Osteoarthritis Of the Knee: Epidemiology, Pathophysiology, Clinical Features and Management – A Review

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***Abstract*—Osteoarthritis (OA) of the knee is the most common degenerative joint disorder and a leading cause of pain, disability, and reduced quality of life among adults, especially the elderly. The knee joint is particularly vulnerable due to its weight-bearing function and biomechanical stress. The prevalence of knee OA is increasing globally due to aging, obesity, sedentary lifestyle, and occupational stress. This review discusses the epidemiology, risk factors, pathophysiology, clinical presentation, diagnostic criteria, and current management strategies of knee osteoarthritis, with special emphasis on the Indian population.**

***Index Terms*—Knee osteoarthritis, degenerative joint disease, epidemiology, physiotherapy, management**

I. INTRODUCTION

Osteoarthritis is a chronic, progressive disorder characterized by degeneration of articular cartilage, subchondral bone remodeling, osteophyte formation, and synovial inflammation. Knee OA is a major public health problem and accounts for a significant proportion of musculoskeletal disability worldwide. In India, knee OA is one of the most common causes of locomotor disability among older adults.

II. EPIDEMIOLOGY AND STATISTICS (STATE / STATUS OF OA KNEE)

GLOBAL STATISTICS

- OA affects approximately 240 million people worldwide.
- Knee OA contributes to nearly 80% of OA-related disability.
- Radiographic knee OA is seen in 30–40% of individuals above 60 years.

INDIAN SCENARIO

- Prevalence of knee OA in India ranges from 22% to 39% in adults.
- Higher prevalence is reported among women, particularly post-menopausal.
- Rural populations show increased incidence due to squatting, kneeling, and manual labor.
- OA knee accounts for nearly 50–60% of all OA cases in India.

RISK FACTORS

- Advancing age
- Female gender
- Obesity
- Genetic predisposition
- Occupational stress (squatting, lifting)
- Previous knee injury

III. PATHOPHYSIOLOGY

Knee OA involves an imbalance between cartilage degradation and repair. Mechanical stress leads to:

- Loss of proteoglycans
- Collagen breakdown
- Subchondral bone sclerosis
- Osteophyte formation
- Synovial inflammation

These changes result in joint space narrowing, pain, stiffness, and functional limitation.

IV. CLINICAL FEATURES

- Knee pain aggravated by activity
- Morning stiffness lasting <30 minutes
- Crepitus during movement
- Reduced range of motion
- Joint swelling and deformity (varus/valgus)

V. DIAGNOSIS

Diagnosis is primarily clinical, supported by imaging.

RADIOLOGICAL FINDINGS

- Joint space narrowing
- Osteophytes
- Subchondral sclerosis
- Cysts

Kellgren–Lawrence grading is commonly used for severity assessment.

VI. MANAGEMENT OF KNEE OSTEOARTHRITIS

CONSERVATIVE MANAGEMENT

- Patient education
- Weight reduction
- Activity modification
- Physiotherapy:
  - Quadriceps strengthening
  - Range of motion exercises
  - Aerobic and balance training
- Heat and cold therapy

PHARMACOLOGICAL MANAGEMENT

- NSAIDs
- Analgesics
- Intra-articular corticosteroids
- Visco supplementation

SURGICAL MANAGEMENT

- High tibial osteotomy
- Total knee arthroplasty (advanced cases)

VII. ROLE OF PHYSIOTHERAPY

Physiotherapy plays a key role in reducing pain, improving muscle strength, joint mobility, and functional independence. Evidence supports exercise therapy as the first-line treatment in mild to moderate knee OA.

VIII. CONCLUSION

Knee osteoarthritis is a prevalent and disabling condition with increasing socio-economic burden. Early diagnosis, lifestyle modification, and conservative management—especially physiotherapy—can significantly delay disease progression and improve quality of life. Public awareness and preventive strategies are essential, particularly in high-risk populations.

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