

A Study on Prescription Pattern and Rational Uses of Analgesic and Anti-Inflammatory Agents in Orthopaedic Patients

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ABSTRACT :**Introduction:** Irrational use of drugs in the Orthopaedic department leads to development of various adverse effects in patients, leading to increased morbidity and increased expenditure. Irrational prescribing is a global problem. Prescription studies are needed to evaluate to make treatment rational. **Methodology:** A Prospective Observational study conducted for period of 6 months among 150 orthopaedic inpatients. The data collected from 150 enrolled subjects with the help of medical records and patient profile. **Results:** A total of 150 patients were enrolled in this study. Majority of patients were Male n=99(66%) and female n=51(34%). Major indications for admission were fractures. Among 150 patients 123 patients were with no-comorbidities. Diclofenac n=116(76.8%) was most commonly prescribed analgesic followed by paracetamol and tramadol. Serratiopeptidase (71.2%) was most commonly prescribed anti-inflammatory agent followed by Enzoheal(28.7%). **Conclusion:** Polypharmacy and higher frequency of injection use reported in the present study could be influenced by the fact that only inpatients were included in the study. A prescription based analysis is regarded as one of the most effective method to assess and evaluate the describing attitude of physician. **Keywords:** Non-steroidal anti-inflammatory drugs(NSAIDs), Cyclooxygenase(COX), World health organisation(WHO), National list of essential medicines(NLEM).

I. INTRODUCTION:

Orthopaedics department of the hospital is a very important unit where various drugs such as NSAIDs, Anti-microbial agents, Corticosteroids, Gastric ulcer protective drugs are routinely given, patients remain admitted for a long period, approximately 2-3 weeks, sometimes even longer. Pain is an unpleasant sensation localized to a part of body. Often described in terms of a penetrating or tissue destructive process and/or of a body or

emotional reaction. Furthermore, pain of moderate or higher intensity is accompanied by anxiety and the urge to escape or terminate the feeling, illustrating the duality of pain both sensation and emotion. Pain has been categorized into two different ways.² Nociceptive and Neuropathic Pain is also classified as acute and chronic pain.¹¹ Removing the cause for any pain is considered to be an ideal treatment, thus, diagnosis should always precede treatment planning.¹ Non-steroidal Anti-inflammatory drugs(NSAIDs) are almost the preferred and first line of treatment for acute pain. Mild to Moderate opioids may be needed to supplement or to be effective as a multi-pronged approach for the management of acute pain effectively.¹¹ Furthermore some conditions are so painful that rapid and effective analgesia is essential (eg: the post-operative state, burns, trauma, cancer, sickle-cell crisis). Analgesic medications are the first line of treatment in these cases.¹ Analgesics are defined as the drugs that relieve pain without blocking nerve impulse conduction or markedly altering sensory function. Aspirin, acetaminophen and NSAIDs are considered together because they are used for similar problems and may have a similar mechanisms of action. All these compounds inhibit cyclo-oxygenase (COX) and except for Acetaminophen (paracetamol). COX inhibitors are by far most commonly used analgesics. They are absorbed well from the Gastro-intestinal tract and with occasional use, have only minimal side-effects. With chronic use, gastric irritation is a common side effect of Aspirin and NSAIDs and is the problem that most frequently limit the dose. Opioids are the most potent pain relieving drugs currently available. They have the broadest range of efficacy, providing the most reliable and effective method for pain relief. Rational Drug therapy is an important aspect of drug treatment which if properly implemented will save the resources of India & unnecessary adverse reaction to patients.⁵

II. METHODOLOGY:

Study location and duration: The Prospective observational study was carried out at Department of orthopaedics, VIMS Ballari District, Karnataka for the period of six months from October 2019 to March 2020.

Data collection: Patients who met the inclusion criteria were enrolled in the study. All information relevant to the study was collected from case records. The patient demographic details, diagnosis, prescribed drugs with dose, frequency and administration of medications was also be recorded in data collection form.

Inclusion criteria:

- Patients of all age group
- Patients of either sex
- Orthopaedics IPD

Exclusion criteria

- Patients who are not willing to participate in the study
- Specialized population like pregnant women, breast feeding women
- Non compliant patient

III. RESULTS

Among 150 patients enrolled in this study 99(66%) were Males and 51(34%) were females as shown in table.1.

Table 1: Genderwise distribution

GENDER	TOTAL(n=150)	PERCENTAGE(%)
Male	99	66%
Female	51	34%

The majority of patients 50(33.4%) admitted were in the age group of 41-60 years, followed by 42(28%) of 20-40 years, below 20 years 36(24%) and more than 60 years 22(14.6%) as shown in table 2.

Table 2 : Age wise distribution

AGE GROUP	TOTAL(n=150)	PERCENTAGE(%)
<20	36	24%
20-40	42	28%
41-60	50	33.4%
>60	22	14.6%

The study results revealed that the most commonly prescribed route of administration for Analgesic and Anti-inflammatory agents are Oral 129(46.07%) followed by Intramuscular 116(41.4%) and through Intravenous 35(12.5%) as shown in table 3.

Table 3: Route of Administration for Analgesic and Anti-inflammatory agents

Route of administration	Total(n=280)	Percentage (%)
Oral	129	46.07%
IM	116	41.4%
IV	35	12.5%

Out of 150 patients included in this study, the most common cause for admission was Fracture 135(90%) followed by Inflammatory conditions 8(5.3%), congenital talipusequinovarus 2(1.3%), others 2(1.3%) and Talocalcaneal coalition as shown in table 4.

Table 4: Diagnosis

Diagnosis	Total(n=150)	Percentage (%)
Fracture	135	90%
Inflammatory conditions	8	5.3%
Congenital talipusequinovarus	2	1.3%
Others	2	1.3%
Talocalcaneal coalition	1	0.6%

Most of the patients admitted to the hospital are without having any co-morbidities 123(82%) followed by HTN 11(7.3%), DM 8(5.3%), epilepsy 3(2%), TB 2(1.3%) with less number 1(0.6%) of stroke, IHD and others. Out of

94 anti-inflammatories agents prescribed Serratiopeptidase 67(71.2%) was most commonly prescribed followed by Trypsin, Bromelein, Rutosidetrihydrate 27(28.7%) as shown in table 5

Table 5 : Co-morbidities

Co-morbidities	Total (n=150)	Percentage(%)
No Co-morbidities	123	82%
Hypertension	11	7.3%
Diabetes Mellitus	8	5.3%
Epilepsy	3	2%
Tuberculosis	2	1.3%
Stroke	1	0.6%
IHD	1	0.6%
Others	1	0.6%

Among Analgesics prescribed Diclofenac was most commonly prescribed constituting 116(76.8%) followed by Paracetamol 22(14.5%) and Tramadol 13(8.6%) as shown in table 6.

Table 6: Anti-inflammatory agents prescribed

ANTI-INFLAMMATORY DRUGS	TOTAL (n= 94)	PERCENTAGE(%)
Serratiopeptidase	67	71.2%
Trypsin, Bromelein, Rutosidetrihydrate	27	28.7%

Among Analgesics prescribed Diclofenac was most commonly prescribed constituting 116(76.8%) followed by Paracetamol 22(14.5%) and Tramadol 13(8.6%) as shown in table 7.

Table 7: Analgesicsprescribed

ANALGESICS	TOTAL(n=151)	PERCENTAGE(%)
Diclofenac	116	76.8%
Paracetamol	22	14.5%
Tramadol	13	8.6%

Out of 280 Analgesic and Anti-inflammatory drugs, most of the drugs prescribed by Monotherapy(222).

Table : 8 Single and Combination therapy

SL NO	THERAPY	TOTAL (280)
1	Monotherapy	222
2	Combination therapy	58

Percentage of drugs prescribed by NLEM were 73% and WHO essential list 55% as shown in table 4. . Standard prescribing trends:

1. Avg No of drugs/prescription : 5.96
2. Avg No of Analgesics/prescription : 1.8
3. Avg No of Anti-inflammatory/prescription : 0.6

Table:9 Essential drug list:

Essential drug list Total (n=45)	YES	NO
NLEM	33(73%)	12(26%)
WHO essential list	25(55%)	20(44%)

IV. DISCUSSION:

As the most of the patient admitted in orthopaedic wards are 41 to 60 years of age groups. The present study highlighted that fractures of bones is the major cause of admission which is in accordance with the study conducted by Nagla A et al. Most of them are male patients. Most commonly prescribed drugs are NSAIDS followed by antibiotics and ulcer protective .Among analgesics diclofenac being maximum prescribed 76.8% followed by paracetamol 14.5 percentage , tramadol was least used 8.6 %.Among anti-inflammatory serratiopeptidase 71.2% being maximum prescribed followed by enzoheal 28.7%.WHO core prescription in our study shows polypharmacy as average number of drugs per prescription is

more than the WHO guidelines ,which is of 2.012 drugs per prescriptionThis was 2.6 in study done by sharma T in uttaranchal. Polypharmacy increases chances of drug interaction.Essential medicines list has been shown to improve the quality and cost effectiveness of health care delivery when combined with proper procurement policies and good prescribing political practices. Essential drug list or formula issued to measure the degree to which practicing confirm to a national policy.

Percentage of drug prescribed by NLEM were 73% and WHO essential list 55%.Percentage of drug prescribed by generic name and from essential drug list was less.This type of study helps in evaluating the existing drug use pattern in planning appropriate intervention to ensure rational drug therapies. Hence further studies are required so as to provide optimum health to improve the overall health of the community.There is a need to educate and train doctor to prescribe rationally by emphasising this aspect in pharmacology teaching and continuing medical education program in order to rationalize the medical care to the community.Prescribing medicines by generic names would help in less expensive treatment. The number of medicines per prescription should be kept minimum . In other words the rational drug must be strictly followed. polypharmacy and combination of drugs has to be discouraged to minimise adverse drug reaction and drug interaction.

V. CONCLUSION:

The result from the present study shows that most commonly used analgesics in treatment of pain are Diclofenac, Paracetamol and Tramadol. Polypharmacy and higher frequency of injection use reported in the present study could be influenced by the fact that only in-patients were included in the study.

A prescription based analysis is regarded as one of the most effective method to assess and evaluate the prescribing attitude of physician.

None of the patients showed any adverse drug reaction in our study even though average number of drugs per encounter was high. Limitation of our study are small study frame period, no follow up and single centred study.

STATEMENT OF HUMAN AND ANIMAL RIGHTS:All procedures performed in human participants were in accordance with the ethical standards of the institutional research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. This article does not contain any studies with animals performed by any of the authors.

INFORMED CONSENT: Written informed consent was obtained from patient 1 and patient 2 for anonymized patient information to be published in this article.

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CONFLICT OF INTEREST :Nil

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