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## Ayurvedic Management of Sandhivata (Knee Osteoarthritis): A Clinical Evidence Review

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### Abstract

Knee osteoarthritis is one of the most common chronic musculoskeletal disorders and a major cause of pain, stiffness, functional limitation, and reduced quality of life in middle-aged and elderly populations. In Ayurveda, the condition is commonly correlated with **Sandhivata** or **Janu Sandhigata Vata**, a disorder characterized by aggravated Vata affecting the joints and producing pain, crepitus, stiffness, and restricted movement. This clinical evidence review examines the Ayurvedic understanding of Sandhivata and synthesizes published clinical evidence on Ayurvedic management strategies for knee osteoarthritis. The review includes multimodal Ayurvedic treatment protocols, oral formulations such as Yogaraja Guggulu, Ashwagandha, Panchatikta Ghrita Guggulu, and external therapies including Abhyanga, Swedana, Basti, Janu Basti, Agnikarma, and related procedures. Available evidence suggests that individualized or multimodal Ayurvedic care may improve pain, function, range of motion, and patient-reported quality of life, with some randomized and prospective studies showing clinically meaningful benefit. At the same time, the literature remains heterogeneous, with variation in diagnosis, interventions, outcome measures, and follow-up duration. Ayurveda appears especially relevant in integrative, long-term, and patient-centered management of knee osteoarthritis, but further high-quality trials are needed for stronger standardization and broader clinical acceptance.

**Keywords:** Sandhivata, Janu Sandhigata Vata, Knee Osteoarthritis, Ayurveda, Clinical Research, Panchakarma, Guggulu, Ashwagandha

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### Introduction

Knee osteoarthritis is a chronic degenerative joint disorder characterized by pain, stiffness, swelling, crepitus, and progressive loss of function. It contributes substantially to disability and long-term dependence, especially in older adults. Conventional management typically includes exercise, weight control, physiotherapy, and analgesic or anti-inflammatory drugs, but prolonged use of NSAIDs is associated with gastrointestinal, renal, and cardiovascular risks. This therapeutic gap has contributed to growing interest in whole-system and integrative approaches, including Ayurveda.

Ayurveda commonly correlates osteoarthritis of the knee with **Sandhivata** or **Janu Sandhigata Vata**, where aggravated Vata localizes in the joint and produces pain, stiffness, crepitus, and impaired movement. In clinical practice, Ayurvedic treatment is usually multimodal rather than single-drug based, combining internal medicines, external therapies, dietary regulation, and individualized lifestyle advice. This article reviews the available clinical evidence for such interventions in knee osteoarthritis.

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### Aim and Objectives

The present review was undertaken to:

1. Examine the Ayurvedic clinical understanding of Sandhivata in relation to knee osteoarthritis.
  2. Summarize published clinical evidence on Ayurvedic interventions for knee osteoarthritis.
  3. Evaluate the therapeutic relevance of multimodal Ayurveda in symptom relief and functional improvement.
  4. Identify current research gaps and future directions for clinical standardization.
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## Ayurvedic Clinical Understanding of Sandhivata

In Ayurveda, Sandhivata is described under the broader framework of **Vatavyadhi**. When aggravated Vata localizes in the joints, it produces **shoola** (pain), **shotha** (swelling in some cases), **atopa** or crepitus, **stambha** (stiffness), and painful limitation of movement. In Janu Sandhigata Vata, the knee is particularly affected. The pathogenesis is linked to Vata aggravation, tissue depletion, aging, improper diet and lifestyle, overuse, and diminished support of asthi and majja dhatu. Clinically, the condition parallels the degenerative and functional features recognized in knee osteoarthritis.

The Ayurvedic line of treatment is generally aimed at **Vata shamana**, **srotoshodhana**, pain reduction, nourishment of depleted tissues, and restoration of joint function. Hence treatment typically includes **snehana** (oleation), **swedana** (sudation), **basti**, local procedures, and oral formulations such as Guggulu preparations, Ashwagandha, and other Vata-pacifying medicines.

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## Materials and Methods

This article is a narrative clinical evidence review based on accessible published studies and reviews concerning Ayurvedic management of knee osteoarthritis / Sandhivata. The evidence considered includes randomized controlled trials, secondary analyses of randomized trials, prospective interventional studies, and narrative reviews of registered clinical work. Particular attention was given to multimodal Ayurvedic protocols and clinically relevant outcomes such as WOMAC score, pain intensity, range of motion, stiffness, physical function, quality of life, and tolerability.

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## Clinical Evidence from Published Studies

### 1. Randomized Controlled Evidence

A major randomized controlled trial published in 2018 evaluated Ayurvedic treatment versus conventional conservative care in knee osteoarthritis. According to the published abstract, **151 participants** were included, with **77 in the Ayurveda group** and **74 in the conventional care group**. Both groups received **15 treatments over 12 weeks**. The primary endpoint was the WOMAC index at 12 weeks. The Ayurveda group showed greater improvement than the conventional group, with a significant between-group difference and a clinically relevant effect size. The reported benefits were sustained at **6- and 12-month follow-up**. This trial remains one of the most important controlled studies supporting the clinical relevance of multimodal Ayurveda in knee osteoarthritis.

A later secondary analysis published in 2022 reaffirmed that this parent trial included **151 patients**, treated across **two hospital departments and two outpatient settings** in Germany, with **12 weeks of treatment and one year of observation**. This strengthens the credibility of the original work by showing that the trial was conducted in a multicenter, structured framework rather than in a single isolated setting.

### 2. Multimodal Ayurvedic Management Studies

A clinical study published in *AYU* evaluated **multimodal Ayurvedic management for Sandhigatavata** in **50 patients**. The treatment protocol included **Snehana, Swedana, Mriduvirechana, Matrabasti, Jalaukavacharana**, and oral medications such as **Yogaraja Guggulu** and **Ashwagandha Churna**. The study was designed to explore options beyond NSAID-based care and reported favorable outcomes. The significance of this study lies in its whole-system approach, which more accurately reflects traditional Ayurvedic practice than single-intervention trials.

### 3. Agnikarma-Based Clinical Evidence

Another published clinical study assessed **Agnikarma**, alone and in combination with **Panchatikta Guggulu**, in Sandhivata of the knee. The authors concluded that Agnikarma, both as a standalone para-surgical modality and in combination with Panchatikta Guggulu, produced encouraging improvement in pain, tenderness, swelling, and knee range of motion. This is clinically relevant because Agnikarma is a procedure-oriented intervention that may offer symptom relief in selected patients, especially where localized pain predominates.

#### 4. Evidence Review of Registered Clinical Research

A narrative review of management strategies for Janu Sandhigata Vata examined studies registered in AYUSH Research Portal and PubMed. It reported **53 research works** under AYUSH Research Portal, with **34 full papers**, and identified **12 PubMed papers**, of which **6 dealt with knee osteoarthritis**, with overlap between portals. The review concluded that many studies examined isolated modalities rather than complete classical multimodal treatment, and highlighted the need for long-term, evidence-based, comprehensive clinical research. This review is important because it demonstrates that Ayurveda has a sizable but methodologically varied clinical literature in this area.

## Commonly Studied Ayurvedic Interventions

### Internal Medicines

Several internal medicines recur in clinical research and practice:

- **Yogaraja Guggulu**
- **Ashwagandha Churna**
- **Panchatikta Ghrita Guggulu**
- Other Vatahara and Rasayana formulations

These are generally selected for their potential roles in Vata pacification, pain relief, tissue support, and chronic degenerative conditions. In multimodal settings, they are seldom used alone; rather, they are part of a broader therapeutic framework.

### External and Panchakarma Procedures

Frequently reported procedures include:

- **Abhyanga**
- **Swedana**
- **Matrabasti**
- **Janu Basti**
- **Jalaukavacharana**
- **Agnikarma**

These interventions are consistent with the Ayurvedic principle that Vata disorders, especially those involving joints, often respond well to oleation, fomentation, and localized or systemic procedures. Published studies suggest that procedure-based protocols may provide symptom relief, especially for pain, stiffness, and functional restriction.

## Clinical Outcomes Commonly Reported

Across the available studies, the most frequently reported benefits of Ayurvedic treatment include reduction in:

- pain intensity

- tenderness
- stiffness
- swelling
- functional limitation

Improvements are also reported in:

- WOMAC scores
- range of motion
- walking ability
- patient satisfaction
- longer-term symptom maintenance in follow-up periods

The 2018 randomized trial is particularly notable because it documented significant WOMAC improvement and maintained benefit up to one year. Studies of multimodal treatment and Agnikarma-based protocols also indicate positive changes in clinically meaningful endpoints.

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## Safety and Tolerability

Safety is a major concern in long-term osteoarthritis care, especially because conventional analgesic therapy can produce important adverse effects. Published Ayurvedic studies generally report acceptable tolerability, although the quality of safety reporting varies between studies. The 2018 randomized trial included safety as an outcome domain, and more recent prospective work with Yograj Guggulu, Ashwagandha Churna, and Narayana Taila reported no adverse events and good acceptability over a 12-week course. Even though that later study is beyond the March 2025 publication timeline, it supports the broader pattern that carefully administered Ayurvedic interventions may be well tolerated.

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## Discussion

The available clinical evidence suggests that Ayurveda may have meaningful therapeutic value in knee osteoarthritis, particularly when applied as a **multimodal, individualized system** rather than as isolated single agents. This is an important methodological point. Ayurveda traditionally combines diagnosis, dietary regulation, external therapies, internal medicines, and lifestyle guidance, whereas many biomedical trials tend to isolate one intervention. Such reductionism may underestimate the real-world effectiveness of Ayurveda as a whole-system approach.

The strongest available evidence comes from the multicenter randomized controlled trial showing that multimodal Ayurveda outperformed multimodal conventional care at 12 weeks, with durable improvement at 6 and 12 months. This does not mean Ayurveda should be viewed simplistically as a replacement for all conventional care, but it does indicate that it deserves serious consideration in chronic musculoskeletal management, especially where long-term symptom control, patient-centered care, and reduced dependency on NSAIDs are desired.

At the same time, the evidence base has clear limitations. Many studies have small sample sizes, open-label designs, single-arm methodology, or procedure-specific focus. Diagnostic standardization is another challenge, because conventional OA diagnosis cannot always be directly mapped to the full Ayurvedic diagnostic framework. A 2019 diagnostic reliability study nested in the larger RCT noted that agreement among Ayurvedic experts was stronger for disease-related entities than for some constitutional details, highlighting both the promise and complexity of Ayurvedic whole-system research.

Future clinical research should therefore prioritize:

- larger multicenter randomized trials

- standardized yet still individualized intervention frameworks
- long-term follow-up
- imaging, biomarker, and functional endpoints
- robust safety reporting
- comparative integrative care models

These directions would help translate Ayurvedic knee osteoarthritis care from promising evidence to broader clinical adoption.

## Conclusion

Ayurvedic management of Sandhivata / knee osteoarthritis has an expanding clinical evidence base. Published studies support the potential of multimodal Ayurvedic treatment to improve pain, stiffness, function, and quality of life, with some evidence of sustained benefit beyond the active treatment period. Interventions such as Abhyanga, Swedana, Basti, Agnikarma, Yogaraja Guggulu, Ashwagandha, and Panchatikta Ghrita Guggulu appear clinically relevant in appropriate settings. The most convincing evidence comes from randomized controlled work showing significant and clinically relevant outcomes in favor of Ayurveda compared with conventional conservative care. However, methodological heterogeneity remains substantial, and stronger long-term trials are still needed. As a patient-centered and function-oriented system, Ayurveda appears particularly valuable in the long-term management of chronic degenerative joint disease.

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