

Case Report

Management of Osteoarthritis Through a Family Medicine Approach

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Abstract:

Osteoarthritis is a chronic degenerative joint disease characterized by pain, stiffness, reduced function, and structural changes involving the entire joint, including articular cartilage, subchondral bone, synovium, ligaments, the joint capsule, and periarticular muscles. Its global burden continues to increase because of population ageing, obesity, physical inactivity, previous joint injury, and repeated mechanical loading. Diagnosis is generally clinical, based on activity-related pain, morning stiffness lasting less than 30 minutes, bony enlargement, and limited range of motion. Imaging and laboratory investigations are reserved for atypical presentations, red flags, suspected alternative diagnoses, trauma, or planning of advanced treatment. Management should be comprehensive and individualized. Core interventions include patient education, self-management, low-impact aerobic and strengthening exercise, weight reduction in patients with overweight or obesity, activity modification, assistive devices, and rehabilitation. Pharmacological treatment may include topical or oral non-steroidal anti-inflammatory drugs, selected according to comorbidities and the risk of adverse effects. A family medicine approach strengthens continuity of care, shared decision-making, monitoring of comorbidities, prevention of falls and disability, and family participation in sustaining behavioral change. This approach can help patients maintain mobility, independence, and quality of life.

Keywords: Family medicine; Osteoarthritis; Primary care; Self-management; Quality of life.

1. Introduction

Osteoarthritis (OA) is a chronic, progressive musculoskeletal disorder that affects the whole joint and is associated with pain, stiffness, impaired mobility, and loss of function. Contemporary evidence emphasizes that OA care should move beyond a purely structural or analgesic model toward evidence-based, function-oriented management (1).

The burden of OA continues to increase because the condition is highly prevalent, often persistent, and associated with repeated healthcare use, work impairment, and substantial societal costs (2). Real-world epidemiological analyses further demonstrate that chronic OA pain is linked to considerable primary and secondary care utilization (3), while increasing disease severity is associated with more intensive treatment patterns and greater healthcare resource use (4).

In family medicine and primary care, OA is commonly managed as a long-term condition requiring continuity, early assessment, education, rehabilitation, and coordination across services. Primary care-based models can

support structured OA management (5), and effective interactions should also address the priorities, expectations, and concerns of both patients and clinicians (6).

The objective of this report is to describe osteoarthritis, its clinical diagnosis and management, and the contribution of a family medicine approach to maintaining function, preventing disability, and improving quality of life.

2. Case Presentation

Definition and epidemiology

Osteoarthritis is characterized clinically by activity-related pain, brief stiffness after rest, progressive functional limitation, and structural changes that may involve cartilage, subchondral bone, synovium, and periarticular tissues. Imaging research on early knee OA highlights that structural abnormalities may emerge before advanced radiographic disease is present (7). Clinical characteristics and outcomes of knee and hip OA also show substantial overlap, supporting a common core approach to education and exercise while retaining joint-specific considerations (8).

OA most frequently affects the knee, hip, hand, and spine, but other weight-bearing joints may also be involved. Primary care assessment should therefore consider joint location, functional impact, previous injury, mechanical loading, age, and relevant comorbidities; these principles are also reflected in guidance for ankle OA (9). Management strategies may need to be adapted to the anatomical site and clinical pattern of disease (10).

Etiology and pathophysiology

OA develops through the interaction of biological and mechanical factors. Ageing, excess body weight, previous injury, altered alignment, repetitive loading, and muscle dysfunction can modify joint biomechanics and contribute to pain and disability. In knee OA, biomechanical markers are associated with symptoms and functional impairment in addition to radiographic severity (11).

The disease process involves the entire joint rather than cartilage alone. Repeated mechanical stress may alter load distribution, promote cartilage degeneration, stimulate subchondral bone remodeling and osteophyte formation, and contribute to synovial and periarticular changes. Evidence from hand OA similarly illustrates the importance of joint biomechanics in symptom development and rehabilitation planning (12).

Clinical manifestations and diagnosis

The main clinical manifestations of OA are activity-related joint pain, stiffness, restricted movement, crepitus, and reduced function. Symptoms can range from mild activity limitation to persistent pain that interferes with sleep, mobility, work, and daily activities. A structured clinical assessment of knee pain remains essential to distinguish OA from other musculoskeletal or inflammatory causes (13).

OA is primarily a clinical diagnosis based on the pattern of symptoms, age, physical examination, and functional limitation. Imaging is useful when the presentation is atypical, another diagnosis is suspected, symptoms are disproportionate, trauma is present, or advanced intervention is being considered. Decision-support approaches may improve the consistency of knee OA assessment and triage (14), while evidence also suggests that the way radiographic findings are explained can influence patients' beliefs about disease and management (15).

Table 1. Differential diagnosis of osteoarthritis and initial management

Differential diagnosis	Clinical clues	Initial action
Inflammatory arthritis	Morning stiffness lasting more than 30-60 minutes, multiple warm swollen joints, and systemic symptoms.	Perform indicated laboratory evaluation and refer if rheumatoid arthritis or spondyloarthritis is suspected.
Gout or septic arthritis	Very severe acute pain, a red and hot joint, fever, or infection risk factors.	Refer immediately for joint aspiration and treatment.
Fracture or malignancy	Progressive night pain, trauma history, weight loss, or previous cancer.	Arrange imaging and referral.

Differential diagnosis	Clinical clues	Initial action
Neuropathic or radicular pain	Numbness, tingling, weakness, or dermatomal radiating pain.	Perform a neurological examination and manage according to the cause.

Management

The goals of OA management are to reduce pain, maintain or improve function, prevent disability, support participation in meaningful activities, and preserve quality of life. Structured primary care delivery models can improve implementation of recommended care (16). Quality indicators emphasize that OA pain management should combine evidence-based treatment, functional assessment, monitoring, and patient involvement (17), consistent with broader indicators for high-quality musculoskeletal care in primary and community settings (18).

Pharmacological management

Pharmacological treatment should be considered when pain interferes with activity, sleep, exercise, or daily function, and it should be integrated with non-pharmacological care rather than used as a stand-alone strategy. Primary care chronic pain guidance supports individualized selection of therapy according to benefit, risk, comorbidities, and patient preferences (19). Real-world primary care data also show substantial variation in analgesic use among people with knee OA, underscoring the need for regular medication review (20).

Paracetamol may be considered selectively, although contemporary guidance places greater emphasis on limited benefit and appropriate patient selection (21). Non-steroidal anti-inflammatory drugs can provide symptomatic relief but require attention to gastrointestinal, renal, and cardiovascular risk (22). Physical therapy may provide favorable value compared with intra-articular glucocorticoid injection for knee OA in selected patients (23). When injections are used, patient and clinician experiences show the importance of shared expectations regarding short-term benefit and uncertainty (24), while repeated corticosteroid injections require particular caution and individualized decision-making (25). Opioids should generally be reserved for limited circumstances because prescribing practices remain variable and require careful risk-benefit assessment (26).

Non-Pharmacological Management

Non-pharmacological care is the foundation of OA management. Education should help patients understand the condition, remain active, manage symptoms, and recognize that medication alone is insufficient. Observational evidence indicates that education and exercise remain important components of care even among patients using pain medication (27).

Exercise should be individualized and progressed according to symptoms, function, and patient goals. Strength and aerobic exercise can improve knee function and quality of life (28), while brief self-exercise education can support people with chronic knee pain (29). More complex stratification does not necessarily outperform well-delivered usual exercise therapy (30), reinforcing the importance of feasible and sustained activity. Individually prescribed physical activity can support longer-term management (31), and cycling combined with education has been evaluated as a pragmatic intervention for hip OA (32).

Weight management should be addressed when overweight or obesity contributes to joint loading or limits mobility. Primary care obesity algorithms support structured assessment and individualized management (33), while long-term behavioral weight-management programs demonstrate the value of sustained lifestyle support (34). For patients with OA, weight management should be integrated with exercise and functional goals rather than treated as an isolated intervention.

Assistive devices, footwear modification, home adaptation, and fall-prevention strategies may help patients maintain independence. Concerns about falling are common among people with knee or hip OA and are associated with pain, function, and psychological factors, indicating that fall risk should be assessed as part of routine care (35).

Family Medicine Approach

A family medicine approach extends beyond joint symptoms to biological, psychological, social, occupational, behavioral, and family factors that influence long-term outcomes. Integrating OA case-finding and initial management into primary care reviews can also identify related anxiety and depression that may affect self-

management (36). The interaction between OA and other chronic diseases can shape everyday functioning and treatment priorities, as shown among people living with both knee OA and type 2 diabetes (37).

Patient-centered assessment should include pain severity and duration, functional limitations, mobility, work and household demands, previous injury, body weight, comorbidities, medication use, personal goals, and barriers to exercise. Prognostic research in large primary care cohorts indicates that health outcomes after education and exercise are influenced by patient characteristics and comorbidity (38). Shared decision-making can be strengthened through structured decision aids that clarify treatment options and patient preferences (39).

Family and community support can reinforce exercise adherence, diet modification, medication safety, fall prevention, and home adaptation. Clinical-community partnerships have been explored as a strategy to optimize OA care (40). Community pharmacists may also contribute to education and support for knee OA (41), while digital self-management tools offer an additional option for sustained patient engagement, including in hand OA (42).

Referral should be considered when pain remains uncontrolled despite appropriate conservative care, when severe deformity or substantial functional impairment is present, when another diagnosis is suspected, or when advanced rehabilitation, injection procedures, or orthopedic assessment are required. Improving referral pathways can increase efficiency in OA care (43). Longitudinal evidence shows that many patients use multiple non-surgical treatments before progressing to knee replacement (44), and decisions about surgery should account for both clinical indications and patient expectations (45).

3. Discussion

OA management in routine practice remains challenging because guideline recommendations must be translated into feasible care across different health systems. Qualitative work identifies barriers and enablers affecting OA management in primary care (46), while implementation studies show that guideline-driven programs can improve the delivery of structured knee and hip OA care (47). Physiotherapy practice in primary care also requires ongoing alignment with evidence-based recommendations (48).

The family medicine model is particularly suitable for OA because it supports continuity, multimorbidity management, rehabilitation, and coordinated care. Advanced-practice physiotherapy models have been used to extend OA management within primary care (49), and community-based consensus frameworks emphasize integrated diagnosis, treatment, and follow-up for older adults (50). Real-world general practice data further illustrate the importance of understanding how OA is actually managed outside specialist settings (51). Strengthening clinicians' confidence and capability to deliver OA care may therefore be an important implementation strategy (52).

Routine imaging is not required for every patient with a typical clinical presentation. Imaging should be targeted to cases with diagnostic uncertainty, red flags, trauma, marked symptom progression, or consideration of advanced intervention. As primary care increasingly incorporates digital services, implementation should also account for accessibility, workflow, and patient-level barriers so that technology supports rather than fragments musculoskeletal care (53).

4. Conclusion

Osteoarthritis is a chronic disease involving the entire joint and has a major effect on pain, mobility, daily function, and quality of life. Diagnosis is generally clinical, while imaging is reserved for atypical presentations, red flags, suspected alternative diagnoses, trauma, or planning of further intervention. Management should be comprehensive and individualized through education, self-management, physical exercise, weight reduction when indicated, activity modification, assistive devices, rehabilitation, and rational pharmacological therapy. A family medicine approach strengthens continuity of care, family participation, monitoring of comorbidities, assessment of function, prevention of disability and falls, and coordination of referral. Through a biopsychosocial and family-focused model, patients can be supported in reducing pain, maintaining independence, and improving quality of life.

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