

Drug utilisation evaluation in patients with osteoarthritis in tertiary care hospital

Abdul Rasheed, Mohammed Muneebullah, Mohammed Maqsood,
Arbaz Ahmed Khan, Mohamed Ahmed*

Department of Pharmacy Practice, Shadan College of Pharmacy, Hyderabad, Telangana, India

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***Correspondence:**

Mohamed Ahmed,
Email: moin086@gmail.com

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ABSTRACT

Background: The principle aim of our study is to assess the prescribing pattern of drugs used in treatment of osteoarthritis patients.

Methods: A prospective and empirical study was carried out at department of orthopaedics-Shadan teaching and general hospital, for 6 months.

Results: During the study period, a total 120 patients were enrolled, of which 57% were females, 43% were males and common age group was ≥ 60 years. It was found that 56% of OA patient have history of trauma and 62% of obese individual contribute to occurrence of OA. It was found that subjects developed comorbidities like CV disorders which is 36%. It was found that 63% have OA for a duration of >2 years, 56% had no knowledge about their medications, 59% have co-morbidity, 61% have treatment complexity. NSAID's, calcium, vitamin D₃, glucosamine and chondroitin sulphate were the most frequently prescribed drugs in OA accounting for 50%. It was reported that 55% were adherent to OA medication, adherence to physical activity was 64%, adherence to weight loss was 62%.

Conclusions: Our study manifest that majority of the patients had duration of >2 years of OA. The reasons for the uncontrolled pain was due to absence of awareness about osteoarthritis-related difficulties, drugs, low calcium diet, increased stress, obesity, and advanced age. Continuous health education, patient counselling, information about medication adherence and satisfaction at follow-ups is essential to avoid the problems.

Keywords: Osteoarthritis, Drug utilization study, NSAID's, Clinical pharmacist

INTRODUCTION

Drug utilization evaluation (DUE) is a continuous, systematic, and criteria-based programme of medicine evaluations that will assist in ensuring optimal medication use. If therapy is found to be ineffective, providers or patients will need to be involved in order to optimize pharmacological therapy.¹ Drug utilization review (DUR) is typically classified into three different categories: prospective DUR, concurrent DUR and

retrospective DUR.² The most frequent type of arthritis is osteoarthritis (OA) and symptomatic OA is recognized as an important reason of disability and participation restriction in middle-aged and older adults. OA is a heterogeneous condition confined to synovial (diarthrodial) joints.³

Osteoarthritis

Osteoarthritis is a progressive degenerative disorder that occurs due to the bio-chemical break-down of articular

cartilage (hyaline) in synovial joints. The entirety of the joint organ, including the sub-chondralbone and synovium, is affected.⁴

Clinical presentation

Pain’s the most prominent feature and the most prevalent type of presentation of osteoarthritis.⁵ In osteoarthritis, stiffness in the morning typically lasts less than 20 minutes. Advanced OA disease is associated with subluxation of the joint and gross deformity. Knee osteoarthritis is common. Unlike rheumatoid arthritis, osteoarthritis affects only one knee compartment (patellofemoral, medial, or lateral) and isn’t symmetrical.^{6,7}

Risk factors

Risk factors are depicted in (Figure1).

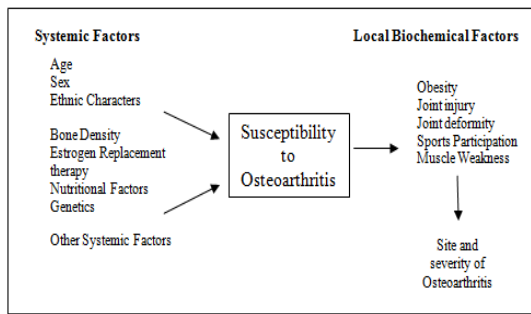


Figure 1: Pathogenesis of osteoarthritis with putative risk factors.⁸

Diagnosis

X-ray evaluation is the "gold standard" in the diagnosis of osteoarthritis. Measurement of cartilage degradation components in serum, urine, or joint fluid has sparked a lot of attention recently, because identifying signs of early cartilage breakdown could lead to earlier diagnosis and management.⁸

Treatment

The therapeutic goals for OA patients are to educate patient about the condition and to maintain freedom and quality of life by reducing or eliminating knee pain, restoring joint mobility, reducing inflammation, improving surrounding muscle strength to protect knee structures, Each OA patient's treatment is determined by the location and severity of joint involvement, comorbid illness conditions, concurrent medication, and allergies.⁹ There is still no cure for OA at this time. In general, non-pharmacological, pharmacological, and surgical interventions are used to treat OA. Non-Pharmacological treatments: exercise and physiotherapy are advised for all stages of OA regardless of age, comorbidities, pain

severity, or impairment.¹⁰ However, exercise alone is not always or always not effective as a treatment for OA.

Table 1: Current recommended OA drugs by AAOS, ACR, and OARSI.¹¹

Drugs	Recommendations
Acetaminophen	AAOS: Inconclusively recommended for symptomatic knee OA with 3000 mg per day (moderately recommended in the 2008 edition with up to 4 000 mg per day) ACR: First-line drug up to 4 000 mg per day OARSI: An effective initial oral analgesic for mild-to-moderate OA pain up to 4 000 mg per day.
Non-selective NSAIDs	AAOS: Strongly recommended for symptomatic knee OA ACR: Conditionally recommended for hand, knee, and hip OA OARSI: Recommended for patients with symptomatic hip or knee OA at the lowest effective dose.
Selective COX-2 inhibitors	AAOS: Strongly recommended for symptomatic knee OA ACR: Conditionally recommended for hand, knee, and hip OA OARSI: Recommended for patients with symptomatic hip or knee OA at the lowest effective dose.
Opioid analgesics (tramadol)	AAOS: Strongly recommended for symptomatic knee OA ACR: Conditionally recommend for hand, knee, and hip OA OARSI: Consider use for the treatment of refractory pain in patients with hip or knee OA.
SNRIs (duloxetine)	AAOS: Not included ACR: Conditionally recommended for patients ≥75 OARSI: Not included.
Intra-articular corticosteroids	AAOS: Inconclusively recommended for symptomatic knee OA ACR: Conditionally recommended for hip and knee OA OARSI: For patients with moderate-to-severe pain who are not respond to oral analgesic and anti-inflammatory agents.
Intra-articular hyaluronic acid	AAOS: No longer recommended (inconclusively recommended in the 2008 edition) ACR: No recommendation OARSI: May be useful in patients with knee or hip OA.

ACR-American college of rheumatology; AAOS-American academy of orthopaedic surgeons; NSAIDs-non-steroidal anti-inflammatory drugs; OA-osteoarthritis; OARSI-Osteoarthritis research society international; SNRIs-serotonin–norepinephrine reuptake inhibitor.

Pharmaceutical treatments for OA are being considered in this case. Surgical treatment should always be the last resource for OA treatment.⁹ Pharmacological treatment: presently, there are no drugs that effectively are able to modify the disease process in OA (that is, treatment that will reduce symptoms in addition to slowing or stopping the disease progression).¹² Surgery: Surgery is an invasive procedure that should be used if non-pharmacological and pharmacological treatments have failed to produce the intended results. For end-stage hip or knee OA a joint replacement is an effective treatment option.¹³

METHODS

Study design, location, duration and sample size

Current study is a prospective observational study. During study tenure, a prospective study looks for outcomes, such as the development of a disease, and correlates this with other factors, such as a potential risk or protection factor(s). Prospective studies offer the advantage of having fewer possible sources of confounding and bias. The study was conducted at the Shadan institute of medical sciences, teaching hospital & research centre, a tertiary care hospital, Hyderabad. The data required was obtained from the orthopedics department. Data was gathered on osteoarthritis on a daily basis during the study period, as well as during follow-up visits. The study was conducted for duration of 6 months from January 2021 to June 2021. 120 patients were enrolled in the current study.

Table 2: Inclusion criteria and exclusion criteria.

Inclusion criteria	Exclusion criteria
Patients willing to involve/participate in the study	Patients not involving/willing to participate in the study.
Patients with history of osteoarthritis with or without co-morbidities.	Patients with Asthma and COPD.

Study procedure

Data was gathered on osteoarthritis on a daily basis during the study period, as well as during follow-up visits in orthopedics department of the hospital. The collected data were recorded in data collection forms designed for the recording of only those factors/parameters vital to establish the objectives of the study. The data collection form used for the study was designed on Google drive, after which, it was entered month wise into Microsoft excel. The results were obtained after filtering for the required data, figures and percentages.

Sources of data

All necessary required and relevant data were collected from the orthopedics department in tertiary care hospital.

The data was collected from: patient’s case notes, patient’s prescribed prescription, in a questionnaire and laboratory reports. To find the prevalence of osteoarthritis and summarize the pattern of drugs prescribed in osteoarthritis patients. All the patients (with joint and knee pain) admitted in orthopaedics department of Shadan institute of medical sciences, teaching hospital & research centre are screened for osteoarthritis. Each subjects detailed information/history regarding age, gender, body weight, employment-status, family-income, education, marital-status, socioeconomic status, urban or rural setting, date of admission, date of discharge, sleep pattern, physical-activity, dietary-intake, salt-consumption, laboratory investigations, history of osteoarthritis, and its treatment given, social habits, and any co-morbid conditions were collected. Literatures, which support the study, were obtained, and prescribing pattern of osteoarthritis drugs was reviewed.

Statistical analysis

The data were analyzed using descriptive statistics. Microsoft Word and Microsoft Excel were used to create the graphs and tables. To arrive at to our study's findings, we employed basic percentage calculations

RESULTS

A total of 120 patients (68 Females, 52 males) were enrolled in the study. Age-wise distribution of patients based on their joints involved, prescribed pattern of drugs is osteoarthritis patients, prescribed pattern of combinations of classes of drugs in osteoarthritis patients, participant adherence status on self-care behaviours among osteoarthritis patients were as mentioned in results.

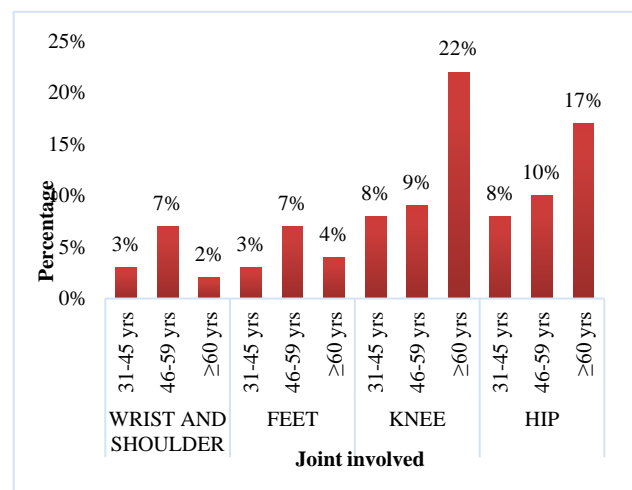


Figure 2: Age wise distribution of patients based on their joint involved in osteoarthritis.

Majority of the patients were found to be belonging to the age group of ≥60 years with Osteoarthritis affecting their knee joint significantly which accounts for 22%. From

the data obtained it was found that NSAIDs were the most commonly prescribed class of drugs in osteoarthritis. From the data obtained, it was found that a combination therapy of NSAIDs, calcium and vitamin D₃, glucosamine, chondroitin sulphate was the most regularly prescribed therapy in osteoarthritis accounting for 50%. It was found that 55% of patients were adherent to OA medication, 64% patients were performing physical activities/exercises and 62% of patients were adherent to losing weight.

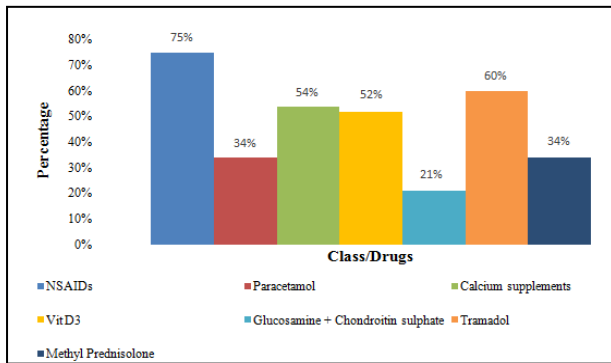


Figure 3: Prescribed pattern of drugs in osteoarthritis patients.

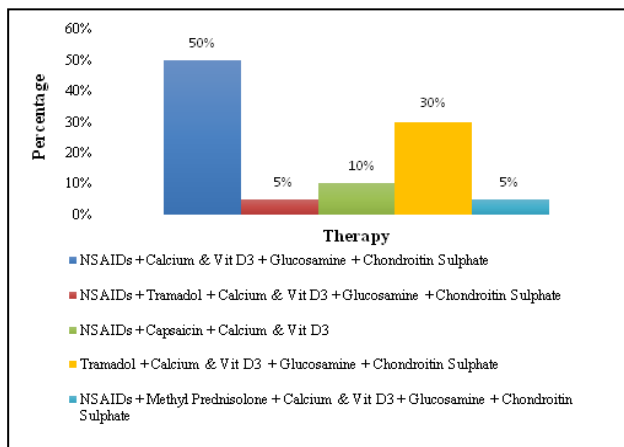


Figure 4: Prescribed pattern of combinations of classes of drugs in osteoarthritis patients.

DISCUSSION

In 120 patients that were included in the study, it was found that Knee joint was the most significantly affected joint, which accounted for 22% of the cases. This is comparable to a study by Oliveria et al.¹⁴ In our study, numerous kinds of medicines were prescribed, with NSAIDs (75%) being the most typically prescribed, both in monotherapy and combined therapy followed by tramadol (60%) calcium supplements (54%), vitamin D₃ (52%), paracetamol (34%), glucosamine and chondroitin sulphate in combination (21%), methyl prednisolone (34%) and also in the pattern of prescribing in osteoarthritis patients, NSAID'S were most commonly prescribed (75%) and aceclofenac was the most

frequently prescribed drug (52%). This is comparable to a study by Gupta et al.¹⁵ In the study conducted, it was found that combination therapy of NSAIDS, calcium and vitamin D₃, glucosamine, chondroitin sulphate was the most regularly prescribed therapy in osteoarthritis accounting for 50%. In the study, it was found that 55% of patients were adherent to OA medications, 64% were performing Physical activities and 62% of patients were adherent to Losing weight. The adherence observed in the present study is higher than what has been reported in a similar study by Dominick et al.¹⁶

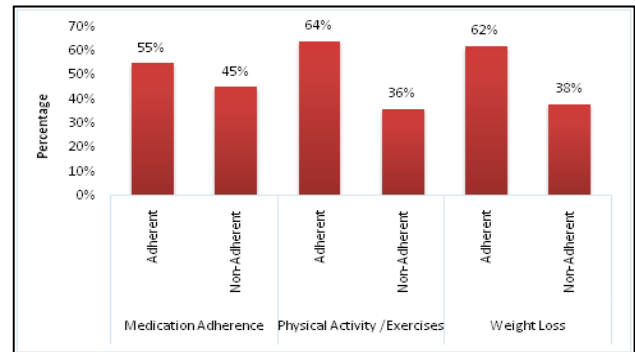


Figure 5: Participant adherence status on self-care behaviour among osteoarthritis patient.

Limitations

Limitations of current study was due to the Coronavirus pandemic follow ups were difficult as visits to the hospital were limited and as the study duration was only of 6 months, the sample size was limited to 120 patients.

CONCLUSION

Our study manifest that majority of the patients had duration of >2 years of OA. The reasons for the uncontrolled pain in Patient's was caused due to absence of awareness about osteoarthritis-related difficulties, drugs, a low calcium diet, increased stress, obesity, and advanced age. A clinical pharmacist can assess risk factors early on, improving the patient's quality of life and lowering the cost of medication. Continuous health education, patient counselling, and information about medication adherence and satisfaction at each follow-up is essential to avoid the problems

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