International Journal of Current Science Research and Review
ISSN: 2581-8341
Volume 09 Issue 10 October 2026
DOI: 10.47191/ijcsrr/V9-i10-25, Impact Factor: 8.048
IJCSRR @ 2026
www.ijcsrr.org

Improvement in Knee Osteoarthritis and Weight Loss Through Integrative Ayurvedic Management: A Case Study

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ABSTRACT:

Background: Osteoarthritis (OA) is the most prevalent form of arthritis worldwide, causing significant disability. Obesity further increases the risk and severity of Osteoarthritis. Current pharmacological treatments like NSAIDs often fail to halt disease progression and are associated with adverse effects. Integrative Ayurvedic management offers a holistic alternative for addressing underlying metabolic and inflammatory contributors to Osteoarthritis.

Methods: A 45-year-old obese female with moderate bilateral knee osteoarthritis, fatty liver, and other systemic complaints underwent a structured Ayurvedic treatment regimen. This included personalized Panchakarma therapies (Snehan, Swedan, PRDA, Janu Basti, Shali Shashti Sweda), oral Rasayana medications, a controlled 800-calorie high-protein/high-fiber diet, and prescribed physical exercise.

Results: The patient showed progressive improvement in functional mobility measured via the KOOS score (from 9% to 67%) and reported significant symptomatic relief. Weight reduction was clinically significant and associated with improved joint mobility and reduced pain. Fatty liver indicators and general systemic health also improved without adverse pharmacological side effects.

Conclusions: The integrative Ayurvedic approach provided holistic, patient-centered care with notable improvements in Osteoarthritis symptoms, body weight, and comorbid conditions. These outcomes support the role of Ayurveda as a complementary modality in managing musculoskeletal and metabolic disorders.

KEYWORDS: Osteoarthritis, Obesity, Panchakarma, KOOS Score, Integrative Medicine, fatty liver.

INTRODUCTION

Osteoarthritis (OA) is one of the most common chronic musculoskeletal disorders, characterized by the gradual degradation of articular cartilage, subchondral bone remodelling, osteophyte formation, and synovial inflammation. These pathological changes collectively lead to chronic pain, joint stiffness, swelling, and functional limitations. As a leading cause of disability worldwide, osteoarthritis primarily affects the elderly; however, its prevalence is steadily rising among younger populations due to contributing factors such as obesity, sedentary lifestyles, and metabolic disorders [1].

In India, osteoarthritis is among the top ten most frequently reported chronic ailments, with a disproportionately high incidence in post-menopausal women due to hormonal changes, bone density loss, and lifestyle-related risk factors [2]. This demographic shift necessitates a broader view of osteoarthritis management beyond pharmacological symptom control.

Conventional treatment strategies for osteoarthritis primarily involve the use of analgesics and non-steroidal anti-inflammatory drugs (NSAIDs), which, while effective in short-term symptom relief, do not alter the disease's natural course [3]. Long-term NSAID usage is often associated with gastrointestinal, cardiovascular, and renal complications, posing significant challenges for patients requiring chronic care [4].

Given these limitations, there is growing interest in integrative and holistic approaches to osteoarthritis management. Ayurveda, the traditional system of Indian medicine, provides a time-tested framework for addressing chronic degenerative conditions through a combination of personalized therapies. Central to Ayurvedic management is Panchakarma, a structured detoxification and rejuvenation protocol designed to eliminate accumulated toxins (Ama), restore doshic balance, and promote tissue regeneration (Rasayana) [5].

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This case study presents an example of successful integrative Ayurvedic treatment in a middle-aged female patient with bilateral knee osteoarthritis complicated by obesity and fatty liver. It highlights the potential of Ayurveda to offer a safe, systemic, and patient-centered alternative to conventional care.

MATERIALS AND METHODS

2.1 Study design & patient population

This case study involved a 45-year-old female patient who presented with a two-year history of severe bilateral knee pain, swelling, and reduced mobility, clinically diagnosed as moderate osteoarthritis. The patient also had multiple comorbidities, including obesity, fatty liver (Grade I), and radiating chest pain. Her initial Knee Injury and Osteoarthritis Outcome Score (KOOS) was critically low at 9%, indicating severe disability. She reported pain during ambulation, stair climbing, and restricted knee joint range of motion, significantly affecting her daily functioning.

2.2 Panchsutri Methodology

A comprehensive integrative Ayurvedic management plan was adopted, involving oral medications, Panchakarma therapies, dietary modifications, and a structured exercise regimen. The herbal formulations included *Punarnava*, *Gokshura*, *Varun*, *Pashanbhed*, *Rasna Saptak Kwath*, *Shunthi*, *Marich*, *Kankol*, *Saindhav*, *Sita*, *Manukka*, *Asthisrunkhala*, *Erand mula*, *Jatamansi*, *Erand oil* (murchit with *Triphala*), *Panchsakar churna*, and *Yograj guggul*. These were selected for their anti-inflammatory, analgesic, and Rasayana (rejuvenative) properties.

Panchakarma therapies included *Snehan* (oleation), *Swedan* (sudation), *Per rectal drug administration* (PRDA), *Janu Basti*, and *Shali Shashti Pinda Sweda*. These were administered twice weekly, with each session lasting 20–30 minutes depending on the procedure. Therapies were supported by local applications of oils such as *Vatari oil* (containing *Dashmoola* and *Nirgundi*), *Vatex oil*, *Neem oil*, and *Murchit til oil*. Specific interventions like *Per Rectal Basti* using decoctions like *Panchatikta Ghrita*, *Sahachar oil*, and *KNG Kwath* were employed to address metabolic imbalance, improve circulation, and enhance fat metabolism.

Dietary management included an 800 kcal/day plan focusing on high-fiber, high-protein foods, with portion control to facilitate weight loss. A set of knee-specific exercises was prescribed to improve joint mobility and muscular support. Patient progress was monitored clinically and functionally using the KOOS Score system at baseline, mid-treatment, and completion.

2.3 Study endpoints and data collection

The effectiveness of the integrative Ayurvedic intervention was evaluated through both primary and secondary endpoints.

Primary Endpoint:

- **Improvement in KOOS Score**: The Knee Injury and Osteoarthritis Outcome Score (KOOS) was recorded at three intervals—baseline (pre-treatment), mid-treatment, and post-treatment—to assess changes in symptoms, pain, function, and quality of life.

The total KOOS score increased progressively from **9% at baseline** to **37% at mid-treatment**, reaching **67% at the end of treatment**, reflecting significant symptomatic relief and functional improvement **[Table 1].**

Secondary Endpoints:

- **Weight Reduction**: The patient experienced clinically meaningful weight loss during the course of therapy, contributing to reduced joint load and inflammation.
- **Ultrasonographic Findings**: Follow-up USG revealed stabilization of the pre-existing **Grade I fatty liver** and **no increase in uterine fibroid size**.
- **Systemic Symptom Relief:** Improvements were noted in radiating chest pain, hyperacidity, and energy levels.

Also, Data Collection from Patient Interviews, Physical Assessments and Laboratory and Imaging Reports.

Statistical Analysis

Due to the single-patient nature of this case, descriptive statistics were applied to track longitudinal changes in KOOS score and other parameters. Clinical relevance was emphasized over inferential statistics.

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RESULTS

Over the course of integrative Ayurvedic therapy, the patient showed significant clinical and functional improvement. The initial KOOS score of 9% (indicating severe disability) improved to 37% at the mid-treatment evaluation, and further to 67% by the end of therapy. This represented a substantial improvement in pain management, daily activity participation, and quality of life.

Additionally, the patient experienced a meaningful reduction in body weight, which contributed to the mechanical unloading of the knees and reduced inflammatory burden. She also reported notable relief in her radiating chest pain. There was observable improvement in gastrointestinal symptoms like hyperacidity, and systemic signs of inflammation were reduced. There was observable improvement in gastrointestinal symptoms like hyperacidity, and systemic signs of inflammation were reduced. No adverse effects from the Panchakarma therapies were observed, except for occasional mild fatigue post-Swedana, which resolved with rest.

Follow-up ultrasonography and haematological reports showed stabilization of the previously diagnosed fatty liver. These changes indicated systemic benefits of the integrative approach beyond musculoskeletal symptom control.

DISCUSSION

The current case illustrates the multidimensional impact of an integrative Ayurvedic approach in managing knee osteoarthritis in the context of obesity and complex comorbidities. osteoarthritis is a progressive disorder wherein conventional pharmacological agents offer only transient symptom relief, often accompanied by undesirable side effects [3,4]. In contrast, Ayurveda's holistic strategy targets the root causes, emphasizing detoxification, metabolic correction, and tissue rejuvenation [5].

The combination of herbal medicines used in this case—many with established anti-inflammatory and Rasayana actions—helped mitigate joint inflammation while also supporting the hepatic, reproductive, and metabolic systems. *Asthisrunkhala*, *Rasna Saptak Kwath*, and *Yograj Guggul* are classically indicated in osteoarthritic conditions and may contribute to cartilage repair and pain relief. Panchakarma procedures like *Janu Basti* and *Patra Pinda Sweda* have been shown to enhance local circulation, relieve stiffness, and restore joint function through thermal vasodilation and oleation mechanisms.

The improvement in KOOS score (from 9% to 67%) reflects not only symptomatic relief but also restoration of function, which aligns with the holistic goals of Ayurvedic management. In maximum cases weight gain is major cause for knee pain so in this case, weight loss through a tailored hypocaloric diet and metabolic enhancers such as *KNG Kwath* and *Neem oil* likely reduced mechanical load on the knee joints and systemic inflammation, supporting sustainable recovery.

The stabilization of fatty liver and improvement in digestive symptoms suggest systemic effects extending beyond local joint therapy. Given the absence of serious adverse events and the broad spectrum of benefits observed, this integrative protocol may serve as a valuable model for managing osteoarthritis in patients with multiple chronic conditions.

CONCLUSION

This case study demonstrates the significant role of integrative Ayurvedic therapy in managing knee osteoarthritis complicated by obesity. A holistic regimen including Panchakarma, herbal medication, dietary modification, and physical therapy resulted in remarkable improvements in KOOS scores, symptom relief, and systemic health.

Table 1:

KOOS Score Subscale	Baseline (%)	Mid-treatment (%)	Post-treatment (%)
Symptoms + Stiffness	14	46	71
Pain	8	47	75
Function in Daily Living	21	49	74
Function in Sports and Recreational Activity	0	0	40
Quality of Life	0	44	75
Total KOOS Score	**9**	**37**	**67**

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Cite this Article: Kshirsagar Jyoti D., Lakariya Asha A., Dr. Khan Sadik, M.(2026). Improvement in Knee Osteoarthritis and Weight Loss Through Integrative Ayurvedic Management: A Case Study. International Journal of Current Science Research and Review, 9(10), pp. 5467-5470. DOI: https://doi.org/10.47191/ijcsrr/V9-i10-25