

## AN OBSERVATIONAL STUDY OF PRESCRIPTION PATTERN OF DRUGS FOR OSTEOARTHRITIS IN A NORTH INDIAN MEDICAL COLLEGE

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Received: 01 May 2019, Revised and Accepted: 04 June 2019

### ABSTRACT

**Objective:** The objective of the study is to analyze the prescription pattern of drugs for osteoarthritis (OA) in a north Indian medical college collaborated with a tertiary care hospital.

**Methods:** An observational study was conducted on 300 patients diagnosed with OA in the department of orthopedics in collaboration with the department of pharmacology, and thus, prescription was collected as in a cross-sectional manner for 6 months and the same were analyzed in the Department of Orthopedics in tertiary care hospital collaborated with medical college.

**Results:** The average age of patients participating in this present study was 56.46±7.4 years with affected age group of 46-60 years. 60 % of females were affected by osteoarthritis outnumbering male (40 %) patients in this present study. The most commonly involved joint was knee joint (87.33 %) in patients diagnosed with osteoarthritis followed by back (6.67 %) and hip joint (6%). The combination therapy (90 %) outweighed monotherapy (10 %) with preferred route of drug administration as oral route (90 %) followed by topical route (10 %). The average number of drugs prescribed for patients of osteoarthritis was 2.62±0.76. This present study concludes that NSAIDs (45.8%) were prescribed most commonly. However, the drug paracetamol was lesser prescribed and other drugs such as Diclofenac (27.22 %) and acetaminophen (34.44 %) most of all followed by Nimesulide (16.67 %), ibuprofen (13.33 %) and Rofecoxib/valdecoxib (8.33 %) were prescribed.

**Conclusion:** This present study concludes that NSAIDs were most commonly prescribed as p-drugs while paracetamol was undermined prescribed.

**Keywords:** Osteoarthritis, Prescription pattern, Paracetamol, Acetaminophen.

**Abbreviations:** OA: osteoarthritis, NSAIDs: Non-steroidal anti-inflammatory drugs, DDS: drug delivery system.

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### INTRODUCTION

Osteoarthritis (OA) is primarily a localized degenerative disorder of multifactorial etiology consisting of progressive loss of articular cartilage, bone remodeling at margins, and derangement of morphological and biochemical abnormalities of the joint capsule and synovial membrane and later subchondral necrosis. The latter stage of OA projects ulceration and softening and focal disintegration of articular cartilage [1].

One of the most commonly diagnosed diseases in generalized practice is OA, and most likely, the prevalence will be double by the year of 2020, due to an increase in the aging of population and increment in prevalence of obesity [2]. According to a data, it has been estimated that OA may be the fourth leading cause of disability by the year 2020 and thus its implications will deliberately significantly impact the society [3,4].

Arthritis affects about 15% of the population and OA is the most common cause contributing to arthritis [5]. The most common involvement of lower extremities joints, namely hip and knee joint, OA is considered to be the leading cause of lower extremities disabling among geriatric adults with a predominantly risk of OA of knee joint about up to 40% in men and 47% in women. Furthermore, the tendency in obese people is relatively high [2].

OA is considered a chronic, painful, and progressive disorder. The treatment module of OA is mainly focused on symptomatic relief of pain. The peculiar thing while in terms of pharmacotherapy of OA

leads to adverse drug reactions and drug toxicity also increased the cost of treatment and an increase in the duration of hospitalization in hospitalized patients. Till now, few studies have been conducted to describe drug utilization patterns in patients of OA. Thus, this present study is conducted to observe the prescription pattern of drugs for patients suffering from OA visiting the orthopedic outpatient department of tertiary care hospital collaborated with a medical college setting.

OA is the most frequently occurring musculoskeletal disorder. The burden of OA is predominantly related to a symptom of pain, eventually leading to functional disability that differs in terms of mild-to-moderate difficulties encountered in performing normal daily activities. Thus, pain relief paves the most important way for the treatment of OA [6].

The adjuvant pharmacotherapy includes glucosamine superadded by surgical interventional procedures. Most likely non-steroidal anti-inflammatory drugs (NSAIDs) are often abused by self-medication [7].

### Objectives

The objective of the study is to observe the prescription pattern of drugs prescribed for the treatment of OA in the tertiary care hospital setting.

### METHODS

#### Study design and site

This present study was a cross-sectional observational study conducted in the Department of Orthopedics in collaboration with

the Department of Pharmacology in Maharishi Markandeshwar Institute of Medical Sciences and Research, Mullana, Ambala, India. The institutional ethics committee approval was taken before the commencement of the study.

#### Study duration

The study was conducted over for 6 months, namely from May 1, 2018, to October 31, 2018.

#### Sample size

In the total duration of 6 months, 300 patients were selected as per the following documented criteria.

#### Inclusion criteria

- Age: Patients aged >18 years, inclusive of randomized both genders visiting the orthopedic outpatient department for the pharmacotherapy of OA
- Only patients who have given written informed consent were included in this present study.

#### Exclusion criteria

- Those patients were excluded who do not want to willingly participate in this present study
- Patients who have not given written informed consent.

#### Study procedure

The patients who were diagnosed with OA were included in this present study as per the inclusion and exclusion criteria. The exact purpose

**Table 1: Male and female patients**

Gender	Number of patients	Percentage
Males	120	40
Females	180	60

**Table 2: Age group analyses**

Age	Number of participants	Percentage
30–45 years	22	33
46–60 years	176	58.67
61–75 years	102	34

**Table 3: Involvement of joints**

Site	Number of cases	Percentage
Knee	262	87.33
Back	20	6.67
Hip	18	6

**Table 4: The type of therapy instituted**

Type	Number	Percentage
Monotherapy	124	41.33
Combination therapy	176	58.67

**Table 5: Drug category**

Drug category	Number	Percentage
Calcium supplements	131	16.67
NSAIDs	360	45.8
Opioids	30	3.81
Tablet capsaicin	33	4.20
Muscle relaxant	05	4.20
Antiulcer	150	19.08
Vitamin supplements	45	5.725

NSAIDs: Non-steroidal anti-inflammatory drugs

and nature of the study, procedure, and information about the written informed consent were very well explained to them and briefing of their data confidentiality was also explained to patients. The collected data was analyzed, and results were reproduced in the form of tables as described.

## RESULTS

#### Demographic pattern

Analytically gender distribution of the patients diagnosed with osteoarthritis visiting this tertiary care hospital is females (60 %) outnumbering males (40 %).

#### Prescription pattern

The total number of drugs prescribed for 300 patients of OA was 786. The average number of drugs prescribed for patients suffering from OA was  $2.62 \pm 0.46$ .

The 90% of drugs constituted in pharmacotherapy were given orally, and others were in the topical form.

## DISCUSSION

In this present study, demographic distribution projected that OA was much more prevalent in females (60%) as compared to males (40%). Our study coincides with a study conducted by Ullal and Narendranath [8] and Jadhav *et al.* [9] in which they documented 57.14% and 70.56% of patients diagnosed with OA were female patients [6,7]. Further a prospective and observational study conducted by Kulkarni *et al.* among 84 patients also concluded that OA was more prevalent in females (63.1 %), and these results are parallel to our study in which 60% of females were duly affected by OA [10].

In our study, the mean age of patients affected with OA was  $56.46 \pm 7.4$  years. The results of our study are parallel to the study Rahman in which he concluded that OA was more prevalent in the age group of 51–65 years [45 (44.84 %)] [11].

This present study illustrates the involvement of knee joint as the most common joint (87.33%) in patients suffering from OA, which coincides with the study conducted by Gurung *et al.* in which they demonstrated that maximum number of patients outlined OA of knee, namely 92 (80.10%) [12].

In this present study, the average number of drugs prescribed per prescription was  $2.62 \pm 0.46$ . Our results are comparable with a study conducted by Gupta and Malhotra [13].

In this present study, acetaminophen was very much intensively prescribed ( $n=124$ ) (34.44%). Now, as per the guidelines of the American College of Rheumatology, acetaminophen (4000 mg/day) may be stated as an analgesic in patients suffering from OA for mild-to-moderate

**Table 6: DDS**

DDS	Number	Percentage
Oral	708	90
Topical	787	10

DDS: Drug delivery system

**Table 7: NSAIDs incorporated in pharmacotherapy**

Name of NSIADs	Number	Percentage
Ibuprofen	48	13.33
Diclofenac	98	27.22
Nimesulide	60	16.67
Acetaminophen	124	34.44
Rofecoxib, valdecoxib	30	8.33

NSAIDs: Non-steroidal anti-inflammatory drugs

pain [13]. In this study, acetaminophen was under prescribed because the analgesic effects of paracetamol are lower than other NSAIDs in patients diagnosed with OA as demonstrated by Richard *et al.* The combination therapy (58.67%) was much more prescribed in documented prescriptions as compared to monthly 4% of total prescriptions contained glucosamine sulfate which has a doubt while in terms of efficacy according to Osteoarthritis research society international (OARSI) guidelines [14]. A drug utilization pattern must be done to make availability of sufficient supply of drugs in tertiary care hospitals [15,16].

#### CONCLUSION

This present study concluded that OA affects females more as compared to males. The NSAID paracetamol was lesser prescribed. Furthermore, the combination therapy was more preferred over monotherapy. To promote "rational drug use" and "evidence-based medicine," it is essential to analyze the prescription pattern of drugs prescribed for OA.

#### ACKNOWLEDGMENT

The author wants to acknowledge the support and critical suggestions from Dr. Sonia Kochhar, Professor, Department of Physiology, Maharishi Markandeshwar Institute of medical sciences and research, Mullana, Ambala, Haryana, India. The authors especially want to thanks to the patients as participants for their support and wholesome participation in this present study.

#### AUTHORS' CONTRIBUTION

Dr. Ashwani Ummat took the overall process of diagnosing and treatment including prescriptions for all patients in the department of orthopedics diagnosed with OA. Dr. Ranjodh Jeet Singh collected and processed the prescriptions and performed analysis in detail with requisite procedures including statistical analysis, and further interpreted the data and prepared the manuscript. The preparation of the manuscript was throughout supervised and guided by Dr. Sonia Kochhar. All authors have read the manuscript in detail and approved the final manuscript and given their consent in the form of copyright agreement for further process.

#### CONFLICTS OF INTEREST

The authors report no conflict of interest regarding this manuscript.

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