomile trials discussed here. Its conclusions need to be read within that period and its range of herbal products. Aqila et al. (2026) considered broader categories of non-pharmacological treatment, including manual therapies. That analysis provides context for symptom management, but it cannot isolate an essential-oil effect. Keeping the primary reports separate from these secondary syntheses helps avoid double-counting evidence or applying a result to a different intervention.

Biological mechanisms and clinical relevance

Experimental research provides plausible reasons to investigate essential oils for neuropathic pain. Hashimoto et al. (2023) found that linalool inhibited TRPA1 and voltage-gated calcium channels in mouse sensory neurons. Sanna et al. (2019) studied oral lavender oil in mice with experimentally induced nerve injury and reported findings involving cellular signalling and the endocannabinoid system. These studies differ from topical massage in patients with diabetes in their species, disease

model, route and tissue exposure. They do not establish a human dose or show that massage delivers an effective concentration to peripheral nerves.

Figure 1 summarises these preclinical findings and the questions that remain for clinical translation. Touch, attention and expectations may contribute alongside any pharmacological activity of the oil. Proposed explanations involving cortisol, neurotransmitters or microcirculation require direct measurement before they can be treated as established mediators. Nerve regeneration requires different evidence from a fall in pain scores. Mechanistic plausibility can guide trials, while clinical conclusions must rest on the population, comparator and outcomes actually studied (Ridouh & Hackshaw, 2022).

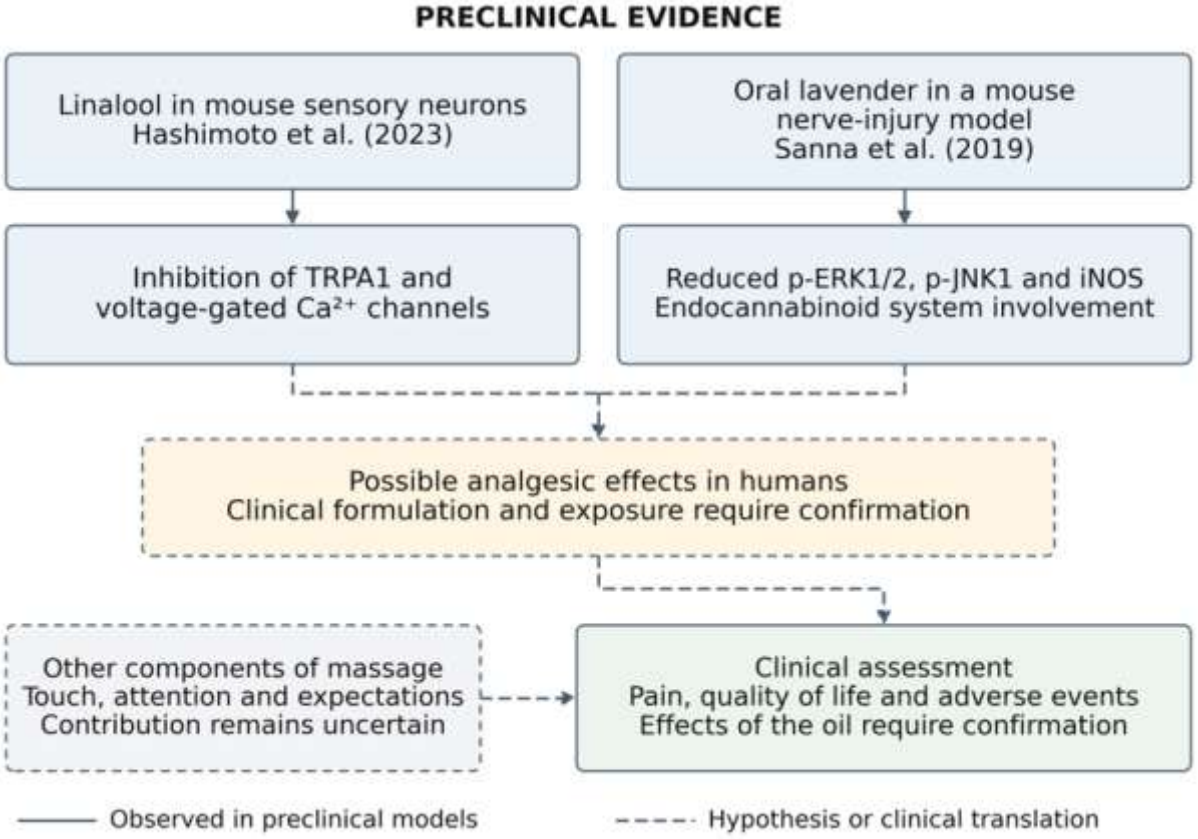

Figure 1. Proposed mechanisms and limits of clinical translation

Solid arrows indicate findings within preclinical models. Dashed arrows indicate hypotheses or links requiring clinical confirmation. Preclinical exposures differ from massage in patients; the figure does not establish nerve regeneration or lasting benefit. Sources: Hashimoto et al. (2023), Sanna et al. (2019), and Ridouh and Hackshaw (2022).

Safety and clinical use

Small studies with short follow-up have limited ability to detect uncommon or delayed adverse events. A report of no events is more informative when it describes active monitoring, clear definitions and the number exposed in each group. Posadzki et al. (2012) documented dermatitis and other reactions in case reports and series involving aromatherapy. Those data establish that adverse reactions can occur, but they do not provide their frequency in DPN. Product concentration, carrier, area of application and the condition of the skin all affect the context in which tolerability is assessed.

Loss of protective sensation makes foot assessment particularly important. The absence of discomfort does not rule out skin injury. Skin condition, perfusion and foot risk should continue to be assessed within diabetes care, and findings from participants without wounds or vascular disease

should not be extended to all diabetic foot conditions (American Diabetes Association Professional Practice Committee for Diabetes, 2026). The studies do not establish a standard oil, concentration, frequency or massage technique. Their schedules describe research interventions and should not be read as prescribing recommendations. Symptom improvement alone does not justify stopping analgesics or reducing established diabetes and foot care.

For Indonesian services, further work should examine feasibility as well as symptom outcomes. Staff time, training, consistency of technique and patients' ability to attend sessions may affect delivery. Preferences for particular aromas and comfort with touch may influence adherence. Claims that the intervention is inexpensive or easy to implement require separate evidence. Recording refusal, discomfort and reasons for stopping would provide a fuller account of acceptability than reporting outcomes only among participants who complete treatment.

Research priorities and review limitations

Future trials should define DPN clearly, document baseline pain and concurrent treatment, and choose controls that match the question. Three groups receiving essential-oil massage, carrier-oil massage or usual care could help distinguish the complete intervention from the added contribution of the oil. Product reporting should include botanical identity, composition, preparation, dilution and consistency between batches. TIDieR provides a framework for describing materials, procedures, providers, schedules, modifications and adherence so that an intervention can be replicated (Hoffmann et al., 2014). Funding, product supply and sponsor involvement should also be disclosed.

Trials should prespecify outcomes and report between-group differences with confidence intervals. Pain intensity can be complemented by function, sleep, quality of life and patients' overall assessments of improvement. Follow-up after treatment ends is needed to assess persistence. Adverse events, withdrawals and missing data require planned collection and transparent reporting. Registration and an accessible protocol would help readers distinguish prespecified analyses from exploratory findings and assess whether all relevant outcomes were reported.

This review brings together indexed and local reports and distinguishes direct DPN evidence from subgroup and preclinical findings. It also retains negative findings and reporting inconsistencies. Its targeted searches and purposive selection limit claims of comprehensive coverage. OpenAlex retrieval stopped at 100 records per query, selection was not independently duplicated, and some study details were available only in abstracts. Narrative appraisal does not replace a formal risk-of-bias or GRADE assessment. Differences in products, controls, instruments and follow-up also prevent a dependable estimate of the overall benefit or support for a specific regimen.

CONCLUSION

Aromatherapy massage using lavender or oil blends may relieve pain over a short period in people with DPN, while quality-of-life findings remain inconsistent. Related topical botanical trials show that results vary by product and comparator. Current studies do not establish the benefit attributable to the essential oil itself, a standard regimen or persistence of improvement after treatment. Long-term safety and nerve regeneration also remain unproven. This review clarifies the distinction between symptom relief from a complete intervention and a specific effect of the oil.

DECLARATIONS

Acknowledgment: The authors acknowledge the researchers whose published work informed this review.

Conflicts of interest: The authors declare no conflicts of interest.

Ethical approval: Ethical approval was not required because this narrative review used published literature and involved no new recruitment of human participants or use of identifiable patient data.

Financial support and sponsorship: This review received no external funding or sponsorship.

Data Availability Statement: No new datasets were generated or analysed. The evidence discussed in this review is available in the cited publications.

Author Contributions: I Gede Eka Handrean and Rindha Dwi Sihanto contributed to the preparation of this narrative review.

Declaration of the Use of Artificial Intelligence in Scientific Writing: Artificial Intelligence assisted with language editing, and figure preparation. The authors are responsible for the manuscript content.

REFERENCES

Abdel Hamid Hawash, M., Gamal Ramadan Asal, M., & Ramadan Shaheen Ibrahim, S. (2023). Effect of aromatherapy massage with chamomile oil versus lavender oil on neuropathic pain and quality of life in diabetic patients: Randomized controlled clinical trial. Egyptian Journal of Health Care, 14(2), 724–737. https://doi.org/10.21608/ejhc.2023.302778

American Diabetes Association Professional Practice Committee for Diabetes. (2026). 12. Retinopathy, neuropathy, and foot care: Standards of Care in Diabetes 2026. Diabetes Care, 49(Suppl. 1), S261–S276. https://doi.org/10.2337/dc26-S012

Amiri, M., Imani, M. H., Imani, A. H., Bazrafshan, H., Bazrafshan, M., Vardanjani, H. M., & Zohalinezhad, M. E. (2025). Topical chamomile oil as a novel therapeutic intervention for diabetic neuropathy: A randomized double-blind controlled clinical trial. EXPLORE, 21(4), 103189. https://doi.org/10.1016/j.explore.2025.103189

Aqila, H., Masykur, U. J., Janet, K. A., Sulistomo, H. W., & Kurniawan, S. N. (2026). Comparative effectiveness of non-pharmacological interventions for diabetic neuropathic pain: A network meta-analysis of pain intensity and neuropathic symptom outcomes. MNJ (Malang Neurology Journal), 12(2), 149–163. https://doi.org/10.21776/ub.mnj.2026.012.02.08

Aykemat, Y., Doğru, B. V., & Serin, E. K. (2026). The effect of aromatherapy on quality of life in patients with type 2 diabetes mellitus: A systematic review. Journal of Diabetes & Metabolic Disorders, 25(2), 219. https://doi.org/10.1007/s40200-026-02033-z

Baethge, C., Goldbeck-Wood, S., & Mertens, S. (2019). SANRA: A scale for the quality assessment of narrative review articles. Research Integrity and Peer Review, 4, 5. https://doi.org/10.1186/s41073-019-0064-8

Beshara, R. A., Abd El-Hay, S. A., Frag, W. F., & Abdallah, A. K. (2026). Effect of aromatherapy massage on neuropathic pain and quality of life of diabetic patients. Tanta Scientific Nursing Journal, 40(1, Suppl. 2), 70–90. https://doi.org/10.21608/tsnj.2026.497511

Boyd, A., Bleakley, C., Hurley, D. A., Gill, C., Hannon-Fletcher, M., Bell, P., & McDonough, S. (2019). Herbal medicinal products or preparations for neuropathic pain. Cochrane Database of Systematic Reviews, 2019(4), CD010528. https://doi.org/10.1002/14651858.CD010528.pub4

Cho, M.-K., & Kim, M. Y. (2024). The effect of aromatherapy on pain in individuals with diabetes: A systematic review and meta-analysis. Journal of Korean Biological Nursing Science, 26(2), 71–82. https://doi.org/10.7586/jkbns.24.012

Dworkin, R. H., Turk, D. C., Wyrwich, K. W., Beaton, D., Cleeland, C. S., Farrar, J. T., Haythornthwaite, J. A., Jensen, M. P., Kerns, R. D., Ader, D. N., Brandenburg, N., Burke, L. B., Cella, D., Chandler, J., Cowan, P., Dimitrova, R., Dionne, R., Hertz, S., Jadad, A. R., ... Zavisic, S. (2008). Interpreting the clinical importance of treatment outcomes in chronic pain

clinical trials: IMMPACT recommendations. The Journal of Pain, 9(2), 105–121. https://doi.org/10.1016/j.jpain.2007.09.005

Elafros, M. A., Andersen, H., Bennett, D. L., Savelieff, M. G., Viswanathan, V., Callaghan, B. C., & Feldman, E. L. (2022). Towards prevention of diabetic peripheral neuropathy: clinical presentation, pathogenesis, and new treatments. The Lancet Neurology, 21(10), 922–936. https://doi.org/10.1016/S1474-4422(22)00188-0

Gok Metin, Z., Arikan Donmez, A., Izgu, N., Ozdemir, L., & Arslan, I. E. (2017). Aromatherapy massage for neuropathic pain and quality of life in diabetic patients. Journal of Nursing Scholarship, 49(4), 379–388. https://doi.org/10.1111/jnu.12300

Hashimoto, M., Takahashi, K., & Ohta, T. (2023). Inhibitory effects of linalool, an essential oil component of lavender, on nociceptive TRPA1 and voltage-gated Ca2+ channels in mouse sensory neurons. Biochemistry and Biophysics Reports, 34, 101468. https://doi.org/10.1016/j.bbrep.2023.101468

Hoffmann, T. C., Glasziou, P. P., Boutron, I., Milne, R., Perera, R., Moher, D., Altman, D. G., Barbour, V., Macdonald, H., Johnston, M., Lamb, S. E., Dixon-Woods, M., McCulloch, P., Wyatt, J. C., Chan, A.-W., & Michie, S. (2014). Better reporting of interventions: Template for intervention description and replication (TIDieR) checklist and guide. BMJ, 348, g1687. https://doi.org/10.1136/bmj.g1687

Kholifah, N., Purnama, A., & Afrina, R. (2025). The effect of aromatherapy massage with lavender oil on pain levels and quality of life in diabetic neuropathy patients. Open Access Health Scientific Journal, 6(2), 186–192. https://doi.org/10.55700/oahsj.v6i2.74

Li, L. (2010). The effect of Neuragen PN on neuropathic pain: A randomized, double blind, placebo controlled clinical trial. BMC Complementary and Alternative Medicine, 10(1), 22. https://doi.org/10.1186/1472-6882-10-22

Meutia, R. T. M., Marlindawani, J., & Ritarwan, K. (2023). Intervensi massage aromaterapi (lavender) terhadap penurunan intensitas nyeri penderita neuropathy diabetic [Lavender aromatherapy massage to reduce pain intensity in diabetic neuropathy]. Journal of Telenursing (JOTING), 5(1), 279–289. https://doi.org/10.31539/joting.v5i1.4232

Mohammed, A. S., Hassanein, S. M., Soliman, F. M., & Elsheimy, H. A. (2019). Effect of aromatherapy massage on neuropathic pain among patients with type II diabetes mellitus. International Journal of Novel Research in Healthcare and Nursing, 6(3), 1077–1086. https://www.noveltyjournals.com/upload/paper/Effect%20of%20Aromatherapy-2127.pdf

Motilal, S., & Maharaj, R. G. (2013). Nutmeg extracts for painful diabetic neuropathy: A randomized, double-blind, controlled study. The Journal of Alternative and Complementary Medicine, 19(4), 347–352. https://doi.org/10.1089/acm.2012.0016

Musharraf, M. U., Ahmad, Z., & Yaqub, Z. (2017). Comparison of topical capsaicin and topical turpentine oil for treatment of painful diabetic neuropathy. Journal of Ayub Medical College Abbottabad, 29(3), 384–387. https://jamc.ayubmed.edu.pk/index.php/jamc/article/view/2107

Nasiri Lari, Z., Hajimonfarednejad, M., Riasatian, M., Abolhassanzadeh, Z., Iraji, A., Vojoud, M., Heydari, M., & Shams, M. (2020). Efficacy of inhaled Lavandula angustifolia Mill. essential oil on sleep quality, quality of life and metabolic control in patients with diabetes mellitus type II and insomnia. Journal of Ethnopharmacology, 251, 112560. https://doi.org/10.1016/j.jep.2020.112560

Posadzki, P., Alotaibi, A., & Ernst, E. (2012). Adverse effects of aromatherapy: A systematic review of case reports and case series. International Journal of Risk & Safety in Medicine, 24(3), 147–161. https://doi.org/10.3233/JRS-2012-0568

Price, R., Smith, D., Franklin, G., Gronseth, G., Pignone, M., David, W. S., Armon, C., Perkins, B. A., Bril, V., Rae-Grant, A., Halperin, J., Licking, N., O'Brien, M. D., Wessels, S. R., MacGregor, L. C., Fink, K., Harkless, L. B., Colbert, L., & Callaghan, B. C. (2022). Oral and topical treatment of painful diabetic polyneuropathy: Practice guideline update summary:

Report of the AAN Guideline Subcommittee. Neurology, 98(1), 31–43. https://doi.org/10.1212/WNL.0000000000013038

Ridouh, I., & Hackshaw, K. V. (2022). Essential oils and neuropathic pain. Plants, 11(14), 1797. https://doi.org/10.3390/plants11141797

Rivaz, M., Rahpeima, M., Khademian, Z., & Dabbaghmanesh, M. H. (2021). The effects of aromatherapy massage with lavender essential oil on neuropathic pain and quality of life in diabetic patients: A randomized clinical trial. Complementary Therapies in Clinical Practice, 44, 101430. https://doi.org/10.1016/j.ctcp.2021.101430

Sanna, M. D., Les, F., Lopez, V., & Galeotti, N. (2019). Lavender (Lavandula angustifolia Mill.) essential oil alleviates neuropathic pain in mice with spared nerve injury. Frontiers in Pharmacology, 10, 472. https://doi.org/10.3389/fphar.2019.00472