Drug utilization pattern and rational use of medicines in an orthopaedic outpatient department of a tertiary care hospital: a cross-sectional study

Abstract

Background

Rational use of medicines is essential for safe, effective and affordable patient care. The World Health Organization (WHO) core prescribing indicators provide a standardized tool to evaluate prescribing trends and promote rational medicine use. Orthopaedic outpatients frequently receive multiple analgesics and adjuvant drugs, which may predispose to polypharmacy and irrational prescribing.

Objectives

To evaluate drug utilization patterns and rational drug use in an orthopaedic outpatient department (OPD) of a tertiary care teaching hospital using WHO core prescribing indicators.

Methods

A retrospective, cross-sectional study was conducted in the Orthopaedics OPD of MGM Medical College & Hospital, Aurangabad, India, from 1 May to 30 October 2025. Prescription records of adult patients ($\geq$18 years) receiving at least one drug were included. Demographic details, ICD-10 diagnoses, number and class of drugs (ATC classification), routes and dosage forms, and whether drugs were prescribed by generic name and listed in the National List of Essential Medicines (NLEM) were recorded. WHO core prescribing indicators were calculated. Patients were stratified into three age groups (18–44, 45–64, $\geq$65 years) and compared using the chi-square test for categorical variables and the Kruskal–Wallis test for number of drugs per encounter ($p < 0.05$ significant).

Results

A total of 900 prescriptions (360 males, 540 females; mean age 53.1 ± 14.2 years, range 18–92 years) with 2,790 drugs were analysed (mean 3.1 drugs per encounter). Most patients (75.0%) received 2–4 drugs, 15.0% received a single drug and 10.0% had polypharmacy ($\geq$5 drugs). Common diagnoses included low back pain (25.0%), knee pain (20.0%), general joint pain (15.0%), shoulder pain (10.0%) and knee osteoarthritis (8.0%). Oral (95.0%) and topical (70.0%) routes predominated; injections were used in 12.0% of encounters. By ATC-1 level, 67.0% of drugs belonged to the musculoskeletal system group and 20.0% to the alimentary tract. The most frequently prescribed drug classes were anti-inflammatory and antirheumatic agents (38.0%), topical joint/muscle preparations (20.0%) and acid-suppressive drugs (15.0%). Pantoprazole (10.0%), diclofenac (7.0%) and paracetamol (7.0%) were the top individual drugs. WHO indicators showed: average number of drugs per encounter 3.1 (WHO optimum 1.6–1.8), percentage of drugs prescribed by generic name 25.0% (target 100%), percentage of encounters with an antibiotic 5.0% ($\leq$30%), encounters with an injection 12.0% ($\leq$20%), and percentage of drugs from NLEM 55.0% (target 100%). Polypharmacy was significantly higher in patients $\geq$65 years (median 4 drugs, $p = 0.010$), whereas antibiotic and injection use did not differ significantly across age groups.

Conclusion

Antibiotic (5.0%) and injection (12.0%) use in this orthopaedic OPD were within WHO recommended limits, suggesting rational use of these categories. However, the average number of drugs per encounter remained higher than the WHO optimum and both generic prescribing (25.0%) and NLEM use (55.0%) were suboptimal. These findings underscore the need for targeted interventions such as prescriber education, reinforcement of generic policies and regular prescription audits to improve rational and cost-effective orthopaedic prescribing.