

Drug Utilization Evaluation of Nonsteroidal Antiinflammatory in a Tertiary Care Teaching Hospital

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ABSTRACT

A prospective observational study was carried out among 100 patients for a period of 3 months from various departments such as medicine, cardiology and casualty were excluded from the study. The data was collected using a patient data collection form. prescribed dose of the drug route of administration and beneficial for the indication of NSAIDs were considered. Males were found more (52%) than females (48%).Most of the NSAIDs were prescribed for males with a mean age group of 60-70years(43.1%).NSAIDs were prescribed mainly for the treatment of body pain (19) patients. Of total prescriptions the major prescription was for Paracetamol (57)and 75% of the NSAIDs were given in oral route and remaining by parenteral and a combination of both parenteral and oral route. The most prescribed brand was Aceclofenacin 20% prescriptions and NSAIDs were most commonly prescribed along with Antibiotic in 45 % of the cases. The major drug interactions was found with the use of Anticoagulantwhile others are moderate and minor. The NSAIDs were prescribed for various cardiovascular disorders and this study may be useful to the physicians in understanding the major drug interactions and adverse events associated with the use of NSAIDs especially in the case of geriatric patients and to help decreasing side effects and improve the therapeutic outcomes of the patient.

I. INTRODUCTION

As per the World Health Organization (WHO), rational use of medicines is defined as, “patients receive medications appropriate to their clinical needs, in doses that meet their own individual requirements, for an adequate period, and at the lowest cost to them and their community”(1).The Non-steroidal Anti-inflammatory Drugs (NSAIDs) are the most commonly used medications in the world.

NSAIDs are used in the treatment of disorders associated with pain and inflammation.

The Non-steroidal Anti-inflammatory Drugs (NSAIDs) constitute the largest group of drugs used worldwide for indications like rheumatoid arthritis, osteoarthritis, low back pain etc⁽²⁾.Non-steroidal anti-inflammatory drugs (NSAIDs) are often prescribed to patients with rheumatoid arthritis (RA), as the first line drugs, and are administered over a long term. NSAIDs are classified principally into acidic and basic preparations, and the former is more widely used for the treatment, since the latter possesses no anti-rheumatic effect⁽⁵⁾.Periodic evaluation of drug utilization patterns enable suitable modifications in prescription of drugs to increase the therapeutic benefit and decrease adverse effects⁽²⁾.

The most common ADRs are those pertaining to gastrointestinal (GI) system, notably dyspepsia and bleeding⁽³⁾.

Common NSAIDs drugs

DRUG	DOSE	TIME $\frac{1}{2}$
Aspirin	40-80mg/day 325-650mg 1g	2-3 hours 4-6 hours
Acetaminophen	10-15mg /kg	4-6 hours
Indomethacin	25mg/day 75-100mg/night	2-5 hours
Ketorolac	30mg IV 60 mg IV	4-6 hours
Diclofenac	50mg-3times /day 75mg-twice /night	1-2 hours
Mefenamic acid	250mg ,500mg	3-4 hours
Ibuprofen	200 -800mg	2-4hours
Naproxen	250mg /day 500mg twice /day	14 hours
Fenoprofen	200mg 4-6 times /day 300-600mg 3-4 times /day	2 hours

NSAIDs mechanism of action inhibiting cyclooxygenase (cox-1 and COX-2) isozymes.

Anti inflammatory effect of NSAIDs was produced by inhibition of (COX-2) enzyme (COX-1) they are responsible for adverse effect like GI. COX-2 is very important in clinical setting but causes GI complication like ulcer and bleeding associated with cardiovascular system. Selective COX-2 inhibitor is equal to non-selective COX-2 inhibitor example: Ibuprofen and diclofenac has less adverse reaction than NSAIDs(3). It appears that NSAIDs have been used to manage musculoskeletal symptoms since antiquity(4).Use of NSAIDs may decrease the efficacy of diuretics and induce congestive heart failure (CHF) in patients treated with diuretics(10).

Risk factors for upper gastrointestinal tract (GI) clinical events with nonsteroidal anti-inflammatory drug

Patient

- Age .65 years
- Alcohol and tobacco Medical history
- Prior peptic ulcer or upper GI event
- Previous NSAID-induced GI side effects
- Severity of underlying disease
- Comorbid conditions ○ Poor functional status

Medication

- Concomitant use of steroids, ie, Prednisolone
- Use of anticoagulants
- Long-term use
- High NSAID dose and use of multiple NSAID

(6)

Although nonsteroidal anti-inflammatory drugs (NSAIDs) are effective analgesic and anti-inflammatory agents, they may have adverse effects on the gastrointestinal, hepatic, renal, pulmonary, and platelet aggregation systems in susceptible patients(7).Problems related to NSAID-induced renal dysfunction and hepatic events and gastroduodenal as well as large- and small-bowel effects of the NSAIDs are also considered(8).

The common condition causing pain in the elbow and forearm and lack of strength and function of the elbow and wrist. It is often treated with non-steroidal anti-inflammatory drugs (NSAIDs), either orally or by topical application.In the short term there may be some advantage in steroid injection over oral NSAID [patient's perception of benefit relative risk = 3.06, (95% confidence intervals 1.55 to 6.06)], but this was not sustained in the longer term(9).

II. MATERIAL AND METHODS

A prospective observational study was conducted for a period of 6 months from July 2024 to Dec 2024 in Ashwin Hospital 800 hospital in Coimbatore, Tamil Nadu, India.

Study materials

Patient data collection form was prepared by the study. A total of 100 cases were selected and reviewed their case sheets thoroughly to evaluate

for the NSAIDs, prescribed. Dose of the drug and characterize route of administration and beneficial for the indication the use of NSAIDs were considered.

Inclusion criteria

Patients in the medicine and cardiology.

Exclusion criteria

Casualty and paediatrics

III. RESULTS AND DISCUSSION

A clinical study was carried out with 100 patients who were prescribed with NSAIDs in the department of medicine and cardiology

Gender-wise distribution of study population

In the study population, out of 100 patients 52 were Male patients and 48 Female patients. It indicates male patients were found to be more than females as shown in Figure 1.

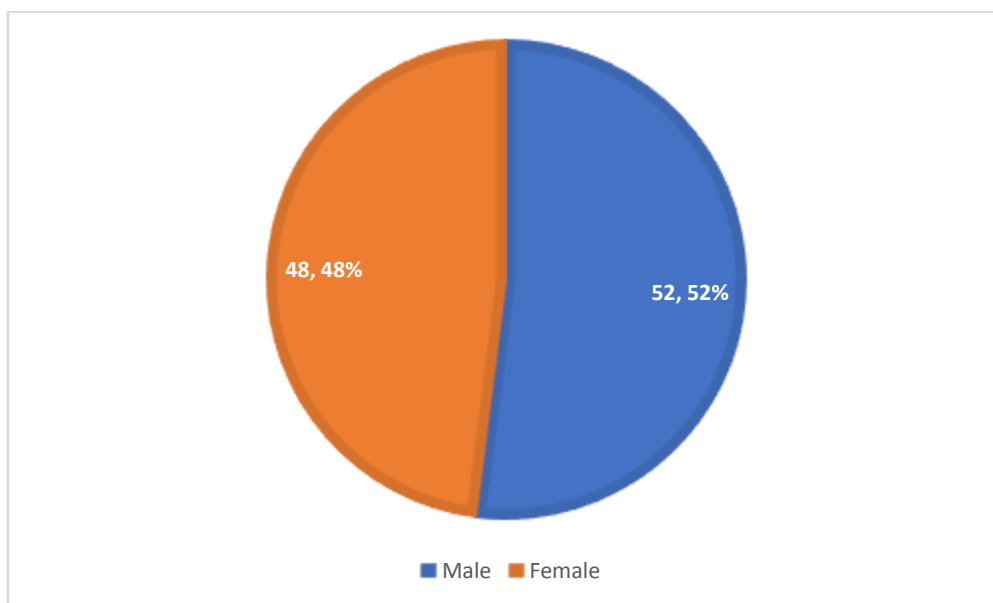


Fig 1: Gender distribution of Study population

Age-wise distribution of study population

Out of 100 patients, most of patients prescribed with NSAIDs belong to the age group of

60-70 years (21%). It shows that NSAIDs are mainly used in geriatric patients, complete details are furnished in Table No. 1.

Table 1: Age Distribution of Study population

S.NO	AGE GROUP(YEARS)	NO.OF PATIENTS
1	<20	6
2	20-30	5
3	30-40	11
4	40-50	10
5	50-60	15
6	60-70	30
7	70-80	16
8	>80	7

Clinical diagnosis of study population

Out of 100 patient cases; related problem were most prominent, Body Pain diagnosis found in 19 patients (20%). It is followed by infectious disease like Urinary Tract Infection (UTI) in 14

cases, enteric fever, Malaria, dengue fever, Tubular meningitis in 16 patients, Respiratory Tract Infections in 10 patients and other diagnosis as shown in Table 2.

Table 2: Diagnosis of Study Population

S. NO	DIAGNOSIS	NO. OF PATIENTS
1	Fever	16
2	HTN	13
3	Diabetes Mellitus(DM)	12
4	Infectious Disease	14
5	RTI (Respiratory Tract Infections)	10
6	Toothache	16
7	Body Pain	19

Breakups of NSAIDs Prescribed

In total of 100 cases of NSAIDs prescribed; Paracetamol was prescribed in 57%patients, Aceclofenac18%, Diclofenac

15%andAspirin 10%. It indicates that mostly prescribed NSAIDs is Paracetamol as shown in Figure 2.

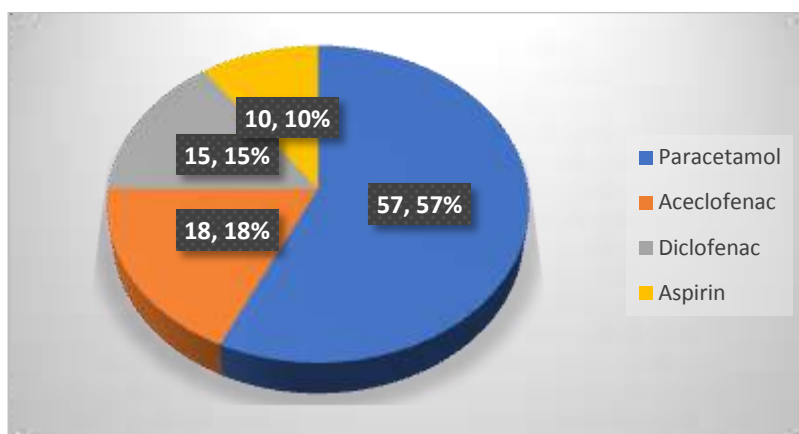


Fig 2: Breakups of NSAIDs Prescribed to the Study Population

Route of Administration of NSAIDs

In 50% of the prescription NSAIDs were given by oral route followed by 75% for parenteral

route and 15% were given by both oral and parenteral route 10% as shown in Figure No. 3.

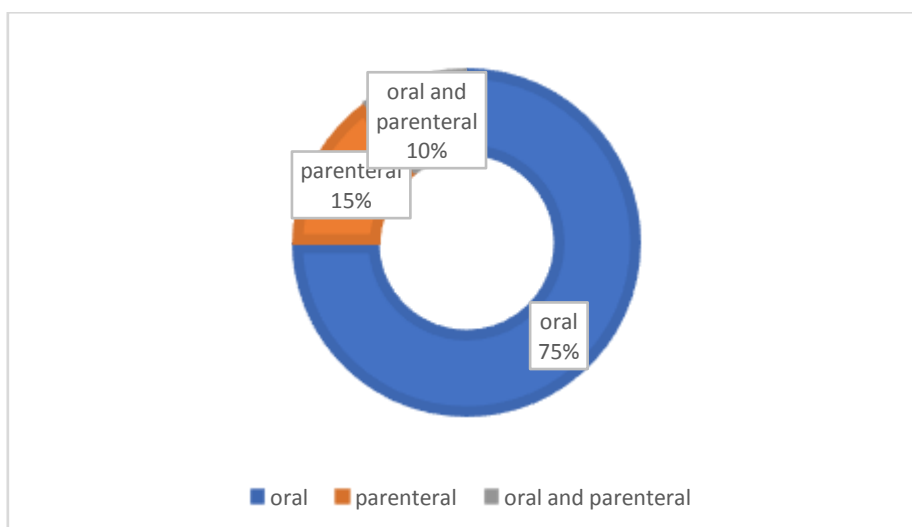


Fig 3: Route of Administration of NSAIDs given in the Study population

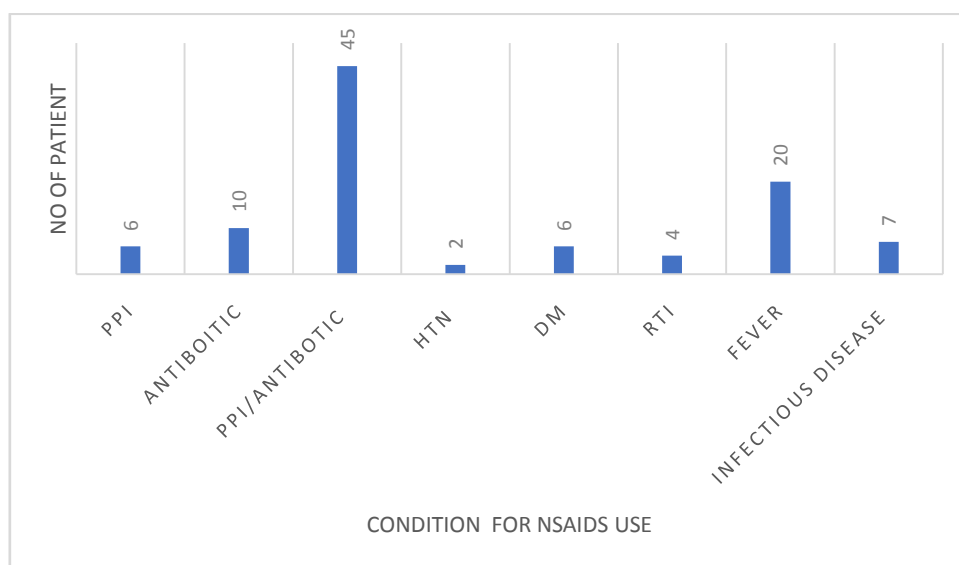
Table No.3: Different bands of NSAIDs prescribed in the study population

S.NO	BRAND NAMES	NO. OF PATIENTS
1	Calpol	9
2	Aceclofenac	27
3	Cataflam	6
4	Zipsor	2
5	Trioflam	4
6	Celebrex	6
7	Advil	5
8	Dolo	10
9	crocin	25
10	Tylenol	6

NSAIDs use evaluation

In our study population NSAIDs was prescribed mostly along with PPI/Antibiotics containing prescriptions in 70 prescriptions which is justified, followed by PPI in 6 cases, PPI along

with antibiotics in 45 cases, for HTN in 2 cases, RTI (Respiratory Tract Infections) 4 cases, fever 20 cases, infectious disease 7 cases, antibiotics in 10 cases, Diabetes Mellitus 6 cases, as shown in Figure No. 4.



Concurrent Drugs Prescribed

In our study population antibiotics were most common drugs prescribed in 34 patients

followed by Cold/ cough/Antiallergics in 26 patients as shown in Table No. 4.

Table No. 4: Concurrent Drugs prescribed

S.NO	CONCURRENT DRUGS(n=100)	NO. OF PATIENTS
1	Antibiotics	34
2	Anti Hypertensive	19
3	Antidiabetics	7
4	Cold/ cough/Antiallergics	26
5	Multivitamin/Mineral/Supplement	15
6	GTI Drugs(laxative/purgative/Antihelminthic)	6
7	Corticosteroids	8
8	Anticoagulant/Antiplatelet	3
9	Others	6

Drug interaction of NSAIDs with other drugs

The major drug interaction was found with the use of NSAIDs along with Anticoagulant, whereas with

other drugs studied interaction was moderate as shown in Figure No. 5.

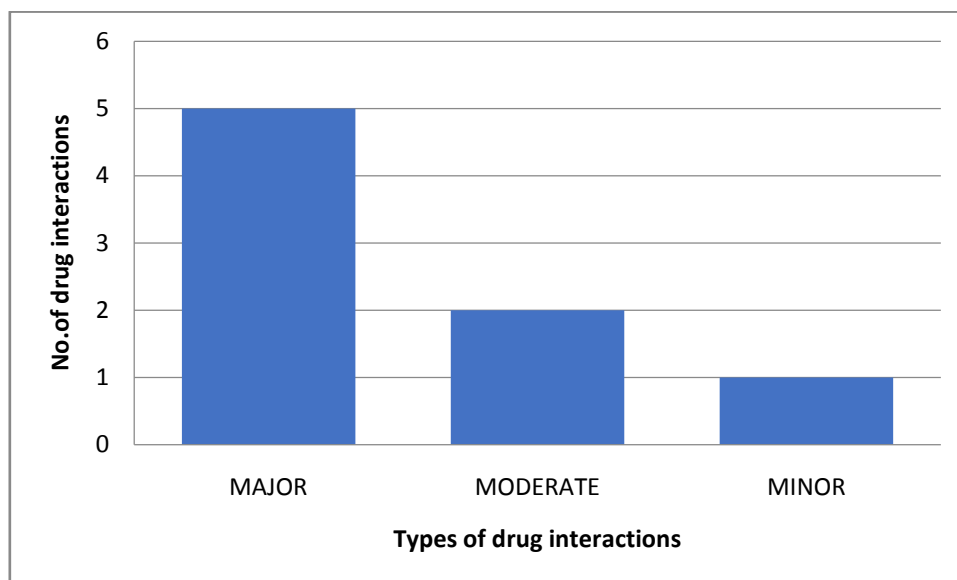


Fig.No.5:Drug interactions of NSAIDs with other drugs

IV. CONCLUSION

The study found out the use of NSAIDs in a wide range of indications, but they are often used without a clear indication. This study may be useful to the physicians in reducing the NSAIDs prescriptions in patients with no apparent and clear indications thereby decreases unwanted side effects, unbecoming use, Similar adverse effects with NSAIDs and health care costs and thereby advertising rationalized drug therapy. Interventions such as educational or awareness programmes and development of guidelines at the hospital level to decreases the NSAIDs in inpatient and outpatient population appears promising. The role of clinical pharmacist in these kind of case are appealing and should strongly interventions in determining and solving deficiencies in pattern of prescribing these drugs.

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