Drug Prescription Pattern in Osteoarthritis in a Tertiary Care Teaching Hospital

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Authors’ contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

ABSTRACT

Objective: Drug prescribing studies aim to provide feedback to the prescriber and to create awareness among them about rational use of medicines. The primary aim of drug utilization research is to facilitate the rational use of drugs in patients. Osteoarthritis is the most common form of joint disease and the leading cause of pain in elderly people. The aim of the study was to study the prescription pattern of drugs used in the management of osteoarthritis.

Methods: A prospective observational study was conducted in a tertiary care hospital for period of 12 months in collaboration with the department of Orthopaedics. A total of 300 patients enrolled in the present study with fulfilling inclusion and exclusion criteria. Patients' data was recorded in case report form and analysed to study the prescription pattern.

Results: Out of the total 300 patients enrolled in this study, Osteoarthritis was found to be more common in females. In our study 58.3% of patients were females as compared to 41.7 % of male patients. Patients of age group 46-60 years (60%) were most commonly affected followed by 61-75 years (30.3%). Etoricoxib was the most commonly used NSAID in 28.3% of patients followed by Aceclofenac in 18%, combination of Aceclofenac and Paracetamol in 15.6% & combination of Tramadol and Paracetamol in 8.3% of patients.

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Conclusions: In our study it is seen that osteoarthritis affects females more often than males and the knee joint is the most commonly affected joint. Etoricoxib was the most prescribed drug because of good gastrointestinal tolerance.

Keywords: Prescription pattern; osteoarthritis; nonsteroidal anti-inflammatory drugs; SYSADOA.

1. INTRODUCTION

Drug utilization research is demarcated as the marketing, distribution, prescription and use of drugs in a society, with special emphasis on the consequential medical, social and economic values. The primary aim of drug utilization research is to facilitate the rational use of drugs in patients and in itself does not necessarily provide answers, but it contributes to rational drug use [1].

Osteoarthritis (OA) is universally known as the most common musculoskeletal disorder. The main issue experienced by the patients is the occurrence of pain, which causes functional disability of mild to moderate range [2]. It is the leading cause of pain in elderly people. It is a disorder mainly occurring in the elderly with a radiographic prevalence of nearly 70% in persons over the age of 65 years. The incidence of OA is mounting; by increasing epidemics of obesity and aging population. OA is a progressive and painful chronic disease that affects knee, hand and hip joints. Pain symptoms associated with OA result in increased physical and walking disability [3].

The management of Osteoarthritis is chiefly palliative converging on symptomatic relief of the most commonly targeting pain. Therefore, pain relief portrays a key role in the treatment of Osteoarthritis [4]. The main objectives in the management of Osteoarthritis are to reduce symptoms and functionality or even halt the progression of structural changes and thereby to delay or even avoid the need for prostheses [5]. Management of OA starts with the simple approaches like weight loss (in obesity), exercise, lifestyle alterations, use of analgesics and topical agents [6]. Therapeutic measures consist of non-pharmacological (e.g. patient education and physical therapy), pharmacological (e.g. analgesics, nonsteroidal anti-inflammatory drugs (NSAIDS), symptomatic slow-acting drugs in osteoarthritis (SYSADOA) and ultimately surgical treatments (orthopaedic surgery including joint replacement). Among the pharmacological treatments, NSAIDS remain the most widely prescribed drugs for OA, despite the fact that they provide only symptomatic relief and don’t prevent progression of the disease. However, their long-term use leads to gastrointestinal ulceration, vascular adverse events and other complications. NSAIDS have also been applied topically to reduce gastrointestinal adverse reactions by minimizing systemic toxicity [7].

There are very few studies which describe drug utilization in OA. So, we decided to conduct this study to provide feedback about drug prescription pattern in the management of osteoarthritis.

2. METHODOLOGY

2.1 Study Design and Site

A prospective observational study was conducted in a tertiary care hospital. The study was conducted in the department of Pharmacology in collaboration with department of Orthopaedics for a period of 1 year at a tertiary care hospital. All newly diagnosed patients of OA receiving treatment from the outpatient department of orthopaedics for complaints of OA were included in the study. The clearance from Institutional ethics committee mandated the start of the study.

2.2 Study Duration

The study was carried out over a period of one year from December 2020 to November 2021.

2.3 Sample Size

During the period, a total 300 patients of OA were found to be attending orthopaedic department OPD. All the patients of OA attending OPD were included in the study hence, a sample size of total 300 was selected for study. Data from the patient were recorded in case record form and were analysed for prescription pattern of drug.

2.4 Inclusion Criteria

1. Patients of age 30yrs and above of either gender suffering from primary
osteoarthritis. Thirty years old patient was considered for the participation in the study looking at the increasing prevalence of early menopause which could be predisposing factor for OA and also to include the post traumatic osteoarthritis patients in the study sample.

2. Patients who were willing to participate in the study and give a written informed consent.

2.5 Exclusion Criteria

1. Patients with history of gastrointestinal, renal, and liver disease or any psychiatric illness and with surgical indications for the management of OA are excluded from the study.

2. Patients who were in disagreement about participation in the study.

3. RESULTS

Table 1 shows that 58.3% of patients were females as compared to 41.7% of male patients of osteoarthritis.

Table 2 Depicts that most commonly affected age group. In our study it was 46-60 years (60%) followed by 61-75 yrs (30.3%).

Table 3 shows that the joint most commonly affected with osteoarthritis is knee (86%) followed by hip in 9.3% of patients.

| Table 1. Demographic details |
|-----------------------------|
| Gender | Number of participants | Percentage |
| Male    | 134                  | 41.7        |
| Female  | 166                  | 58.3        |
| Total   | 300                  | 100         |

| Table 2. Age groups affected |
|-----------------------------|
| Age            | Number of participants | Percentage |
| 30-45 years    | 29                    | 9.6         |
| 46-60 years    | 180                   | 60          |
| 61-75 years    | 91                    | 30.3        |

| Table 3. Details of disease distribution of patients in OA |
|----------------------------------------------------------|
| Site           | Number of cases | Percentage |
| Knee           | 258            | 86         |
| Hip            | 28             | 9.3        |
| Spine          | 14             | 4.6        |

| Table 4. Different NSAIDs used |
|-------------------------------|
| Name of the drug | Number | Percentage |
| Etoricoxib         | 85     | 28.3       |
| Aceclofenac        | 54     | 18         |
| Aceclofenac + Paracetamol | 47   | 15.6       |
| Tramadol + Paracetamol | 25   | 8.3        |
| Diclofenac + Paracetamol | 20  | 6.6        |
| Etodolac           | 19     | 6.3        |
| Diclofenac         | 15     | 5          |
| Paracetamol        | 13     | 4.3        |
| Ibuprofen          | 9      | 3          |
| Piroxicam          | 8      | 2.6        |
| Naproxen           | 5      | 1.6        |
Table 5. Adjunct /Concomitant Therapy

| Name of the drug                  | Number | Percentage |
|-----------------------------------|--------|------------|
| Glucosamine sulphate + Diacerein  | 89     | 29.6       |
| Calcium Salts                     | 170    | 56.6       |
| Vitamin D3                        | 145    | 48.3       |
| B complex                         | 32     | 10.6       |
| Muscle relaxants                  | 12     | 4          |

Table 4 shows that Etoricoxib is the most commonly used NSAID in 28.3% of patients followed by Aceclofenac in 18%, combination of Aceclofenac and Paracetamol in 15.6% & combination of Tramadol and Paracetamol in 8.3% of patients.

Table 5 shows the use of concomitant drugs used in the management of osteoarthritis.

4. DISCUSSION

The primary aim of drug utilization research is to facilitate the rational use of drugs in populations. The objective of any drug prescribing study is to provide feedback to the prescriber and to create cognizance among them about rational use of medicines. Osteoarthritis is an acute or chronic inflammation of joint accompanied by pain, swelling and stiffness resulting either from infection or injury. Management of osteoarthritis is complex and includes the combination of pharmacological and non-pharmacological treatments. Long term treatment may lead to toxicity and occurrence of adverse drug reactions, hospitalizations and increase in cost of treatment. Most of the treatment options mainly focused on relieving the pain. So periodic evaluation of drug utilization patterns needs to be done at regular intervals so that suitable modifications can be made in drug prescribing to increase the therapeutic benefit and to reduce the adverse effects.

In our study, demographic data profile showed that osteoarthritis was more common in females (55.3%) than males (44.7%). This is in accordance with studies done by Patil et al, Ullal et al and Bishnoi et al [8-10]. This increase in the prevalence and incidence of OA among women after the menopause draws attention to the possible contribution of oestrogen deficiency leading to acceleration of cartilage degradation [11]. In our study osteoarthritis of knee was found to be more common than in other joints probably due to excessive use of squatting and cross-leg sitting positions in Indian customs. This is in accordance with studies of Ullal et al [9] and Purushottam Jhanwaret al [12].

In our study, Etoricoxib which is a selective for Cox-2 was the most commonly prescribed NSAID in 28.3% of patients. In a study done by Poornima B et al Etoricoxib was the most commonly prescribed NSAID for pain relief in 43% of patients of osteoarthritis [13]. Also, in a study conducted by Gupta et al selective Cox-2 inhibitors were the most commonly prescribed drugs in 30.4% of patients followed by Diclofenac [14]. This is because the selective Cox 2 inhibitors are safe on account of their gastric tolerability than non-selective NSAIDS. In a study conducted by Meng et al, Orthopaedic departments most commonly used selective cyclo-oxygenase-2 (COX-2) inhibitors, while emergency departments most commonly used traditional NSAIDs. The incidences of gastrointestinal (GI) complications, cardiovascular (CV) events, and new onset hypertension were inferior in patients treated with selective Cox-2 inhibitors than those who had received treatment with traditional NSAIDs and NSAID combinations (P<0.05) [15]. These studies are in accordance with our study in which Etoricoxib was the most commonly used NSAID. In our study Aceclofenac was the second most commonly prescribed NSAID. It is one of the most commonly prescribed drugs for osteoarthritis as shown in study conducted by Kumar et al [16] where it is used in 32.85% of patients and 36.17% in study conducted by Gupta et al [17].

The American college of Reumatology (ACR) guidelines recommends the use of simple analgesic like Paracetamol in the respite of mild-to moderate joint pain [1], but our study reveals that there was a limited use of Paracetamol in the management of OA as a monotherapy. In our study it is mostly used in combination therapy with Aceclofenac, Diclofenac and Tramadol.

The EULAR [18] and OARSI [19] recommendations have favoured the use SYSADOA (symptomatic slow acting drugs for osteoarthritis) like glucosamine sulphate, diacerein especially in early OA. In Olivier Bruyere et al study chondroitin sulphate,
diacerein, glucosamine sulphate [SYSADOA], have demonstrated pain reduction and physical function improvement with very low toxicity [20]. In our study only 29.6% patients received Diacerein + Glucosamine sulphate as an adjunct treatment, their use is still less despite these drugs being very safe and having both symptom modifying and structure modifying effects in OA. But these drugs are costly & that may be the reason for underuse. Other adjunct therapy included Calcium and vitamin D3 Supplements, multivitamins and muscle relaxants.

5. CONCLUSION
In our study it is seen that osteoarthritis affects females more often than males and the knee joint is the most commonly affected joint. Etoricoxib was the most prescribed drug because of good GI tolerance at Lata Mangeshkar hospital, Nagpur a tertiary care teaching hospital. Paracetamol as a monotherapy and SYSADOA were under prescribed.

CONSENT
As per international standard or university standard, Participants’ written consent has been collected and preserved by the author(s).

ETHICAL APPROVAL
As per international standard or university standard written ethical approval has been collected and preserved by the author(s).

COMPETING INTERESTS
Authors have declared that no competing interests exist.

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