



**RESEARCH ARTICLE**

**Prescription Pattern of Drugs in Osteoarthritis**

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**ABSTRACT**

Osteoarthritis, a chronic joint disease is a progressive disorder characterized by destruction of articular cartilage and subchondral bone associated with synovial changes, primarily affecting the knee and hip. Progression of the disease influences quality of life. The treatment aims to reduce the symptoms and improve functionality of the individual. To analyze the prescribing pattern and frequency of the use of drugs in the treatment of primary Osteoarthritis and to provide feedback to prescribing clinicians. Prospective, observational study was conducted for 6 months including 200 patient's prescription in Department of Orthopedics OPD at Rajarajeswari Medical College and Hospital. Out of 200 prescriptions, females (63%) were more commonly affected with mean age being 56.2 years. Knee Joint (72%) was most commonly affected, followed by hip joint, spine and other joints. Etoricoxib (43%) a Selective Cox 2 Inhibitors was commonly prescribed followed by Non Selective NSAIDS being Aceclofenac (35%), Diclofenac (10%), Nimusulide (6%), Piroxicam (4%) and Tramadol (2%). 28% received Paracetamol in combination. Rabeprazole (46.4%) was preferred gastroprotective agent. Diacerin and Glucosamine sulphate (42%) [SYSADOA - symptomatic slow acting drugs for OA] were used as Adjunct Therapy along with topical analgesics, Calcium and vitaminD3 Supplements. Non-drug therapy included exercise and physiotherapy. Our study showed Osteoarthritis knee being most common among female patients and Etoricoxib as the most preferred drug used. Paracetamol and SYSADOA are being under prescribed. National Drug Policy is needed to rationalize the drug use and bring awareness among the Prescribing Doctors.

**KEYWORDS**

Prescribing Pattern, Osteoarthritis, NSAIDS, SYSADOA, Etoricoxib

**INTRODUCTION**

Osteoarthritis (OA) is a progressive disorder characterized by destruction of articular cartilage and subchondral bone associated with synovial changes.<sup>1</sup> It is the most common chronic joint disease of the older patient, primarily affecting the knee and hip.<sup>2</sup> Disease burden is related to pain occurrence, frequently leading to functional

disability ranging from slight limitation of movements to severe impairment of normal daily activities.<sup>3</sup> The progression of the disease is influential on quality of life.<sup>2</sup> Although age is the strongest predictor of the development of OA, obesity, trauma, and physically demanding occupations and activities also increase the risk for OA.<sup>4</sup>

Management of OA starts with the simple approaches like weight loss (in obesity), exercise, lifestyle alterations, use of analgesics and topical agents.<sup>5</sup> Therapeutic measures consist of nonpharmacological (eg, patient education and

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physical therapy), pharmacological (eg, the use of analgesics, nonsteroidal anti-inflammatory drugs [NSAIDs], and symptomatic slow-acting drugs in osteoarthritis [SYSADOA], and ultimately, surgical treatments (orthopedic surgery, including joint replacement).<sup>6</sup>

The main objectives in the management of osteoarthritis are to reduce symptoms and improve functionality or even halt the progression of structural changes and thereby to delay or even avoid the need for prostheses.<sup>7</sup> Non-steroidal anti-inflammatory drugs (NSAIDs) are the most commonly prescribed agents for pain management, but they increase the risk of gastrointestinal (GI) bleeding and vascular adverse events.<sup>2</sup>

Paracetamol due to its better gastrointestinal safety profile has been recommended as the initial drug of choice for symptomatic relief in OA.<sup>8,9</sup> NSAIDs should be considered only in patients unresponsive to paracetamol.<sup>8</sup>

In this context, there is a need for safe and effective alternative treatments which would provide both symptomatic improvement and disease modifying effects in OA. Therefore, second-line drugs such as symptomatic slow-acting drugs for OA (SYSADOA) which include glucosamine sulfate, glucosamine hydrochloride, chondroitin sulfate, hyaluronic acid, avocadosoybean unsaponifiables (ASU) and diacerein are more commonly used.

These drugs may improve patient symptoms as well as reduce cartilage degradation.<sup>10,11</sup> and also having decreased occurrence of GI adverse events when compared to NSAIDs. Hence, the need for treatment regimens having greater safety profile is to be considered.

Accordingly, this prospective study is carried out to analyze the prescribing pattern and frequency of the use of drugs in the treatment of primary OA and to provide constructive feedback to prescribing clinicians, as prescription based survey is considered to be one of the most effective methods to assess and evaluate the prescribing attitude of clinicians<sup>12,13</sup>

## MATERIAL AND METHODS

After taking clearance from Institutional Ethical Committee, a Prospective Observational study was carried out at the Outpatient sections in the department of Orthopedics, of Rajarajeswari Medical College & Hospital, with the assistance/coordination of Orthopedicians.

200 cases were included in the study in a period of 6 months. Data was recorded in a specially designed proforma, which included

- Demographic data: Age, gender, address, OP number and date of examination
- Diagnosis - OA knee, hip, spine
- Drugs Data: drugs prescribed, dose, frequency and duration
- Investigations conducted

### Inclusion Criteria

- Patients above the age of 30yrs of either gender suffering from Primary osteoarthritis

### Exclusion Criteria

- Patients < 30yrs of age
- Pregnant women
- patients with secondary osteoarthritis
- Malignancies of joints

### Statistical Method

The data collected was analyzed statistically using descriptive statistics. Wherever necessary, the results was depicted in the form of percentages and graphs.

## RESULTS

Of 200 patient's prescriptions, OA was more commonly seen in 126 female patients (63%) than 74 male patients (37%) [Figure 1]. The mean age of patients was 56.2 years (30-70 years). [Figure 2] shows Osteoarthritis (OA) knee in 144 patients (72%) being most common, either Unilateral or Bilateral followed by OA Hip in 36 patients (18%), OA Spine in 10 patients (5%) and other joints in 10 patients (5%). Pain and joint stiffness were the common clinical presentation.

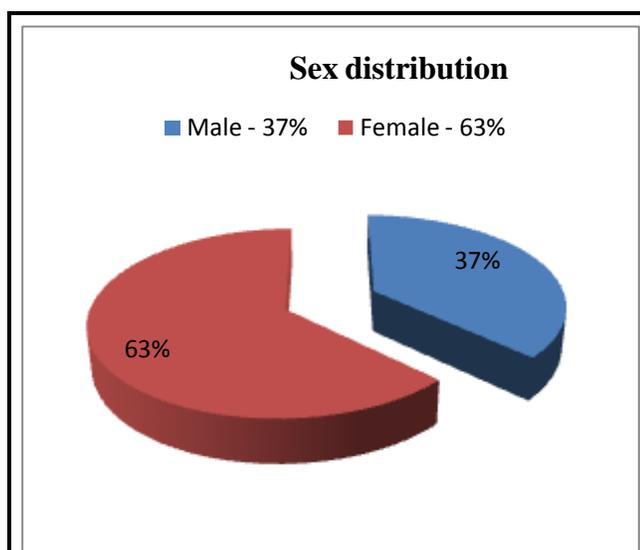


Figure 1: Sex Distribution

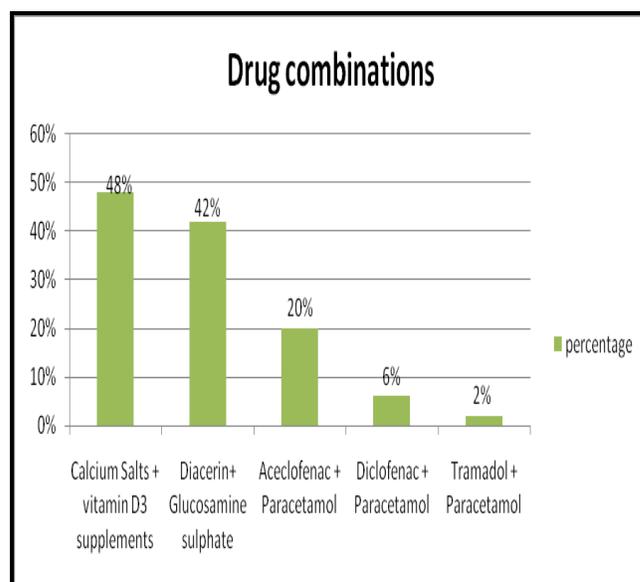


Figure 3: Drugs Used In Combination

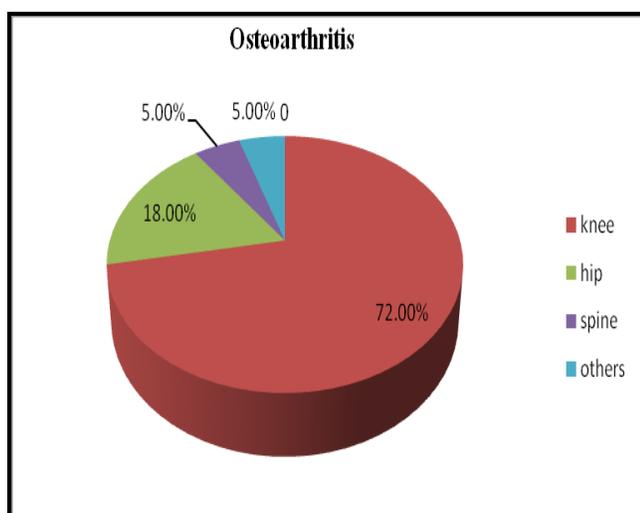


Figure 2: Osteoarthritis

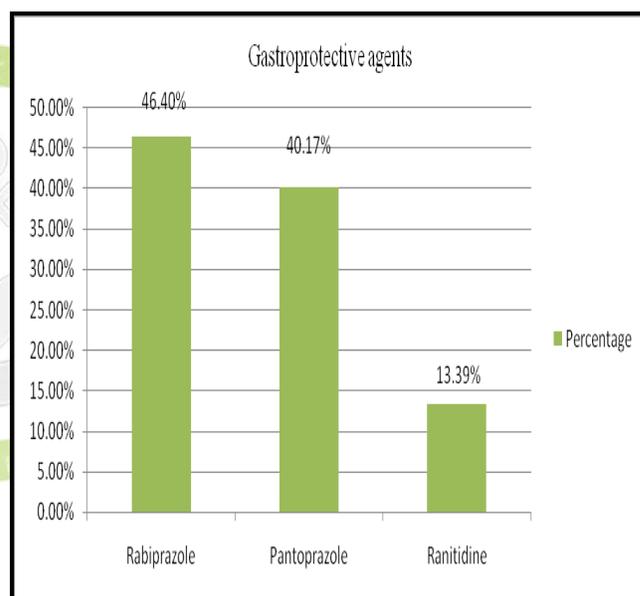


Figure 4: Gastroprotective Agents used with NSAIDS

All the drugs were prescribed with their Brand names. The average number of drugs per prescription was 2.7. [Table 1] shows the drugs used in OA. 96 % of prescriptions contained NSAIDS. Etoricoxib (43%) a Selective Cox 2 Inhibitors was commonly prescribed for pain relief followed by Non Selective NSAIDS being Aceclofenac (35%), Diclofenac (10%), Nimusulide (6%), Piroxicam (4%) and Tramadol (2%). Paracetamol was prescribed in combination with NSAIDS and Opioid in 56 patients (28%) [Figure 3]. Gastroprotective agents were used in 112 patients (56%) along with Non selective NSAIDS, out of which Rabeprazole was most preferred in 52 patients (46.4%). [Figure 4]

Topical analgesic creams were used as Adjunct Therapy in 124 (62%) patients. Other Adjunct Therapy included Calcium and vitamin D3 Supplements (48%) and Diacerin and Glucosamine sulphate (42%), [Figure 3] shows drug used in combination. Non-drug therapies included - Quadricep muscle strengthening exercise (76%), physiotherapy- Ultrasonic massage (36%), hot wax therapy (28%) and life style management like exercise, weight reduction in obese individuals.

Table 1: Drugs Used in Osteoarthritis

Sl No	Drug Name	Monotherapy	Combination	Total	
		No of patients	No of patients	No of patients	%
1	Etirocoxib	86	-	86	43%
2	Aceclofenac	30	40	70	35%
3	Paracetamol	-	56	56	28%
4	Diclofenac	8	12	20	10%
5	Nimusulide	12	-	12	6%
6	Piroxicam	8	-	8	4%
7	Tramadol	4	-	4	2%
<b>Adjunct /Concomitant Therapy</b>					
8	Diacerin	-	84	82	42%
9	Glucosamine sulphate	-	84	82	42%
10	Calcium Salts and	-	96	96	48%
11	vitamin D3 supplements	-	96	96	48%

## DISCUSSION

In our study, out of 200 prescriptions, OA was more common in Female (63%) as compared to male (37%) which is similar to Bishnoi et al,<sup>13</sup> Ullal et al<sup>14</sup>, Purushottam Jhanwar et al<sup>15</sup> studies. This difference may be because, females in their menopausal period (mean age being 56.2 years) have low estrogen, which is not so protective to the cartilage. Also because the females in our region have lack of physical activity, mobility, social issues.<sup>16</sup> Our study is in consensus with Ullal et al,<sup>14</sup> Purushottam Jhanwaret al,<sup>15</sup> where OA was found to be overwhelmingly more common in the knee (72%) than in other joints probably due to excessive use of squatting and cross-leg sitting positions in Indian customs.

Etoricoxib (43%) a Selective Cox 2 Inhibitors was commonly prescribed for pain relief which is similar to use of selective cox 2 inhibitors in Wittenberg et al,<sup>17</sup> Gupta et al.<sup>18</sup> This is because the Selective Cox 2 Inhibitors are safe on account of their gastric tolerability than non -selective NSAIDS.<sup>19</sup> In Ullal et al,<sup>14</sup> Purushottam Jhanwaret al,<sup>15</sup> studies, Diclofenac topped the list either alone or in combination in contrast to our study with Diclofenac (10%).

European evidence-based recommendations for the management of knee, hip, and hand OA devised by the European League against Rheumatism (EULAR)<sup>8</sup> state that “because of its efficacy and safety, paracetamol (up to 4 g/day) is the oral analgesic of first choice and, if successful, is the preferred long term oral

analgesic” owing to its gastrointestinal safety. Analgesic efficacy of paracetamol has been found to be comparable to that of ibuprofen and naproxen.<sup>20,21</sup> However in our study NSAIDs were prescribed in 96% of patients as first line and Paracetamol was under-prescribed, with only 28% patients receiving it in combination, which is similar to Ullal et al<sup>14</sup>, Purushottam Jhanwar et al,<sup>15</sup> studies.

Gastroprotective agents were used in 56% along with Non selective NSAIDs to prevent gastrointestinal adverse effects, out of which Rabeprazole 46.4% was most preferred, which is in contrast to Ullal et al<sup>14</sup> study where Pantoprazole (19%) was most preferred drug.

The EULAR<sup>8</sup> and OARSI<sup>9</sup> recommendations have favored the use SYSADOA- glucosamine sulphate, diacerin especially in early OA. In Olivier Bruyère et al<sup>22</sup> study chondroitin sulfate, diacerein, glucosamine sulfate [SYSADOA], have demonstrated pain reduction and physical function improvement with very low toxicity.<sup>22</sup> In our study only 42% patients received Diacerin + glucosamine sulphate as an Adjunct treatment, despite these drugs being very safe and having both symptom modifying and structure modifying effects in OA. Their under-prescription probably reflects the lack of faith in the clinical effectiveness and cost effectiveness of these drugs, as they are costly compared to NSAIDs

Other Adjunct Therapy included Topical NSAID creams, Calcium and vitamin D3 Supplements. Topical NSAID creams were used in 63% patients. There is growing evidence that topical and oral NSAIDs have equivalent efficacy; moreover, topical NSAIDs display better gastrointestinal safety than their systemic counterparts<sup>23</sup> and should be used more often for symptomatic relief in OA. However Topical NSAID creams was under prescribed in Ullal et al,<sup>14</sup> Purushottam Jhanwar et al<sup>15</sup> studies. 48% of patients were supplemented with Calcium and vitamin D3 in order to increase the bone strength and bone forming substances in the body.

Non-drug therapy has important qualitative role in treatment of OA. In our study they included -

Quadricep muscle strengthening exercise in 76%, physiotherapy- Ultrasonic massage in 36%, hot wax therapy in 28% and life style management like exercise, weight reduction in obese individuals, which is in contrast to Purushottam Jhanwar et al,<sup>15</sup> Bishnoi et al<sup>13</sup> studies where Non-drug therapy was not advised to patients.

All the drugs were prescribed with their Brand names. Use of generic drugs should be considered to reduce prescription costs since Generic drugs are often more economic than the branded ones. Prescribing by brand name may be an evidence of vigorous promotional strategies by pharmaceutical companies.

## CONCLUSION

Our study showed OA knee being most common among patients and Etoricoxib as the most preferred drug used. Paracetamol and SYSADOA are being under prescribed. Non selective NSAIDs were prescribed with gastroprotective agents of which Rabeprazole was most preferred. In a developing country like India, a National Drug Policy is needed to rationalize the drug use. To achieve this, it is very important to determine drug use pattern and monitor drug use profile over the time and bring for awareness among the Prescribing Doctors.

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