

Drug Utilization Study of Anti-Rheumatoid Drugs in Patients with Rheumatoid Arthritis at a Tertiary Care Hospital

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Abstract

Background: Rheumatoid arthritis (RA) is a chronic disease that is classified as an autoimmune illness. It is characterized by joint inflammation, which can subsequently cause joint destruction. This leads to disability and a decline in quality of life. An analysis of drug usage is an important way of assessing prescribing habits and evaluating the rationality of drug use in an effort to achieve optimal therapeutic results among RA patients. **Objectives:** To evaluate the drug utilization pattern of anti-rheumatoid drugs, identify commonly prescribed medications, assess prescription rationality, and detect potential drug–drug interactions in RA patients. **Methods:** A cross-sectional study was performed in the rheumatology/medicine outpatient unit for six months in a tertiary care hospital. One hundred RA patients were recruited. A structured proforma was used to collect data, which was then analyzed using descriptive statistics. Drug use was measured by the World Health Organization (WHO)-prescribed indicators, and the database was used to measure drug–drug interactions. **Results:** Females represented 68% of the population in the study, and 60% of patients were aged 30-60 years. A total of 420 prescribed drugs suggested the average was 4.2, which indicated polypharmacy. DMARDs comprised of 55% drug prescriptions, whereas methotrexate was the most with 40% dominance, hydroxychloroquine 25%, and sulfasalazine 15%. Combination therapy was also observed in 48% of patients, and use of supplements was prescribed with NSAIDs (nonsteroidal anti-inflammatory drugs) (70%), corticosteroids (45%), and gastroprotective agents (50%) was observed. WHO indicators showed 62% of prescribed drugs were of generic brand, 12% were substitutes, and 78% were from the list of drugs comprising the essential medicines. 65 potential drug–drug responder, i.e., 50% moderate, were observed. Approximately 75% of prescriptions were rational, whereas 30% of patients expressed poor adherence. **Conclusion:** Methotrexate DMARDs maintained their dominant drug impact in the management of RA and informed rational drug impact. However, substandard generic prescribing, polypharmacy, and inconsistencies in patient adherence were observed, and therefore, the need for education and training with this cohort was identified. The system of rational prescribing plays an important role in achieving the optimal drug impact, and hence, the necessity for safety is identified.

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Received Date: May 01, 2026

Accepted Date: May 05, 2026

Published Date: May 12, 2026

Citation: Faizur Rahman, Nalini Kanta Sahoo, Rajesh Nath, Alex Martin, Asad Jamal Ansari, Ebadurrahman, Saurabh Kumar Chauhan. Drug Utilization Study of Anti Rheumatoid Drugs in Patients with Rheumatoid Arthritis at a Tertiary Care Hospital. International Journal of Orthopedic Nursing and Practices. 2026; 4(1): 14–20p.

Keywords: Rheumatoid arthritis, drug utilization study, DMARDs, NSAIDs, prescribing pattern, polypharmacy, tertiary care hospital

INTRODUCTION

Rheumatoid arthritis (RA) is an autoimmune disease that causes symmetric joint inflammation in humans. It is fibrotic, causes joint fusion, affects organs, and is functionally degenerative in nature.

Patients lose their productive ability and functional capacity three years after diagnosis [1, 2]. The persistence of pain and loss of function are the most detrimental before and after the loss of function.

The World Health Organization (WHO) describes the impact of a disease as an impairment, disability, or handicap. RA is a chronic disease that directly affects the quality of life (QoL) of patients [3].

Drugs are the cornerstone of treatment for this chronic disease and are aimed at preventing and managing flare-ups. Symptomatic treatment and disease-modifying antirheumatic drugs (DMARDs) are the mainstays of managing this chronic disease. This treatment has new classes, and the new agents are considered to be biological response modifiers. Reducing functional disability and improving QoL are the primary treatment goals. The relationship between therapeutic use and QoL is unknown; therefore, we decided to undertake this study with the objectives listed below [4–7].

Objective

1. Identify commonly prescribed anti-rheumatoid drugs.
2. Classify drugs based on therapeutic class.
3. Identify possible drug interactions.
4. Assess the rationality of prescriptions with standard guidelines.

METHODOLOGY

Study Design

This ongoing study was designed to assess the patterns of prescription used in the management of anti-rheumatoid drugs among adults with RA through a cross-sectional drug utilization study. The cross-sectional study assesses the rate of drug utilization among a given population and a given time interval, while the prospective study collects the data in real time.

Study Setting

The study was conducted in the rheumatology/medicine outpatient department (OPD) of a tertiary care teaching hospital. Tertiary care centers have a diverse patient population with a wide array of clinical subspecialties, thus enabling a comprehensive assessment of prescribing patterns.

Study Duration

Data collection for this study was performed over six months among eligible patients in the outpatient department. This duration was appropriate for collecting representative prescribing patterns of drug utilization.

Study Population and Sample Size

The study population included adult patients diagnosed with RA in the outpatient department. A total of 100 patients who met the study's eligibility criteria were enrolled in the study through convenience sampling. This sample size was used to understand the prescribing patterns of drugs used in the outpatient department.

Inclusion Criteria

- Patients diagnosed with RA based on clinical and/or laboratory findings.
- Patients aged ≥ 18 years.
- Patients of either gender.
- Patients willing to provide informed consent.

Exclusion Criteria

- Patients with incomplete or missing prescription data.
- Pregnant and lactating women.
- Patients with severe comorbid conditions significantly affecting drug utilization.
- Patients unwilling to participate.

Data Collection Method

This study will utilize a proforma to standardize and simplify data collection. Patient records will be used with prescription orders to collect the necessary data. In the absence of the previous two, formal patient data will be collected through interviews.

The collected data will include:

Demographic Details

- Age
- Gender
- Duration of illness

Clinical Information

- Diagnosis of RA
- Severity of disease (if available)
- Presence of comorbid conditions

Medication Details

A comprehensive record of prescribed medications was maintained, including:

- Drug name (generic/brand).
- Dose and frequency.
- Route of administration.
- Duration of therapy.
- Combination therapy.
- Concomitant medications.

Special emphasis was placed on anti-rheumatoid drugs, including DMARDs, NSAIDs (nonsteroidal anti-inflammatory drugs), corticosteroids, and biological agents.

Outcome Measures

The primary outcome measures included:

- Pattern of drug utilization in RA patients.
- Identification of commonly prescribed anti-rheumatoid drugs.
- Assessment of prescription rationality.
- Evaluation of polypharmacy.
- Identification of drug–drug interactions.

Assessment of Drug Utilization

Drug utilization will be evaluated using the WHO prescribing indicators, which are widely accepted tools for assessing rational drug use. The following indicators were considered:

- Average number of drugs per prescription.
- Percentage of drugs prescribed by generic name.
- Percentage of encounters with antibiotics (if applicable).
- Percentage of encounters with injections.
- Percentage of drugs prescribed from the essential medicines list.

These indicators will help in identifying rational or irrational prescribing practices.

Drug–Drug Interaction Analysis

The collected prescription data will be used to implement a proforma-based interaction analysis to semi-automatically check prescription-level conflicts. Each conflicting interaction will be classified into one of the following levels of severity [8]:

- Minor
- Moderate
- Major

This analysis will help identify the potential risks associated with polypharmacy and improve patient safety.

Statistical Analysis

Data were entered into Microsoft Excel and analyzed using descriptive statistical methods.

- Categorical variables were expressed as frequency and percentage
- Continuous variables were presented as mean $\pm$ standard deviation (SD)

The results were illustrated using tables, charts, and graphs for better interpretation.

Ethical Considerations

The ethics of this study will be postmarked by the ethics of practice and the ethics of profession principles and undergraduate training modules. Ethics approval was obtained from the Institutional Ethics Committee (IEC) of the respective receiving hospital.

- Patient confidentiality will be strictly maintained.
- No personal identifiers will be disclosed.
- Informed consent will be obtained from all participants.

Limitations of the Study

- The study is limited to a single tertiary care hospital.
- Sample size is relatively small (100 patients).
- Short study duration may not reflect long-term trends.
- Lack of follow-up limits assessment of treatment outcomes [9].

RESULT

In this study, we present data for 100 patients with RA collected over six months in a tertiary care setup. On demographic analysis (Table 1), we found a high prevalence of RA in females compared to 68% males and 32% females. The majority of our study population ($n = 60$) was in the 30–60 years age group. The remaining population was either below 30 years ($n = 15$) or above 60 years ($n = 25$). The mean age was 45 ± 12 years old.

Across the 100 prescriptions, a total of 420 drugs were prescribed (Table 2), which indicates that the average number of drugs per prescription was 4.2, indicating the state of polypharmacy. Among these drug classes, the majority (55%) were DMARDs (Table 3). Within this category, the most prescribed drug was methotrexate (40%).

This was followed by hydroxychloroquine (25%) and sulfasalazine (15%), as shown in Table 4. Combination therapy with two or more clinically prescribed DMARDs was administered to 48% of the patients. This shows that combination regimens are preferred in clinical practice.

Table 1. Demographic characteristics.

Parameter	Category	Number (n=100)	Percentage (%)
Gender	Male	32	32%
	Female	68	68%
Age group	<30 years	15	15%
	30–60 years	60	60%
	>60 years	25	25%

The prescription of adjunct medications alongside DMARDs is common. The use of NSAIDs (70%) was the most common, and corticosteroids, gastroprotective agents, and other central nervous system (CNS) and cardiovascular agents were also common (45% and 50%, respectively) (Table 5). Symptomatic relief was the primary reason for this. Complementary medications were also prescribed to prevent the side effects of primary medications.

According to the WHO criteria, the average number of drugs (per prescription) was 4.2. Other medications were prescribed to prevent side effects and were complementary to the primary medications. 62% of the drugs were prescribed by their generic names, 12% were prescribed in parenteral form, and 78% of the drugs belonged to the essential medicines, advocating rational prescribing (Table 6).

A total of 65 drug interactions were identified, of which 50% were moderate, 40% were minor, and 10% were major. Considering drug interactions, NSAIDs, corticosteroids, and DMARDs were primarily involved; hence, the need to focus on prescribing (Table 7).

Table 2. Drug utilization pattern.

Parameter	Value
Total prescriptions	100
Total drugs prescribed	420
Average drugs per prescription	4.2

Table 3. Distribution of drug classes.

Drug class	Percentage (%)
DMARDs	55%
Others	45%

Table 4. Distribution of DMARDs.

Drug name	Percentage (%)
Methotrexate	40%
Hydroxychloroquine	25%
Sulfasalazine	15%
Others	20%

Table 5. Use of adjunct drugs.

Drug Class	Percentage (%)
NSAIDs	70%
Corticosteroids	45%
Gastroprotective agents	50%

Table 6. WHO prescribing indicators.

Indicators	Value
Average drugs per prescription	4.2%
Generic prescribing	62%
Injection use	12%
Drugs from essential medicines list (EML)	78%

Table 7. Drug–drug interaction profile.

Interaction type	Value
Minor	40%
Moderate	50%
major	10%

The study of rationality showed that 75% of the prescriptions were standard, but polypharmacy was noted in 35% of cases. Methotrexate, NSAIDs, and corticosteroids, which are considered prescribed drugs, are associated with the risk of hepatotoxicity, gastrointestinal irritation, and metabolic disturbances, respectively.

Approximately 30% of the patients in this study poorly adhered to the prescriptions given. It was believed that the patients were not well counselled and were unable to pay for the drugs. It was pointed out that the therapy was very long and that the drugs were rather costly.

DISCUSSION

This study confirmed a greater prevalence of RA in women, particularly in the middle-aged demographic. Methotrexate was prescribed in almost every case. Recent studies have noted that methotrexate is the most commonly used agent in practice. The use of combined therapy to further control the disease was the most commonly used therapy. From these studies, polypharmacy and the potential for moderate to high polypharmacy were observed.

Symptomatic NSAIDs and corticosteroids were extensively prescribed to the patients. However, long-term use of these drugs may be hazardous. It was noted that there was rationally high prescribing, but the lack of use of generic drugs and polypharmacy suggests that these patients were poorly counselled on drug usage [10].

Some patients showed a general lack of adherence to their medications. This is consistent with the recent literature presenting a range of results regarding adherence to DMARD therapies in patients with RA. Overall, adherence is a component of rational drug use for attaining better therapeutic results, highlighting the need to optimize drug use alongside the adherence trend found in the study to improve the therapeutic results of the patient.

CONCLUSION

This study showed the current drug use concerning the control of RA in a tertiary healthcare center. DMARDs, specifically methotrexate, have remained a cornerstone in disease control therapy in combination with adjunct drugs, such as NSAIDs and steroids, to control the symptoms of the disease.

Despite the DMARD prescribing practices primarily following the WHO prescribing indicators and routine treatment guidelines, polypharmacy, moderate drug–drug interactions, and limited generic drug prescribing practices were found. Furthermore, a large number of patients were characterized by a very low and even less than optimal level of adherence to therapy.

The findings revealed a number of rational prescriptions, a systematic review of the prescriptions to maintain patient safety, drug use control, prescription of low-cost drugs, and improvement of patient education and adherence to therapy. Finally, preventative measures to optimize and engage in prescribing strategies should be the focus of studies to promote patient adherence.

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