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A STUDY ON DRUG UTILIZATION EVALUATION OF NON STEROIDAL ANTI INFLAMMATORY DRUGS IN A TERTIARY CARE HOSPITAL

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ABSTRACT

The present study was aimed to evaluate the utilization of NSAIDs in a Tertiary Care Hospital. The secondary objectives are to assess co-prescription with gastro protective agents, the nature and severity of adverse drug reactions and Drug-Drug interactions, with an intention to prevent the inappropriate use of NSAIDs. A prospective study was carried out in 300 in-patients of various departments of the hospital during the 6 months period of Aug 2023 to Jan 2024. Out of 300 patients, 103 were Male and 197 were Females, in which most of the patients (84) were belonging to age group of 0-10years. The major complaint of the patient was pyrexia (42.39%). Most of the patients were prescribed with single NSAIDs as monotherapy, although some patients were prescribed with combinations of NSAIDs such as Ibuprofen+paracetamol, Paracetamol+mefenamic acid, Aceclofenac + Paracetamol, Pcm+diclofenac+ibuprofen, Paracetamol+aspirin, Paracetamol+dicyclomine. Most of the patients (78.3%) were prescribed with non selective COX inhibitors and few patients (11.0%) were prescribed with preferential COX2 inhibitors and remaining were prescribed with combination of Non Selective Cox Inhibitors And Preferential Cox 2 Inhibitors. Selective COX 2 inhibitors were not prescribed. Paracetamol (60.33%) and Diclofenac (9%) were mostly prescribed and least prescribed NSAIDs were Aceclofenac and Ibuprofen. Most of the NSAIDs were prescribed via oral route (74.6%), parentral route (8.2%) and combinations of route of administrations (16.6%). The suppository NSAIDs (0.3%) and topical + suppository NSAIDs (0.3%) were least prescribed. Drugs can

be useful tools in the prevention and management of symptoms and disease, but if not used properly, they may be harmful and cause new symptoms or produce suboptimal effects.

KEYWORDS: Non steroidal anti inflammatory drugs, Hospitalized patients, prescription, drug-drug interactions, prevention and management.

INTRODUCTION

Drug Use Evaluation (DUE) is defined as an authorized, structured, ongoing review of practitioner prescribing, pharmacist dispensing, and patient use of medications. The World Health Organization (WHO) in 1997 defined drug utilization as the marketing, distribution, prescription and use of drugs in a society, with special emphasis on the resulting medical, social and economic consequences. DUE is an ongoing, systematic process designed to maintain the appropriate and effective use of drugs. It involves a comprehensive review of patient's prescription and medication data before, during, and after dispensing in order to assure appropriate therapeutic decision making and positive patient outcomes. Pharmacists participating in DUE programs can directly improve the quality of care for patients, individually and as populations, by preventing the use of unnecessary or inappropriate drug therapy and by preventing adverse drug reactions. The purpose of a DUE is to ensure that drugs are used appropriately, safely, and effectively to improve patient health status. In addition, continual improvement in the appropriate and effective use of drugs has the potential to lower the overall cost of care.[1-3]

DUE allows the pharmacist to document and substantiate the benefit of pharmacy intervention in improving therapeutic and economic outcomes. Drug use is a complex process. In any country a large number of socio-cultural factors contribute to the ways drugs are used. In India, these include national drug policy, illiteracy, poverty, use of multiple health care systems, drug advertising and promotion, sale of prescription drugs without prescription, competition in the medical and pharmaceutical market place and limited availability of independent, unbiased drug information. The complexity of drug use means that optimal benefits of drug therapy in patient care may not be achieved because of underuse, overuse or misuse of drugs. Inappropriate drug use may also lead to increased cost of medical care, antimicrobial resistance, adverse effects and patient mortality. Hence in recent years studies on drug utilization have become a potential tool to be used in the evaluation of health system.

TYPES OF DUE STUDIES

Qualitative: DU studies are multidisciplinary operations which collect, organize, analyze and report information on actual drug use. They usually examine use of specific drugs or specific conditions. Qualitative DU studies include the concept of criteria. Criteria are predetermined elements against which aspect of the quality, medical necessity and appropriateness of medical care may be compared. Drug use criteria may be based upon indications for use, dose, dosing frequency and duration of therapy.

Qualitative studies assess the appropriateness of drug utilization and generally link prescribing data to reasons (indications) for prescribing. Such studies are referred to as DU review or DU Evaluation. The process is a "therapeutic audit" based on defined criteria and has the purpose of improving the quality of therapeutic care.

Quantitative: DU study involve the collection, organization and display of estimates or measurements of drug use. This information is generally used for making purchase decisions or preparing drug budgets. But data from quantitative drug use studies are generally considered suggestive, not conclusive with respect to quality of drug use. It is possible to combine both quantitative and qualitative DU studies, which will yield information about pattern and amount of drug use as well as quality of drug use.

Establishment of a drug utilization study program

The DU study program is a continuous process occurring/repeating cyclically and will be more valuable if the cycle is completed rather than different steps being performed in isolation.

Steps involved in conducting drug use study

Step 1- Identify drugs or therapeutic areas of practice for inclusion in the program

All drugs used in a hospital cannot be evaluated. Hence the DU evaluation committee should identify drugs whose evaluation and improvement in use will result in greatest clinical impact. Generally drugs with a high volume of use, high cost or high frequency of adverse drug events are subject to DU studies.[4-10]

Step 2- Design of study

Various research methods are used in DU studies. Observational research methods are more commonly used. Cross-sectional studies, where drug use is examined at a single point in time

are useful. Also the pre and post design where drug use is examined before and after interventions to improve prescribing is another commonly used observational method. Prospective, Concurrent or Retrospective DU studies may also be used depending upon thetiming of data collection.

Prospective DU studies: involve evaluating a patient's planned drug therapy before a medication is administered.

Concurrent DU studies: are performed during the course of treatment and involve the ongoing monitoring of drug therapy. It involves consideration of laboratory test results and other monitoring data when appropriate.

Retrospective DU studies: involve review of drug therapy after the patient has completed a course of therapy. The patient's medication sheet, daily progress notes, nursing observations, pathology/biochemistry results and therapeutic monitoring results are screened to determine whether drug therapy met predetermined criteria. The main advantage of this method is that prescribers and others are unaware of data collection and results may therefore be less biased. Another advantage is ease of data collection, as records are assessed at the data collector's convenience. A disadvantage is that some information may be unclear or missing and that reviewed patients do not gain immediate benefit, as interventions are delayed until the intervention phase.

Step 3- Define criteria and standards

After DUS target has been selected, it is important to conduct a comprehensive literature review. The steps involved in literature reviews are:

Perform an exhaustive literature search for the chosen area, using more than one search mechanism.

Briefly summarize the literature review, identify the 'key' papers in the chosen area and the drug criteria that can be derived from the evidence based literature. Criteria are those predetermined statements describing optimal drug use, against which the quality of actual drug use is compared. Standards are professionally developed expressions of the range of acceptable variation from a criterion. Standards should be based on published literature and should describe exceptions when deviation from criteria is acceptable. Criteria should be

scientifically based and be supported by clinical or research literature. They must be valid, unambiguous, realistic, easily measured and outcome oriented.

Step 4- Design the data collection form

Just as it is impossible to monitor and evaluate all drugs in a hospital, it is also impossible to address all aspects of use for each individual drug. It is important to limit data collection to only the most important and relevant aspects of drug use and to factors which may influence these.

Step 5-Data collection

Physician, pharmacists and nurses make ideal data collectors. Timing of the data collection should be during a period, which is likely to be representative of usual pattern of drug use.

Step 6- Evaluate results

Data evaluation is most critical step in a DUE. Data should be summarized into the major categories of results and checked where exactly the data shows deviation from the guidelines and usage criteria that are previously identified. Then the reasons for this deviation should be evaluated. If there is a true reason for deviation, it may be necessary to redefine the criteria. The reasons may not be evident from the DUE data and may require further investigations, surveys or interviews. Reasons for deviation may include

Drug being used for new indication

Outdated procedures

Inadequate resources

Step 7-Provide feedback of result

Success of any DU study depends on feedback of the results to prescribers, other hospital staff involved in the study and to administrative heads. It is important to prepare ascientific interpretation of the results rather than a value judgment. The results can also be circulated to hospital staff via newsletters, DUE meetings or the hospital's academic meetings.

Step 8- Develop and implement interventions

If a drug use problem is identified the next step is to consider how the problem can be addressed. Interventions to improve drug use can be educational or operational.

Educational interventions consist of educational meetings, circulation of protocols, academic detailing, feedback of results, letters to individual physicians, newsletters.

Operational interventions include the development/modifications of drug order forms, manual or computerized reminders, prescribing restrictions, formulary additions/deletions, automatic stop orders or reallocations of staff. Some interventions may be both educational and operational in nature, such as improving the availability of information and resources to support clinical decision-making.

Interventions should be chosen based on their likely success, ease of application, cost, resources required and sustainability. Interventions which are found to be effective in improving drug use include academic detailing, routine reminders, prescribing restrictions, structured prescription forms/treatment charts and interactive educational meetings.

Step 9- Re evaluate to determine if drug use has improved

Drug use and prescribing patterns need to be monitored to determine the success of interventions. Typically the re-evaluation is done three to twelve months after the introduction of the intervention, and should involve collecting the same data as in original DU evaluation.

Step 10- Reassess and revise the DUE program

Lessons learnt from the first DUE study should be used to improve the quality, efficacy and effectiveness of future DUE studies.

Step 11- Feedback results

Circulate the results of DUE to clinicians and other involved hospital staff to obtain their opinions about the success of the interventions, and how these can be improved.

AIM

The study aims to find out the Drug Utilization and Evaluation of NSAIDS in a given specified population.

OBECTIVES

- To conduct a prospective study on drug utilization evaluation of NSAIDs in selected departments of a hospital.
- To find out, whether gastro protective agents are co-prescribed or not and also the class of gastro protective agent.
- To assess the nature and severity of adverse drug reactions associated with NSAIDs use.
- To evaluate the rational use of NSAIDs.

- To study the possible drug-drug interactions associated with NSAIDs use.
- To evaluate whether NSAIDs are prescribed based on clinical evidence.

METHODOLOGY

- **Type of study**: Prospective observational study conducted in a tertiary care hospital.
- **Sample size**: 300 patients
- **Data Collection**: Data were collected from General Medicine, Pediatric, Surgery, Orthopedic ward using structured data entry format.
- **Study Duration**: The study was carried out for a period of 6 months from August 2023 to January 2024.

Inclusion criteria

- Patients in the General medicine, Pediatric, Orthopedic, Gynecology and Surgery ward prescribed with NSAIDs.

- **Exclusion criteria**
- Patients who were prescribed with NSAIDs in casualty , Pregnant women , lactating mothers and patients who are not on NSAIDs.

RESULTS

The clinical study was carried out with 300 patients who were prescribed with NSAIDs in the department of General medicine, Pediatrics, Gynecology, Orthopedics and Surgery.

WARD WISE DISTRIBUTION

Out of 300 patients, 60.33% were admitted in General Medicine, 31% in Pediatric, 5% in Gynecology, 3.3% in surgery & 0.4% in orthopedic.

Table 1: Ward Wise Distribution in Study Population.

WARD	NO OF PATIENTS	PERCENTAGE (%)
General Medicine	181	60.33
Pediatric	93	31
Gynecology	15	5
General surgery	10	3.3
Orthopedic	1	0.4

GENDER DISTRIBUTION

In the study population of 300 patients, 197 were Female patients and 103Male patients. It indicates Female patients were found to be more (65.67%).

Table 2: Gender distribution of Study population.

GENDER	NO.OF PATIENTS	PERCENTAGE (%)
Female	197	65.67
Male	103	34.33

AGE DISTRIBUTION

Out of 300 patients, 84(28%) were between 0-10years were more whereas the patients belonging to age group of 51-60(13%) years were less.

Table 3: Age Distribution of Study population.

AGE GROUP(YRS)	NO.OF PATIENTS	PERCENTAGE (%)
0-10	84	28
11-20	36	12
21-30	68	22.7
31-40	38	12.7
41-50	32	10.7
51-60	13	4.3
=61	29	9.6

REASON FOR ADMISSION

In our study, we could observe pyrexia (42.39 %), respiratory tract infection (11.40%), renal disorders (6.72%), blood disorders (5.8%), gynecology (4.67%), thyroid (1.46%), hypertension (6.72%), diabetes mellitus (4.67%), orthopedics (0.85%), gastro enteritis (11.69), others (3.80%).

Table 4: Reason for Hospital admission of Study population.

REASON FOR ADMISSION	NO.OF.PATIENTS	PERCENTAGE (%)
Fever	145	40.9
Gastro entritis	40	11.29
Respiratory tract infection	39	11.01
Hypertention	23	6.49
Renal disorders	22	6.21
Blood disorders	20	5.64
gynecology	16	4.51
Diabetes mellitus	16	4.51
Others	13	3.67
Thyroid disorders	5	1.41
orthopaedics	3	0.84

NUMBER OF DRUGS PER PATIENT

Out of 300 patients, ≥ 8 drugs were prescribed for 46.7%, 5 drugs for 12.3% whereas 3(2.3%) drugs were prescribed less.

Table 5: No. of Drugs Per Patient in the Study Population.

NO. OF DRUGS PER PATIENT	NO. OF PATIENTS	PERCENTAGE (%)
3	7	2.3
4	23	7.7
5	37	12.3
6	54	18
7	39	13
=8-19	140	46.7

No. OF NSAID's PER PATIENT

In our study, 70% patients were prescribed with a single NSAID and 2.4% with 4 NSAIDs.

Table 6: **No. of NSAIDs Per Patient in the study population.**

NO. OF NSAIDs	NO OF PATIENTS	PERCENTAGE (%)
1	210	70
2	58	19.3
3	25	8.3
4	7	2.4

CLASS OF NSAIDs PRESCRIBED TO STUDY POPULATION

In our study, Preferential Cox 2 inhibitors were prescribed for 11%, Non-Selective Cox inhibitors for 78.3% & combination of both were 10.7%.

Table 7: Class of NSAIDs Prescribed in the Study population.

NSAIDs CLASS	NO OF PATIENTS	PERCENTAGE (%)
Non Selective Cox Inhibitors	235	78.3
Preferential Cox 2 Inhibitors	33	11
Selective Cox 2 inhibitors	0	0
Preferential Cox 2 + Non Selective Cox Inhibitors	32	10.7

DISTRIBUTION OF PRESCRIBED NSAIDs IN STUDY POPULATION

In our study, the most commonly prescribed NSAID was paracetamol for 60.33%, followed by diclofenac for 9% patients Although some patients were prescribed with combinations as follows.

Table 8: Distribution of Prescribed NSAIDs in study population.

NSAIDs	NO. OF PATIENTS	PERCENTAGE (%)
Paracetamol	181	60.33
Diclofenac	27	9
Mefenamic acid	18	6
Aspirin	8	2.6
Aceclofenac	4	1.3
Ibuprofen	3	1
Combinations	59	19.6

Combinations of NSAIDs

Out of 300 patients, 59 patients were prescribed with combinations of various NSAIDs such as diclofenac, paracetamol, ibuprofen, mefenamic acid, aceclofenac, aspirin, dicyclomine, ketorolac and piroxicam.

Table 9: Distribution of Prescribed Combinations of NSAIDs in study population.

Combination of NSAIDs	No. of patients	Percentage(%)
Diclofenac + Paracetamol	12	4
Ibuprofen+paracetamol	8	2.6
Paracetamol+mefenamic acid	8	2.6
Aceclofenac + Paracetamol	6	2
Pcm+diclofenac+ibuprofen	5	1.6
Paracetamol+aspirin	4	1.33
Paracetamol+dicyclomine	3	1
Diclofenac+ketorolac	3	1
Paracetamol+piroxicam	1	0.3
Aspirin+diclofenac	1	0.3
Aceclofenac+diclofenac	1	0.3
Aceclofenac+pcm+mefenamicacid	1	0.3
Pcm+mefenamic acid+diclofenac	1	0.3
Pcm+diclo+aceclofenac	1	0.3
Pcm+ibuprofen+mefenamic acid	1	0.3
Pcm+mefenamic acid+aspirin	1	0.3
Pcm+aspirin+aceclofenac	1	0.3
Mefenamic acid+ketorolac+diclofenac	1	0.3

DURATION OF NSAIDs USE

Out of 300 patients, the duration of use of NSAIDs for 1 day (1.6%), 3 days (27%), 4 days (18%), 5 days (37.7%), 6 days (10.7%) and 5% patients for ≥7 days were observed.

Table 10: Duration of NSAIDs use in Study population.

DURATION OF USE OF NSAIDS	NO.OF PATIENTS	PERCENTAGE (%)
1 day	5	1.6
3 days	81	27
4 days	54	18
5 days	113	37.7
6 days	32	10.7
=7 days	15	5

ROUTE OF ADMINISTRATION

Out of 300 patients 224 patients (74.6%) with ORAL, 20 patients (6.6%) with IM 5 patients (1.66%) with IV, 1 patient (0.3%) with SUPPOSITORY, 50 patients (16.66%) were prescribed with COMBINATIONS of route of administration.

Table 11: Route of Administration given in the Study population.

ROUTE OF ADMINISTRATION	NO OF PATIENTS	PERCENTAGE (%)
ORAL	224	74.6
IM	20	6.6
IV	5	1.66
SUPPOSITORY	1	0.3
COMBINATIONS	50	16.66

COMBINATIONS OF ROUTE OF ADMINISTRATIONS OF NSAIDs

Table 12: Combinations Of Route Of Administration Given In The Study population.

ROUTE OF ADMINISTRATION	NO.OF PATIENTS	PERCENTAGE(%)
IV+ORAL	15	5
IM+ORAL	20	6.6
ORAL+IM+IV	4	1.3
IM+IV	3	1
ORAL+SUPPOSITORY	3	1
IV+SUPPOSITORY	3	1
ORAL+TOPICAL	1	0.3
SUPPOSITORY+IV+ORAL	1	0.3

CONCURRENT DRUGS PRESCRIBED

Major prescriptions of NSAIDs were antibiotics (33.76%) followed by vitamins (11.78%). Other contents of prescription were bronchodilators, antiemetics, antihypertensives, antidiabetics, corticosteroids, anxiolytics and others.

Table 13: Concurrent drugs prescribed in Study population.

	PRESCRIBED	PATIENTS	
1.	Antibiotics	361	33.76
2	Vitamins	126	11.78
3	Anti emetics	124	11.59
4	Anxiolytics	99	9.26
5	Bronchodilators	67	6.26
6	Antidiabetics	43	4.02
7	Antihypertensives	42	3.92
8.	Anti allergics	41	3.83
9	Expectorants	40	3.74
10.	Anti spasmodics	39	3.64
11.	Gut enhancers (lactobacillus)	23	2.15
12.	Lactulose	20	1.87
	OTHERS		
13	Calcium	7	0.65
14	Corticosteroids	7	0.65
15	Drugs related to cardiology	6	0.56
16	Drugs related to thyroid disorders	6	0.56
17	Hepato protectives	5	0.46
18	Amino acids	4	0.37
19	Coagulants	3	0.28
20	Hormones	2	0.18
21	Hypolipidaemics	2	0.18
22	Anti vertigo drugs	2	0.18

CLASS OF GASTROPROTECTIVE AGENTS

Among 300 patients, 254 patients were prescribed with gastro protective agents where as 46 patients were not prescribed with gastroprotectives, out of 254 patients, 63.66% of patients

were prescribed with proton pump inhibitors, 16.66% of patients with H2 receptor antagonist, 2.66% of patients with sucralfate, 0.66% of patients with ranitidine + pantoprazole, 0.3% of patients with sucralfate + pantoprazole, 0.3% of patients with sucralfate + ranitidine and, 0.3% of patients with sucralfate + aluminium hydroxide.

Table 14: Class of gastro protective agents prescribed in study population.

S.NO.	CLASS	NO. OF PATIENTS	PERCENTAGE (%)
1.	Proton pump inhibitors	191	63.66
2.	H 2 receptor antagonist	50	16.66
3.	Sucralfate	8	2.66
4.	Ranitidine+pantoprazole	2	0.66
5.	Sucralfate+PPIS	1	0.33
6.	Sucralfate + h2 recep blockers	1	0.33
7.	Sucralfate + aluminium hydroxide	1	0.33
8.	Nil	46	15.33

DRUG INTERACTIONS

In our study a few major and moderate drug interactions were observed.

Table 15: Drug Interactions noted in the Study population.

S.NO.	INTERACTING DRUGS	SEVERITY	CLINICAL EFFECT	CLINICAL MANAGEMENT
1	KETOROLAC & DICLOFENAC	MAJOR	Black or bloody stools , coughing with stools & shallow breathing	Concurrent use of ketorolac with other NSAIDs is considered contraindicated.
2	AMIKACIN & DICLOFENAC	MODERATE	Diclofenac increases the side effects of amikacin	Discontinue diclofenac

3	DICLOFENAC & CIPROFLOXACIN /OFLOXACIN	MODERATE	Diclofenac increases the risk of seizures with high dose of ciprofloxacin	Blood glucose levels should be monitored
4	DICLOFENAC & TELMISARTAN	MODERATE	Lowers blood pressure and impairs kidney function	Monitor the blood pressure and increase the dose of Atenlol
5	ASPIRIN & TELMISARTAN	MODERATE	Lowering the blood pressure (deteriorates renal function)	Replacement of the antibiotic if possible.
6	MEFENAMIC ACID & GLIPIZIDE	MODERATE	Increase the effect of glipizide(risk of hypoglycemia)	
7	MEFENAMIC ACID & ATENOLOL	MODERATE	Decrease in the effect of Atenolol pharmacodynamically	
8	MEFENAMIC & CIPROFLOXACIN	MODERATE	Increase the effect of Ciprofloxacin	

DISCUSSION

A prospective observational study, **"STUDY ON DRUG UTILIZATION EVALUATION OF NSAIDs IN A SECONDARY CARE HOSPITAL"** was conducted in 300 bedded tertiary care teaching hospital including the inpatients from orthopedic, surgery, general medicine, pediatric and gyneacology departments over a period of six months from Aug 2016

to Jan 2017. The data was collected from 300 in-patients using specially designed data collection form.

Like most of studies have shown that more female patients use NSAIDs than male, our present study also showed that more females (197) are using NSAIDs than males (103) out of 300 patients.

In this study, majority of patients using NSAIDs were between the ranges of 0-10yrs (84 patients), 21-30yrs (68 patients) and 31-40yrs (38patients). It shows that NSAIDs are used mainly in age group of 0-10 years.

Out of 300 patients, majority were from general medicine (66.3%), paediatrics(31%), gynaecology (5%) and surgery department (3.3%). However only 1 patient was from orthopedic(0.4%) department. **Pyrexia** was the major clinical complaint of the patients (42.39 %) besides gastroenteritis (11.69%) respiratory tract infections (11.40%).

Out of 300 patients, 153 patients were prescribed with ≥ 7drugs followed by 78 patients with 4 drugs and 77 patients with 5 drugs per prescription. However, most of the patients were prescribed with single NSAIDs as monotherapy, although some patients were prescribed with combinations of NSAIDs such as Ibuprofen+paracetamol, Paracetamol+mefenamic acid, Aceclofenac + Paracetamol, Pcm+diclofenac+ibuprofen, Paracetamol+aspirin, Paracetamol+dicyclomine.[11-15]

It is observed from the study that, most of the patients (78.3%) were prescribed with non selective COX inhibitors and few patients (11.0%) were prescribed with preferential COX2 inhibitors and remaining were prescribed with combination of Non Selective Cox Inhibitors And Preferential Cox 2 Inhibitors. However the selective COX 2 inhibitors were not prescribed. Although traditional NSAIDs including preferential COX 2 inhibitors and non selective COX inhibitors are associated with high rate of GI complications, but possess low risk of cardiovascular complications than that of selective COX 2 inhibitors. Moreover several studies have revealed that coxibs use has been restricted to avoid the risk of heart attack and stroke. Besides the cost of coxibs is also higher than traditional NSAIDs. Hence the non-prescription of selective COX 2 inhibitors observed from the study is rational.

It is observed from the study that, Paracetamol (60.33%) and Diclofenac (9%) were mostly prescribed and least prescribed NSAIDs were Aceclofenac and Ibuprofen.

In our study, most of the NSAIDs were prescribed via oral route (74.6%), parentral route (8.2%) and combinations of route of administrations (16.6%). However the suppository NSAIDs (0.3%) and topical + suppository NSAIDs (0.3%) were least prescribed. Topical route causes a high local concentration in cutaneous and subcutaneous area of the body with low systemic delivery, thereby significantly improving therapeutic efficacy and minimizing systemic side effects.

To manage NSAIDs associated GI adverse effects, a PPI, H2 antagonist or local acting antacids must be co-prescribed with NSAIDs. In the present study more than 80% of patients were co-prescribed with gastroprotective agents along with NSAIDs, out of which 63.66% were prescribed with proton pump inhibitors and 16.66 % with H2 receptor antagonist and 2.66% of patients were prescribed with sucralfate. The other concurrently prescribed drugs include antibiotics (33.7%) and multivitamins (11.7%), anti emetics (11.5%) anxiolytics (9.2%), and rest includes cariotonis, aminoacids, anti hypertensives etc.

In the study major drug interactions were found between NSAIDs such as ketorolac & diclofenac, moderate drug interactions were between NSAIDs & Antibiotics. No Adverse drug reactions were reported during the study.

CONCLUSION

In present study NSAIDs were more prevalently used in age group 0-10 years and mostly prescribed in female patients. Paracetamol and diclofenac were most frequently prescribed for the management of pain, inflammation and pyrexia. NSAIDs were mostly co prescribed with PPIs. The monotherapy with single NSAID was preferred mode of therapy via parenteral and oral therapy. NSAIDs are vital for clinical management of wide range of pain and inflammatory conditions, but it is mostly accompanied by gastrointestinal complications. In the present study, the gastro protective agents were widely prescribed for prevention and healing of NSAIDs associated ulcers or other GI complications.[16-17] In the present study, the prescription of NSAIDs is found to be rational. However to ensure safe, effective and well balanced therapeutic management of this NSAIDs, both patients and prescribers should be more aware of the appropriate dose, dosage regimen and overall indications.

Drugs can be useful tools in the prevention and management of symptoms and disease, but if not used properly, they may be harmful and cause new symptoms or produce suboptimal effects. The drug utilization problems are common and have significant clinical and

economic complications. Hence the support and involvement of pharmacist along with medical staff is essential for rational drug utilization.

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