

PRESCRIPTION PATTERN STUDY OF DRUGS GIVEN TO PATIENTS ADMITTED IN ORTHOPEDIC WARDS OF A RURAL MEDICAL COLLEGE, A TERTIARY CARE HOSPITAL.Nagla A.¹ and Wadagbalkar P.*²¹Asst Professor, Department of Orthopedics, Index Medical College, Hospital & Research Center, Indore, M.P.²Associate Professor, Department of Pharmacology, Index Medical College Hospital, Indore, MP, India.**Corresponding Author: Dr. Wadagbalkar P.**

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ABSTRACT

Introduction: Rational drug therapy is an important aspect of drug treatment which if properly implemented will save the resources of India and unnecessary adverse reaction to patients. Prescription pattern study or audit in an important way to know & implement Rational drug therapy. **Aims and objectives:** To assess and evaluate the prescription pattern of drugs given to patients admitted in orthopedic department and to know rationality of drugs prescribed. **Materials and methods:** A retrospective cross-sectional study was planned on approximately 221 patients admitted in indoor wards of the orthopedic department. Patient's records were obtained from medical record section with the help of undergraduate students for 3 months starting from 1st October till December 2012 and analyzed for different drugs given in doses, duration etc. The data was analysed considering WHO drug prescription parameters and results were analyzed statistically. **Results:** Of the 224 patients, 135(60.2%) were male and 89(39%) were female. Most common cause of admission to orthopedic ward was fractures of long bones(75%). The most common age group was 20-40 years of age (61%). Patients had 5.1 drugs given per prescription. Most common drug to be prescribed was Analgesics (30.8%) followed by antibiotics (26.3%). Most common Analgesic were Nonopiod (NSAID)(82.3%) followed by opiod Tramadol (17.6%). Most common NSAID was diclofenac sodium(71%) followed by paracetamol(34.6%). Of the total Patients 17.3% received gastric ulcer preventive omeprazole (81.3%) followed by ranitidine, h2 blocker (18.6%). Most common parenteral antibiotic was Ceftriaxone plus sulbactam (83.3%). Amikacin was given additionally in 10%. Most common oral antibiotic was cefuroxime 80.7% followed by amoxicillin plus clavulonic acid (19.2%). Muscle relaxants were given in 3.6%, Thiocolchide (64.2%), Pregbalin (35.7%). Use of drugs by generic name was only (12%). Most of the drugs were from essential drug list (78%). Most common route for was injections (48.6%) followed by oral (42%). Percentage of drugs prescribed by FDC 25%. **Conclusion:** Most commonly patients admitted in orthopedic ward receive non steroidal anti-inflammatory drugs and antibiotics by trade names. Generic use of the drugs should be promoted. Polypharmacy should be reduced. Injection route should be less than 10%. Pharmacology department Faculties and residents should have frequent talks on daily basis, should organize frequently CME/workshop on rational use of drugs for orthopedic residents so as to serve the best interest of the patients.

KEYWORDS: rational, irrational, antibiotics, analgesics, anti-inflammatory, NSAIDS, proton pump inhibitors, antacids, arthritis, fractures, WHO prescription indicators.

INTRODUCTION

Orthopedics department of the hospital is a very important unit where various drugs, antibiotics, NSAIDS, gastric ulcer protective drugs are routinely given, patients remain admitted for a long period approximately 2-3 weeks, sometimes even longer. Most of the patients are there due to fractures, requiring NSAIDS and muscle relaxants and on regular basis. Some others require steroids in arthritis & sciatica patients. They suffer also from peptic ulceration and other side effects from irrational use drugs.^[1]

Irrational use of drugs in the department of orthopedics leads to development of various adverse effects in patients, leading to increased morbidity and morbidity, increased expenditure. Irrational prescribing is a global problem.

According to WHO "Rational use of drugs requires that patients receive medications appropriate to their clinical needs, in doses that meet their own individual requirements for an adequate period of time, at the lowest cost to them and their community".^[2]

Prescription studies are needed to evaluate to make treatment rational.^[3] This type of prescription pattern study was not carried in this hospital, so it was planned to conduct prescription pattern study of drugs as per WHO drug prescription indicators and to find rationality of drugs use in this set up after obtaining clearance from institutional ethics & research committee.

MATERIALS AND METHODS

A retrospective cross sectional study was done in admitted orthopedic wards of Index hospital after obtaining approval from institutional ethics and research committee.

Time period was 3 months from October 2012 december 2012. Patients Medical records were collected by from medical record by section medical students.

Inclusion criteria

Patients admitted in wards of orthopedic department.

Exclusion criteria

1. Patients seen and treated on only OPD basis only.
2. Patient who left on their own, did not finish complete treatment. Left against advice

Collection of data: 224 patients records were analyzed.

statistical analysis: Descriptive statistics was used to analyze the results. SSPS software version 20.0 was used.

RESULTS

Of the 224 patients, 135(60.2%) were male and 89(39%) were female.

Age distribution. Below 20 years 10%, between age group 20 -40 61%, Between 40-60 15%, Above 60 years of age 14%. The most common age group was 20-40 years of age 61.5%.

Causes of admission. Most common cause of admission to orthopedic ward was fractures of long bones (75%), TB spine and lumbar disease 6.6%, complications of fractures 8.3%, sciatica & radicular nerve pain 4.4%, wound infections 4.4%, osteomyelitis 4.4% patients waiting for hip and knee replacement 1%.

Associated conditions. patients have hypertension 10%, diabetes mellitus (5%) chronic obstructive pulmonary disease 11%, hypothyroidism in 2%, others 3%.

Most common drug to be prescribed was Analgesics (30.8%) followed by Antibiotics (26.3%), gastric acid inhibitors 17.3%, Serratiopeptidase 2%, muscle relaxants 3.6%, misc 10%.

Most common analgesic was NSAID Diclofenac sodium(90%) followed by Paracetamol(10%).

Most common muscle relaxants were Thiocolchiside 64.2%, Pragbalin 35.7% a GABA analogue. Patients (17.3%) received gastric ulcer inhibitor pantoprazole (PPI) (81.3%) followed by ranitidine, h2 blocker (18.6%).

Average drugs given per prescription 5.1%.

Percentage of drugs parenteral antibiotic was Ceftriaxone plus sulbactam (81%) followed by Amikacin(10%). In 3% linezolid were given.

Percentage of drugs given by oral antibiotic was cefuroxime 80.7% followed by Amoxicillin plus Clavulonic acid (19.2%). Serratiopeptidase enzyme was given (10.3%) as an additional drug.

Percentage of drugs prescribed by trade names (88%), by generic name was only (12%).

Percentage of drugs were from essential drug list(78%)

Percentage of route of drugs given by injection (45%), oral (42%).

The average cost of treatment was 2800 INR.

WHO PRESCRIBING INDICATORS(2)

1 Average number of drugs per encounter-to measure the degree of polypharmacy

Calculation formula = average, calculated by dividing the total number of different drug products prescribed by the number of encounters surveyed.

In this study it is 5.1 per consultation. As per WHO guideline for polypharmacy is 2.012 drugs per prescription. Here is the need of improvement in this regard by providing guidance on rational drug treatment.

2 percentage of drugs prescribed by generic name – to measure the tendency to prescribe the drugs by generic name

Calculation =percentage, calculated by dividing the number of drugs prescribed by generic names by total number of drugs prescribed.

In this study only 12% of drugs are prescribed by generic names, main tendency is prescribe by trade or branded names. While according to WHO guidelines drug prescription by generic name should be 100%. Here this study shows the need of training of residents of orthopedics department.

3 percentage of encounters with an antibiotic prescribed

In this study it was 26.3%.

4. percentage of encounters with an injection prescribed

Calculated = percentage, calculated by dividing the number of patients encounters during which an antibiotic or an injection is prescribed by the total number of encounters surveyed, multiplied by 100.

In this study it is 48.6%, this should be less than 10% by WHO guidelines.

5 percentage of drugs prescribed from essential drug list or formulary

Calculated =as percentage, calculated by dividing the number of products prescribed which are listed on the essential drug list by the total number of products prescribed, multiplied by 100

It is 68% in this study.

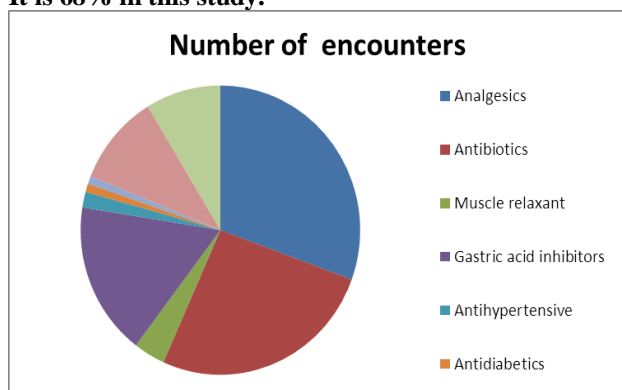


Figure 1 various drugs given in admitted patients in orthopedic wards

Tab 2. common causes of patients seen in orthopedic IPD/ WARDS

S NO	NAME	NUMBER Total 224	Percentage
1	Fractures	168	75%
2	Non union/Dislocation of joints	14	8.3%
2	Sciatica	10	4.4%
3	Spine TB	5	2.2%
4	Rheumatoid	2	2.2%
6	Congenital	2	2.2%
5	Arthritis infective	2	2.2%
6	Wound	10	4.4%
7	`Misc, osteomyelitis	11	4.9%

Tab 3. Other Co existing conditions

s.no.	Name	Number	Percentage
1	Hypertension	20	10
2	Diabetes mellitus	10	5
3	Respiratory diseases	22	11
4	Neuropathic	5	2.5

WHO core drug prescription indicatore

Average number of drugs per prescription 5.1, Percentage of drugs prescribed by generic name 12%

Percentage of encounters with antibiotics 26.3%.

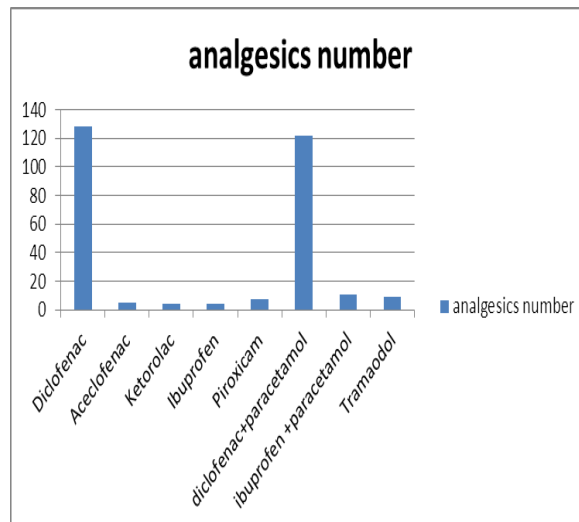


Figure 2 various analgesics given in admitted patients in orthopedics

Tab 1. Demographic profile –Total patient 224

s.no.	Category	number	Percentage
SEX	Male	135	60.3
	Female	89	39.7
AGE GROUP	Age below 20	24	10.7
	Age 20-40	136	60.7
	Age 40-60	33	14.7
	Age >-60	31	13.8

Most common antibiotic is Ceftriaxone plus sulbactam in 41.5%. In 4.9% inj amikain is also given for 5 days parenterally.

This is followed by oral cefuroxime (40.5%), oral amoxi plus clavulonic Oacid in 9.6% cases., oral linezolid in 3.3% cases.

Percentage of encounters with an injection prescribed 48.6% followed by oral 44.4%, topical 7%.

Percentage of drugs prescribed from essential drug list 68%.

Percentage of drug prescribed by FDC 25%.

Most commonly prescribed drugs

Number of patients 224

Number of total encounters=1142

Average number of drugs per prescription =5.1

s.no.	Name/class	Number of encounters	Percentage
1 A Single NSAID FDC of Nonopioid +NSAID OPIOD	Analgesics	352	30.8
	NSAIDS	149(42.3%)	
	Diclofenac	128(36.3%)	
	Aceclofenac	5(1.4%)	
	Ketorolac	4(1.1%)	
	Ibuprofen	4(1.1%)	
	Piroxicam	7(1.9%)	
	Combination of Aceclofenac+paracetamol ibuprofen +paracetamol	141(40%)	
	Tramaodol	122(34.6%)	
		11(3.4%)	
2	Antibiotics	09(2.5%)	26.3%
	Ceftriaxone plus sulbactam	301	
	Cefuroxime	125(41.5%)	
	Amikacin	122(40.5%)	
	Amoxicillin plus clavulonic	15(4.9%)	
	Linezolid	29(9.6%)	
3	Muscle relaxantGABA analogue	42	3.6%
	Pregbalin	15(35.7%)	
	Thiocolchicine	27(64.2%)	
4	Gastric acid inhibitors	198	17.3%
	PPI-Pantoprazole H2 blockers-Ranitidine	161(81.3%) 37((18.68%)	
5	Antihypertensive	20	1.7%
	Antidiabetics	11	9.6%
6	Steroid	10	9.6%
7	Enzymes serratiopeptidase	118	10.3%
8	Misc	100	.8%

Table 3 Polypharmacy total patients 224

s.no.	Patients given	number	Percentage
1	One drug	8	3.5
2	Two drugs	19	8.4
3	Three drugs	38	16.9
4	Four drugs	86	38.4
5	Five drugs	58	25.9
6	More than 5	15	6.7

DISCUSSION

As the most of the patients admitted in orthopedics wards are young patients of 20 -40 years age group, road side

accidents causing fractures of long bones is the major cause of admission. Most of them are male patients. Most commonly prescribed drugs are NSAIDS, Diclofenac being maximum prescribed 71%, followed by Paracetamol 34.6%. Tramadol was least used but in Elsy s study it was found more in number.^[4]

Muscle relaxants like Pragbalin and Thiocolchiside is also being prescribed in neuropathic pain.

Because of gastric acid disorders caused by NSAIDS, Proton pump inhibitors like omeprazole and H2 blockers Ranitidine is also given simultaneously.

Antibiotics were mostly give in treatemet for fractures, injectables for 5 days followed by oral route for next five days.

WHO core prescription indicators in our study shows Polypharmacy as average number of drugs per prescription is 5.1. This is more than the WHO guideline of 2.012 drugs per prescription.

This was 2.6 in a study by Sharma done in Uttaranchal^[5] Polypharmacy increases chances of drug interactions with antihypertensive in particular in old patients.

Drugs prescription by generic names is also very low in our study 12% as most of the drugs patients have to purchase from outside, which are available in branded forms mainly. This increases the cost of treatment. Other study of Patel (6) from Goa also suggest the same finding of 10%. Pharmaceutical companies also visit clinical departments frequently with promotional literature. in addition to sponsoring monthly Orthopedics CMEs and workshops on regular basis. This also promotes uses of branded drugs.

WHO guideline regarding prescribing by generic name is 100%.

The WHO guideline for injection exposure to be less than 10% while in our study it is (48.6%) more than reported by Afsan^[7] was only 3.3%.

Fixed drug combinations a NSAIDS and muscle relaxants are very often used in orthopedics. This also leads to polypharmacy and increased chances of gastric acidity. In this study FDC use was around 25%.

Strength of the study: quick to conduct, limited resources were required & used, better to research this new hypothesis for the first time in this hospital.

Limitations of the study: Single center study, study duration was only 3 months, a retrospective study.

CONCLUSION

Most common cause of admission to IPD /indoor wards of orthopedic department is fractures mostly caused by road side accidents, mostly analgesics, antibiotics and ulcer protectives are prescribed in addition to Prgabalin and Thiocolchiside muscle relaxants. Poly pharmacy is the rule which leads to irrational use of drugs and development of gastric acid disorders.

Pharmacologist / faculties/residents of pharmacology department, department of medical education of the college must organize classes/CME/workshops for residents of orthopedics on regular basis on rational used of drugs.^[8] Education of Residents of the orthopedic department about rational drug therapy may play an important role as they are on constant touch with the patients on ioone side and consultants on the other. This

will prevent unnecessary of use of drugs leading to adverse drug reaction, suffering of patients and increased expenditure of drugs. generic name of drugs use should also be promoted. For this both orthopedic & pharmacology departments need to take proactive interest to appreciate the proper use of available knowledge/resources in the best interest of the patient. Residents of both departments needs to take proactive steps to organize and attend these CME /workshops/ remain in constant touch with each other departments so as to provide maximum benefit to the patient.

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