International Journal of Advanced Multidisciplinary Research and Innovation

E-ISSN: 3107-6157 editor@ijamri.com

Volume 2, Issue 6, November-December 2026

# WOMAC in Osteoarthritis Research on Homoeopathic Treatment: A Critical Review of Measurement, Evidence, and Methodological Limitations

**Dr. Vasim Dadi, MD (Hom)**

Department of Practice of Medicine, Valan Homoeopathic Medical College and Hospital, Valan, Gujarat, India.

**Abstract**

**Background:** Osteoarthritis (OA) is a common musculoskeletal disorder associated with pain, stiffness, and limitations in physical function. The Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC) is a disease-specific patient-reported outcome measure used extensively in hip and knee OA research. Its use in studies of homoeopathic interventions requires careful distinction between outcome measurement and evidence of treatment efficacy.

**Objective:** To critically discuss the structure, strengths, and limitations of WOMAC and its application in clinical research evaluating homoeopathic treatment for osteoarthritis.

**Methods:** This article is a critical narrative review based on foundational literature about WOMAC, published clinical studies of homoeopathic interventions for OA, and established guidance for transparent reporting of clinical research and systematic reviews. It is not presented as a completed systematic review: an exhaustive database search, duplicate screening, formal risk-of-bias assessment, and certainty-of-evidence assessment were not performed for this manuscript.

**Discussion:** WOMAC assesses pain, stiffness, and physical function and can standardize the reporting of patient-perceived outcomes. A randomized placebo-controlled feasibility trial published in 2024 reported favourable findings for WOMAC-derived pain and stiffness scores calculated from KOOS, whereas an earlier feasibility trial reported improvement in both groups without statistically significant between-group differences on its reported outcomes. These findings are preliminary and should not be interpreted as definitive proof of efficacy. WOMAC scores can be influenced by expectations, concurrent care, natural symptom fluctuation, comorbidities, and measurement choices.

**Conclusion:** WOMAC can be useful for measuring outcomes in OA research, including research on homoeopathic interventions. It cannot independently establish causation, structural disease modification, or treatment efficacy. Well-designed comparative trials and transparent, reproducible evidence synthesis are needed.

International Journal of Advanced Multidisciplinary Research and Innovation
E-ISSN: 3107-6157 editor@ijamri.com
Volume 2, Issue 6, November-December 2026

**Keywords:** osteoarthritis; homoeopathy; WOMAC; patient-reported outcome measures; pain; stiffness; physical function; clinical research

## 1. Introduction

Osteoarthritis is a chronic joint disorder associated with pain, stiffness, reduced mobility, and difficulty performing everyday activities. It involves the whole joint, including articular cartilage, subchondral bone, synovium, ligaments, and surrounding musculature. Structural findings do not always correspond closely with the intensity of symptoms or the degree of disability reported by an individual. Clinical assessment therefore benefits from combining history, examination, relevant investigations, and patient-reported outcomes.

The Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC) was developed to measure clinically important symptoms and functional limitations in people with hip or knee OA. Its three domains—pain, stiffness, and physical function—capture outcomes that matter to patients and are commonly used in clinical trials [1,2].

Homoeopathic treatment has been investigated in some clinical studies of osteoarthritis. In this field, standardized outcome measurement can improve the clarity of reporting, but an observed improvement after treatment does not itself demonstrate that the intervention caused the improvement. This review critically considers WOMAC as a measurement tool and discusses methodological issues relevant to its use in homoeopathic OA research.

## 2. Review objective and approach

The objective is to examine the clinical relevance of WOMAC in OA research and critically discuss how WOMAC or WOMAC-derived scores have been used in studies of homoeopathic treatment. The article is a critical narrative review, not a completed systematic review. No claim is made that all eligible studies have been identified or that formal duplicate screening, comprehensive data extraction, risk-of-bias assessment, or meta-analysis has been completed.

A full systematic review addressing this question should follow a prespecified protocol, search multiple databases and trial registries, document exact search dates and strategies, use reproducible eligibility criteria, screen records independently, assess risk of bias with design-appropriate tools, and report study selection in accordance with PRISMA 2020 [3].

## 3. WOMAC: structure and measurement domains

The standard WOMAC 3.1 Index contains 24 items: five for pain, two for stiffness, and 17 for physical function. Available response formats include Likert, visual analogue, and numerical rating scales, depending on the version. Authors should state the exact version, language, response format, scoring method, and handling of missing responses [1,2].

International Journal of Advanced Multidisciplinary Research and Innovation
E-ISSN: 3107-6157 editor@ijamri.com
Volume 2, Issue 6, November-December 2026

Pain domain: The five pain items assess pain in specified situations and activities. This domain can quantify changes in perceived pain over time, but pain is subjective and may be influenced by sleep, mood, expectations, activity, and other treatments.

Stiffness domain: The two stiffness items assess perceived joint stiffness at specified times. Stiffness may fluctuate and should be interpreted alongside the wider clinical presentation rather than in isolation.

Physical function domain: The 17 items address difficulty with everyday activities, such as walking, standing, rising, bending, and using stairs. This domain is valuable because pain relief does not necessarily translate into improved function, and function may change because of exercise, weight change, rehabilitation, or other factors.

Scoring direction must be reported explicitly. In conventional scoring, higher raw scores generally indicate worse symptoms or functional limitation; transformed scores may use a different direction. Comparisons are unreliable when versions or scoring methods differ without a defensible harmonization procedure.

## 4. Strengths of WOMAC

4.1 Disease-specific and patient-centred: WOMAC focuses on symptoms and activities relevant to hip and knee OA rather than relying solely on general health status or imaging findings. This supports clinically meaningful follow-up.

4.2 Multidimensional assessment: Separate pain, stiffness, and physical-function domains provide a broader picture than a single pain-intensity score. The domains may change differently and should generally be reported separately when relevant to the research question.

4.3 Standardized longitudinal measurement: Repeated assessments at predefined time points allow investigators to describe change over time. Standardization reduces dependence on informal statements such as ‘much better’ or ‘some improvement’.

4.4 Use in comparative studies: WOMAC can be used across treatment groups when the same validated version, scoring rules, and assessment schedule are applied. In randomized studies, between-group comparisons are more informative for causal inference than within-group change alone.

4.5 Established measurement literature: WOMAC has a substantial history of development and evaluation in OA research [1,2]. Nonetheless, reliability, validity, and responsiveness are properties of a measure in a particular context; they do not establish the efficacy of an intervention tested using that measure.

## 5. Limitations and threats to interpretation

5.1 Subjectivity and contextual influences: Patient-reported outcomes are appropriate for symptoms such as pain, but responses may be affected by expectations, therapeutic interaction, mood, sleep, recall, and social

circumstances. This is particularly relevant in unblinded studies or studies with unequal contact between groups.

5.2 No direct measure of structural disease: WOMAC does not directly assess cartilage loss, radiographic progression, synovial inflammation, or other structural features. A better score must not be interpreted as proof of cartilage regeneration or disease modification.

5.3 Comorbidities and concurrent care: Obesity, spinal disease, neurological conditions, muscle weakness, exercise, physiotherapy, analgesics, and lifestyle changes can affect pain or function. These factors should be recorded and considered in study design and analysis.

5.4 Floor and ceiling effects: Participants with very mild symptoms may have little room to improve, while the scale may not capture further worsening at the extreme of its range. Baseline severity and the suitability of the selected version should be considered.

5.5 Statistical versus clinical importance: A statistically significant difference is not automatically important to patients. Studies should report effect estimates and confidence intervals and justify any threshold for clinically important change using relevant evidence and the study population.

5.6 Direct versus derived WOMAC scores: Some studies calculate WOMAC scores from KOOS. Such outcomes should be explicitly described as derived and their scoring transformation documented. They should not be assumed to be identical to scores obtained by directly administering a particular WOMAC version.

## 6. Published clinical evidence relevant to homoeopathic treatment

Long and Ernst published a systematic review in 2001 that examined randomized trials of homoeopathic remedies for OA. The authors identified four trials and concluded that the available evidence was insufficient to establish firm conclusions about efficacy [4]. Because its search period ended in 2000, this review is historical context rather than a current comprehensive evidence synthesis.

A double-blind, randomized, placebo-controlled feasibility trial published by Bhattacharyya and colleagues in 2024 enrolled 40 participants with knee OA. The primary outcome was KOOS, and WOMAC scores were derived from KOOS. Assessments were made at baseline and after two months. The abstract reported statistically significant between-group differences favouring individualized homoeopathic medicines on KOOS subscales and on derived WOMAC pain and stiffness scores [5].

These findings are hypothesis-generating. The small sample and feasibility design limit precision and generalizability; the short follow-up cannot establish sustained benefit; and the use of derived WOMAC scores should be distinguished from direct administration of WOMAC. A larger, adequately powered trial with prespecified primary outcomes and transparent reporting would be needed to confirm the findings.

An earlier double-blind, randomized, placebo-controlled feasibility study included 60 participants with acute painful episodes of knee OA. It assessed visual analogue scales and Osteoarthritis Research Society

International scores rather than WOMAC. Both groups improved over two weeks, but between-group differences were not statistically significant on the reported outcomes; the authors concluded that individualized homoeopathy did not appear superior to placebo in that feasibility study [6]. Because WOMAC was not the reported outcome instrument, this trial is contextual evidence about homoeopathic OA research, not direct evidence of a WOMAC treatment effect.

These studies cannot be combined into a single quantitative estimate because they differ in outcomes, design features, follow-up, and reported data. A current systematic review would need to identify all eligible trials, verify full texts and supplementary material, extract numerical results, and assess risk of bias before judging the consistency or certainty of the evidence.

## 7. Implications for future research

Future trials should define the target population, diagnostic criteria, intervention, comparator, co-interventions, primary outcome, and follow-up schedule before recruitment. The WOMAC version and scoring method should be specified in the protocol. Where WOMAC is derived from KOOS, the transformation and rationale should be described.

Randomization and allocation concealment should be appropriate to the study design. Blinding should be used where feasible, and the amount of clinical contact should be comparable between groups when the aim is to estimate the specific effect of the intervention. Concurrent medication, rescue treatment, physiotherapy, physical activity, and other relevant changes should be documented.

Sample size should be based on a justified effect size and the selected primary outcome. The statistical plan should prespecify the principal between-group comparison, missing-data methods, analysis population, and any adjustment for multiple outcomes. Reports should provide group-level results, effect estimates, confidence intervals, adverse events, and participant flow rather than relying on within-group p-values.

Trial reporting should follow CONSORT and, where appropriate, the homoeopathy-specific RedHot extension. Systematic reviews should follow PRISMA 2020 and use design-appropriate risk-of-bias tools [3,7]. The certainty of evidence should be assessed transparently, for example using GRADE when appropriate to the review question.

## 8. Discussion

WOMAC can strengthen the measurement of patient-reported OA outcomes because it separates pain, stiffness, and physical function into structured domains. Its usefulness is greatest when researchers use a validated version, standardize administration, prespecify assessment times, and report scores transparently.

The central interpretive issue is the distinction between measurement and causation. A favourable change after homoeopathic treatment may be real as a patient-reported change, but an uncontrolled before-and-after comparison cannot determine whether the intervention caused it. Natural symptom fluctuation, regression to

the mean, contextual effects, concurrent care, and measurement variability remain possible explanations. A well-designed controlled study is needed to estimate comparative effects.

The available clinical literature is limited and heterogeneous. The 2024 feasibility trial reported favourable derived WOMAC pain and stiffness outcomes, while an earlier feasibility trial using other outcome instruments found improvement in both groups without significant between-group differences. These results are not necessarily contradictory because the studies used different measures and designs; neither alone establishes a definitive treatment effect.

The present article is limited by its narrative approach and selective evidence coverage. It does not provide an exhaustive database search, formal study selection, a PRISMA flow diagram, complete risk-of-bias assessments, or a certainty-of-evidence rating. Accordingly, it should not be represented as a completed systematic review. A future systematic review should address these gaps and include all eligible studies, including studies that report no benefit.

## 9. Conclusion

WOMAC is a useful patient-reported outcome measure for assessing pain, stiffness, and physical function in hip and knee OA. Its multidimensional structure can improve the standardization and interpretability of clinical research, including studies of homoeopathic interventions.

However, WOMAC is an outcome measure, not a test of treatment mechanism or causal efficacy. Improvement in a score does not establish structural disease modification or prove that a specific intervention caused the change. Current homoeopathic OA findings require cautious interpretation, and further rigorous, adequately powered comparative trials are needed. A definitive systematic review will require a comprehensive reproducible search, formal appraisal, and transparent synthesis of all eligible evidence.

## Declarations

**Funding:** No funding information has been provided. The author should confirm whether the work received any financial or material support.

**Conflicts of interest:** The author should declare any actual financial, professional, or other competing interests. Do not submit an unverified ‘none’ declaration.

**Ethics approval:** Not applicable to this narrative review, which reports no newly collected participant data.

**Author contributions:** To be completed by the author in accordance with the target journal’s authorship criteria.

**Data availability:** No new participant-level dataset was generated for this review.

**Acknowledgements:** To be completed if any individuals or organizations contributed to the work.

## References

Bellamy N, Buchanan WW, Goldsmith CH, Campbell J, Stitt LW. Validation study of WOMAC: a health status instrument for measuring clinically important patient relevant outcomes to antirheumatic drug therapy in patients with osteoarthritis of the hip or knee. J Rheumatol. 1988;15(12):1833–1840. PMID: 3068365. https://pubmed.ncbi.nlm.nih.gov/3068365/

WOMAC. Western Ontario and McMaster Universities Osteoarthritis Index: official instrument resources and user guide. https://www.womac.com/

Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. BMJ. 2021;372:n71. doi:10.1136/bmj.n71.

Long L, Ernst E. Homeopathic remedies for the treatment of osteoarthritis: a systematic review. Br Homoeopath J. 2001;90(1):37–43. doi:10.1054/homp.1999.0449. PMID: 11212088.

Bhattacharyya S, Chatterjee C, Saha S, Naskar S, Bhattacharya P, Alam SM, et al. Individualized Homeopathic Medicines in the Treatment of Knee Osteoarthritis: Double-Blind, Randomized, Placebo-Controlled Feasibility Trial. Homeopathy. 2024;113(3):158–166. doi:10.1055/s-0043-1771025. PMID: 37748512.

Bhattacharyya S, et al. A double-blind randomized placebo-controlled feasibility study evaluating individualized homeopathy in managing pain of knee osteoarthritis. Complement Ther Med. 2015. PMID: 25636410. https://pubmed.ncbi.nlm.nih.gov/25636410/

Schulz KF, Altman DG, Moher D; CONSORT Group. CONSORT 2010 Statement: updated guidelines for reporting parallel group randomised trials. BMJ. 2010;340:c332. doi:10.1136/bmj.c332.