



## EVALUASI PENGGUNAAN OBAT ANALGETIK UNTUK PASIEN OSTEOARTHRITIS DI INSTALASI RAWAT JALAN RUMAH SAKIT UMUM DAERAH KOTA MATARAM TAHUN 2021

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### ABSTRACT

Osteoarthritis is a degenerative and inflammatory joint disease characterized by pathological changes in the entire joint structure. Pathological changes that occur include loss of hyaline joint cartilage, followed by thickening and sclerosis of the subchondral bone, osteophyte growth at the joint edges, stretching of the joint capsule, mild synovitis and weakness of the muscles that support the joint due to failure to repair joint damage caused by excessive mechanical stress. Research Objective: This study aims to evaluate the use of analgesic drugs for osteoarthritis patients in the outpatient installation of Mataram City Hospital. Data sampling was carried out retrospectively by looking at the medical records of Osteoarthritis patients who used analgesics in the Outpatient Installation of Mataram City Hospital. Descriptive analysis is a method used to analyze data by describing or depicting the collected data as it is without intending to make conclusions that apply to the public or generalization.

### KEYWORDS

*Osteoarthritis*, Medication, Evaluation



## INTRODUCTION

Osteoarthritis is a degenerative and inflammatory joint disease characterized by pathological changes in the entire joint structure. The pathological changes include the loss of hyaline articular cartilage, followed by thickening and sclerosis of the subchondral bone, osteophyte growth at the joint margins, stretching of the joint capsule, mild synovitis, and weakness of the muscles supporting the joint due to failed repair of joint damage caused by excessive mechanical stress (Felson, 2012; Soeroso, 2015). Osteoarthritis is a joint disorder characterized by pain and stiffness, commonly occurring in the elderly population. The pathological changes consist of the loss of hyaline articular cartilage, thickening and sclerosis of the subchondral bone, osteophyte growth, stretching of the joint capsule, mild synovitis, and weakness of supporting muscles (Felson, 2012). One of the health professionals involved in managing osteoarthritis is physiotherapy. According to Fukuda (2011), from a physiotherapeutic perspective, osteoarthritis can cause various impairments, including reduced muscle strength, pain leading to limited range of motion, muscle spasms, and disabilities such as difficulties in performing activities like kneeling, prolonged standing, rising from a seated position, and squatting. These impairments may further result in functional limitations, such as difficulties in walking, climbing stairs, and running. The prevalence of osteoarthritis in Indonesia is relatively high, with 15.5% in men and 12.7% in women. Among individuals under 40 years of age, the prevalence reaches 5%, increasing to 30% among those aged 40–60 years, and 65% among those over 60 years (Mutiwara, 2016).

A study by Zahara, Narasukma, and Caeciia (2018) showed that 40% of patients had been diagnosed with osteoarthritis for 1–2 years, with the majority being women (72.94%) aged 46–55 years (39%). Most patients had an elementary school level of education or equivalent (41%), and 43.53% were categorized as overweight (BMI 25.00–29.99). All medications prescribed by physicians for osteoarthritis therapy were appropriate in terms of indication and patient suitability. In terms of dosage accuracy, 80.95% were appropriately prescribed, while 19.05% were under-dosed. Potential drug interactions occurred in 30.58% of patients, with a total of 29 cases identified.

Anggraini, Lisni, and Siti Rahmah Faujiah reported 34 osteoarthritis patients, the majority being women (70.6%). The most frequently prescribed drugs were NSAIDs, with diclofenac sodium accounting for 58.8%. Drug-related problems included potential drug interactions between NSAIDs (diclofenac, mefenamic acid) and H2 blockers (ranitidine), observed in 11.7% of cases. In contrast, the present study involves patients of various ages prescribed NSAIDs (diclofenac



sodium, meloxicam, paracetamol), supplements (calcitriol, vitamins, and minerals), NSAIDs combined with opioid analgesics (diclofenac sodium, tramadol, glucosamine), as well as NSAIDs combined with supplements and intra-articular injections (paracetamol, glucosamine, chondroitin sulfate, hyaluronate injections). This study evaluates the appropriateness of analgesic dosage in patients prescribed by physicians.

This rationale underlies the present study, which aims to evaluate the use of analgesic drugs in osteoarthritis patients, specifically to describe analgesic administration and assess the rationality of their use at Mataram City General Hospital, in terms of appropriate indication, drug selection, patient suitability, and dosage accuracy.

## METHOD

The design of this study was observational with a descriptive approach. Data sampling was conducted retrospectively by reviewing the medical records of osteoarthritis patients receiving analgesics at the Outpatient Department of Mataram City General Hospital. Descriptive analysis is a method used to analyze data by describing or portraying the collected data as it is, without drawing conclusions that apply to the general population or generalizations (Sugiyono, 2017).

In this study, the independent variable was osteoarthritis patients, while the dependent variable was the percentage of analgesic drug use evaluation. The study was conducted at the Outpatient Department of Mataram City General Hospital from January to May 2021.

According to Notoatmaja (2014), a population is the total number of samples to be studied. The population is the object of research, and by determining the population, the researcher can process the data (Sugiyono, 2016). Thus, the population in this study comprised all patients at Mataram City General Hospital.

According to Burhan Bungin (2013), a sample is a part of the population studied. A sample is the research object considered to represent the entire population (Notoatmojo, 2014). The sample in this study consisted of osteoarthritis patients at Mataram City General Hospital during the period of January to March 2021.

The sampling technique employed was purposive sampling, defined as the selection of samples based on predetermined characteristics or criteria. Data obtained from the medical record unit were analyzed descriptively to determine the percentage of patient characteristics, osteoarthritis medications including the percentage distribution of drug classes and types used, followed by calculating the percentage results of the evaluation of osteoarthritis drug use.



## RESULT AND DISCUSSION RESULT

This study aimed to describe the use of analgesic drugs in osteoarthritis patients at the Outpatient Department of Mataram City General Hospital in 2021. The study employed a descriptive design with retrospective data collection. Based on the inclusion and exclusion criteria—which consisted of osteoarthritis patients undergoing outpatient treatment at Mataram City General Hospital in 2021 and whose data were obtained from medical records—10 patients were identified as having been diagnosed with osteoarthritis.

Data on analgesic use were collected from the outpatient medical records of both general and BPJS (Indonesian National Health Insurance) patients. These data were subsequently evaluated for compliance with JNC VIII guidelines and the Hospital Formulary (FRS). The collected data included variables such as sex, age, type of drug, and dosage.

### 1. Patient Characteristics

#### a. Sex

The classification of osteoarthritis patients by sex aims to determine the distribution of osteoarthritis cases based on sex.

**Table 1. Patient characteristics by sex**

Sex	Number of Patients	Percentage (%)
Male	1	14
Female	6	86
Total	7	100

*Source: Medical Records, Mataram City General Hospital, 2021*

Table 1 shows that the total number of patients obtained from medical records was 7, consisting of 1 male patient and 6 female patients. Based on sex, the proportion of primary knee osteoarthritis was higher among female patients (82.54%). In terms of chief complaints, the majority of primary knee osteoarthritis cases were accompanied by knee pain (53.26%) (Santoso, 2018).

#### b. Age

Age data in this study were used to determine the distribution of osteoarthritis patients at the Outpatient Department of Mataram City General Hospital in 2021.



**Table 2. Patient characteristics by age**

No.	Age (years)	Number of Patients	Percentage (%)
1	17–35	1	14
2	36–55	2	29
3	56–65	4	57
<b>Total</b>		<b>7</b>	<b>100</b>

*Source: Medical Records, Mataram City General Hospital, 2021*

Table 2 shows that patients aged 56–65 years had the highest percentage (57%), followed by patients aged 36–55 years (29%), while the lowest percentage was found among those aged 17–35 years (14%). According to the 2018 Indonesian Basic Health Research (RISKESDAS), the prevalence of joint diseases diagnosed by physicians in individuals aged over 15 years was highest in Aceh Province (13.26%). By age group, the highest prevalence was observed among individuals aged over 75 years (18.9%). Female patients had a higher prevalence (8.46%) compared to males (6.13%). The 2018 RISKESDAS further reported that the prevalence of joint diseases among individuals aged  $\geq 15$  years in Indonesia was relatively high, with occupational distribution as follows: farmers/farm laborers (9.90%), unemployed (9.10%), civil servants/military/police/state-owned enterprises (7.50%), fishermen (7.40%), entrepreneurs (7.30%), laborers/drivers/household assistants (6.10%), and private employees (3.50%). Osteoarthritis has a global distribution, although prevalence varies among populations and sexes. Nevertheless, OA predominantly affects the elderly population, with a prevalence exceeding 50% among individuals older than 60 years (Moniruzzaman et al., 2018). Based on age group, the proportion of primary knee osteoarthritis was highest among patients aged 56–65 years (45.58%), and in terms of chief complaints, knee pain was the most common symptom (53.26%) (Santoso, 2018).

**Analgesic Use in Osteoarthritis Patients at the Outpatient Department of Mataram City General Hospital in 2021**

Drugs were recorded using their generic names, along with strength and frequency of use. The dosage forms were documented to distinguish oral formulations from injections. Analgesics used by osteoarthritis patients at the outpatient department of Mataram City General Hospital in 2021 included analgesics, corticosteroids, proton pump inhibitors (PPIs), and NSAIDs.

### **a. Treatment Profile of Outpatient Osteoarthritis Patients**



**Table 3. Patient characteristics based on prescribed drugs at the Outpatient Department of Mataram City General Hospital in 2021**

Drug Name	Number of Patients	Percentage (%)
Meloxicam	2	12
Omeprazole	1	7
Na Diclofenac	3	20
Glucosamine	4	26
Metformin	1	7
Paracetamol	1	7
Vit. B Complex	1	7
Allopurinol	1	7
Ibuprofen	1	7
<b>Total</b>	15	100

*Source: Medical Records, Mataram City General Hospital, 2021*

## b. List of Analgesics

**Table 4. Characteristics of patients based on analgesic use for osteoarthritis at the Outpatient Department of Mataram City General Hospital in 2021**

Drug Name	Number of Patients	Percentage (%)
Na Diclofenac	3	75
Paracetamol	1	25
<b>Total</b>	4	100

*Source: Medical Records, Mataram City General Hospital, 2021*

Table 4 shows that the most frequently prescribed analgesic for osteoarthritis patients at the outpatient department was sodium diclofenac, accounting for 75% (3 patients). This is related to its mechanism of action, in which sodium diclofenac inhibits cyclooxygenase (COX) enzymes, thereby reducing prostaglandin production throughout the body. Inhibition of cyclooxygenase-2 (COX-2) is thought to mediate antipyretic, analgesic, and anti-inflammatory effects, whereas inhibition of cyclooxygenase-1 (COX-1) can cause gastrointestinal complications, such as gastric ulcers, in addition to impairments in blood clotting.

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Sodium diclofenac, a phenylacetic acid derivative NSAID, exhibits anti-inflammatory, analgesic, and antipyretic properties. It is a non-selective COX inhibitor with higher potency compared to indomethacin, naproxen, and several other agents. It is commonly used for long-term symptomatic treatment of rheumatoid arthritis, osteoarthritis, and ankylosing spondylitis, as well as short-term management of acute musculoskeletal injuries, acute painful shoulder (bicipital tendinitis and subdeltoid bursitis), postoperative pain, and dysmenorrhea. Ophthalmic formulations are also available for managing postoperative inflammation following cataract extraction.

Adverse effects occur in approximately 20% of patients, with around 2% discontinuing therapy. The most common side effects are gastrointestinal, including nausea, gastritis, bleeding, ulcer formation, and intestinal perforation. Other adverse reactions may include skin erythema, headache, allergic reactions, fluid retention, and edema. The drug is contraindicated in children, breastfeeding mothers, and pregnant women.



**Table 5. Patient characteristics based on prescribed drugs in osteoarthritis patients at the Outpatient Department of Mataram City General Hospital in 2021**

No	Med. Rec. No.	Patient	Sex	Age (years)	Diagnosis	Drug Name	Dose (mg)	Right Patient	Right Drug	Right Dose	Right Indication
1	19***	R	F	72	M19.9, Arthrosis, Unspecified + dyspepsia	Meloxicam / Omeprazole	15 / 20	✓	✓	✓	✓
2	15***	F	M	39	M19.9, Arthrosis, Unspecified	Na Diclofenac / Glucosamine	25 / 250	✓	✓	✓	✓
3	38***	S	M	59	M19.9, Arthrosis, Unspecified + diabetes	Na Diclofenac / Metformin	25 / 500	✓	✓	✓	✓
4	25***	NP	F	65	M19.9, Arthrosis, Unspecified	Glucosamine / Calcium Lactate	250 / 500	✓	✓	✓	✓
5	36***	NI	F	41	M19.9, Arthrosis, Unspecified	Na Diclofenac / Glucosamine / Paracetamol	25 / 250 / 500	✓	✓	✓	✓
6	27***	FA	F	17	M19.9, Arthrosis, Unspecified	Meloxicam / Vit. B Complex	7.5 / -	✓	✓	✓	✓
7	25***	R	F	57	M19.9, Arthrosis, Unspecified	Allopurinol / Ibuprofen / Glucosamine	300 / 400 / 250	✓	✓	✓	✓

**Total Percentage: 100% (Right Patient, Right Drug, Right Dose, Right Indication)**

## DISCUSSION

The findings of this study provide an overview of the patterns of analgesic drug utilization among outpatients diagnosed with osteoarthritis at Mataram City General Hospital in 2021. The results

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indicate that sodium diclofenac was the most frequently prescribed analgesic, accounting for 75% of cases, followed by paracetamol at 25%. This pattern reflects the clinical preference for nonsteroidal anti-inflammatory drugs (NSAIDs), particularly sodium diclofenac, due to its dual role in providing analgesic and anti-inflammatory effects.

The mechanism of action of sodium diclofenac is primarily associated with the inhibition of cyclooxygenase (COX) enzymes, leading to reduced prostaglandin synthesis throughout the body. Inhibition of COX-2 mediates antipyretic, analgesic, and anti-inflammatory effects, whereas inhibition of COX-1 is linked to gastrointestinal adverse effects such as gastric irritation, ulcer formation, and impaired blood coagulation. These pharmacological properties explain both the clinical efficacy and the adverse event profile observed in practice.

In addition to sodium diclofenac, meloxicam and ibuprofen were also prescribed, albeit in smaller proportions. These agents, which also belong to the NSAID class, share similar mechanisms of action but may differ in selectivity and safety profiles. The inclusion of gastroprotective agents such as omeprazole alongside NSAIDs in several cases demonstrates adherence to preventive strategies against gastrointestinal complications, particularly in elderly patients who are at higher risk.

The concomitant use of glucosamine in several patients highlights an attempt to provide disease-modifying or symptomatic slow-acting therapy in osteoarthritis management. Although evidence regarding its clinical efficacy remains controversial, glucosamine continues to be widely prescribed due to its potential benefits in joint protection and pain reduction. Similarly, adjunct medications such as metformin in patients with comorbid diabetes, or allopurinol in patients with hyperuricemia, indicate tailored pharmacotherapy that considers underlying conditions beyond osteoarthritis itself.

Evaluation of the appropriateness of therapy based on the criteria of “right patient, right drug, right dose, and right indication” showed 100% adherence across all cases. This reflects compliance with clinical guidelines such as the Joint National Committee (JNC VIII) and the hospital formulary. Nonetheless, the high reliance on NSAIDs, particularly sodium diclofenac, raises the importance of ongoing monitoring for adverse events, especially gastrointestinal and cardiovascular risks.

Taken together, these findings emphasize the central role of NSAIDs in osteoarthritis management in this setting, complemented by gastroprotective and adjunct therapies. Future research with larger sample sizes and longitudinal designs is warranted to further evaluate the long-term safety



and effectiveness of these therapeutic regimens, particularly in the context of comorbid conditions common among osteoarthritis patients.

## CONCLUSION

Based on the analysis and discussion, it can be concluded that the appropriateness of therapy in terms of the right drug, right patient, right indication, and right dose reached 100%.

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