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TO STUDY THE PRESCRIBING PATTERN OF ANALGESICS IN THE ORTHOPAEDIC IN PATIENT DEPARTMENT OF JAWAHARLAL NEHRU INSTITUTE OF MEDICAL SCIENCES (JNIMS) HOSPITAL, IMPHAL, MANIPUR, INDIA

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ABSTRACT: The prescription pattern of analgesic was investigated for the months of June, July, August 2016 by studying 253 (143 male + 110 female) BHTs of in patients of the orthopaedic department. The data mainly age, sex, diagnosis and line of management available from BHTs was analysed in the form of percentage, average of variable. The generic name cost of treatment per patient and rationality of prescription were evaluated by referring NLEM, CIMS, WHO indicators of drug utilisation. A total of 599 analgesics were prescribed to the patients. The average number of analgesic per prescription was 2.33. The maximum number of patients was in the age group of 41-51 years. Diclofenac was the most commonly prescribed analgesic 152 (26.2%).Only 51 patients received single analgesic and majority of patient received parenteral (45.6% i.m) preparations. Only 9 (1.0%) analgesics from NLEM but no generic name drug was prescribed. And again gastro protective drugs 240 (95.17%) and antibiotics 290 (114%) were frequently prescribed with the analgesics. The average cost of treatment per patient was Rs2954 (approx). The percentage of analgesic prescribed from NLEM 9 (1.66%) and the use of analgesic by generic name was found unsatisfactory. Therefore a regular CME of drug utilisation is mandatory for improving the prescription practice in view of the rational use of medicine.

INTRODUCTION: Analgesics including NSAIDs are commonly prescribed group of drugs in clinical practice for the management of pain and inflammation [1 - 4]. Non steroidal anti-inflammatory drugs (NSAIDs) are commonly available over the counter [1, 5]. The common adverse drug effects with this group of drug are the gastrointestinal tract (GIT) toxicity [6, 7]. Therefore, periodic evaluation of drug utilisation patterns needs to be done to enable suitable modifications in the prescription so as to increase therapeutic benefits and decrease the adverse effects.

Further the use of this drug may be within the realm of the rational use of Medicines (RUM) [8], *e.g.* assessment of drug utilisation is vital for clinical, economic and educational purposes [9]. Drug utilisation research studies conducted in the patient setting are effective tools that help in evaluating drug prescribing trends, efficiencies and cost effectiveness of hospital formularies [10]. The defined daily dose (DDD) which is an important tool to compare the drug utilisation among different clinical set ups within a country and between different countries provides a rough estimation of drug consumption in hospital in patients and a fixed unit of measurement independent of formulations and price [11, 12].

Aims and Objects: To study the prescribing pattern of analgesics at the orthopaedic in patient department in relation to the Generic names,

NLEM (India) and essential drug s list (WHO) and also to investigate the cost of effective treatment to the needy patients.

METHOD:

Collection of Data: Observational and cross sectional design study of the data collected from the Bed Head Ticket (BHT) of the In patients of the Orthopaedic department was done in the period *i.e.* June, July and August 2016. All the patients receiving analgesics were included in the study but inpatients of LAMA (left against medical advice) were excluded. The BHTs were recruited from the Medical Record department of the hospital after getting permission from the Medical superintendent of the JNIMS. The data included demographic data (age, sex, address), clinical data (diagnosis, name of analgesics, route of administration, duration of treatment, any adverse effects, co-prescribed drugs, period of hospital stay, supply of analgesic from hospital if any) [2]. The data were recorded in a predesigned case record form [1]. The generic names of the drugs, categorisation of the drugs under NLEM (national list of essential medicine) and cost of the drugs were considered during the study [1, 2]. Classification of the common analgesics under the ATC (anatomical therapeutic chemical classification) based on chemical, a pharmacological, therapeutic property was also considered. Measurement of drug utilisation pattern was done by using the formula - DDD/100 bed-day [1, 2].

Statistical Analysis: Descriptive statistics were used to analyse the observations. Percentages, average of variables were also calculated.

RESULTS: Out of 253 patients, 143 (56.52%) and 110(43.47%) were male and female respectively. A total of 599 analgesics were prescribed to the patients. The average number of analgesic per prescription was 2.33. A maximum number of analgesic prescriptions were found in the patient of age group of 41-50 year (**Table 1**-age, gender). The number of cases receiving analgesics were 53(20.94%), The most common case was Fractures 147 (25.7%) which was followed by others (PVID, cuts) 87(15.6%), Infective arthritis 7(1.5%), Accidental tissue injury 4(0.6%), Congenital condition (0.1%). (**Table 1** indication). Out of total 579 analgesics prescribed 9 (1.66%) were

prescribed from NLEM; nil analgesic were prescribed by generic name. The average number of drugs per prescription was 2.33 (**Table 1**-category). The average duration of therapy was 10 days.

TABLE 1: PRESCRIBING PATTERN OF ANALGESIC PATIENTS CHARACTERISTICS AND DRUG USE INDICATOR

Variable	Number of patients (%)
Age (year)	n= 253
0-10	23(9.09%)
11-20	33(13.04%)
21-30	37(14.6%)
31-40	43(16.9%)
41-50	53(20.94%)
51-60	33(13.4%)
>60	31(12.3%)
Gender	
Male	143(56.52%)
Female	110(43.47%)
Indications	
Self fall fracture	147(25.36%)
Road traffic accident	42(16.6%)
Soft tissue injury	4(0.6%)
Infective arthritis	7(1.0%)
Congenital	1(0.1%)
Others (PIVD, Cuts, etc)	87(15.6%)
Category	
Number of analgesic prescribed	
Single drug	51(20.1%)
Double drug	84(33.20%)
Triple drug	15(5.92%)
Quadruped drug	36 (14.22)
Indicators assessed	
Number of analgesic per prescription	2.48
Average number of drugs per prescription	2.33
% of analgesic from NLEM	9(1.66)
% of analgesic in Generic name	nil
Utilisation pattern of analgesic in terms of DDD/100 beds-day	
Most common analgesic	480.77
	31.77% (Paracetamol)
	152(26.2%.(Diclofenac)
Most common route of administration	45.6% (im)
Average Cost of treatment per patient Oct 2016, 3 update	Rs 2946/(CIMS July)

The maximum number of analgesic was 152 (26.2%) and the most common route of administration was parenteral (IM) 242 (45.6%), the average cost of treatment with analgesics (oral, parenteral, topical) per patient was Rs2946/

(approx) [13]. No analgesic was supplied from the hospital. (**Table 1** indicator assessed).

The class and combination of drugs may be observed as such - peripherally acting analgesic NSAIDs was 305 (52.6%); and the combination of drugs (non-opioid plus NSAIDs) was almost nil and the centrally acting synthetic opioid analgesic was Tramadol 90 (15.5%). (**Table 2**)

TABLE 2: UTILISATION PATTERN OF ANALGESICS

Peripherally acting (NSAIDs)	No of analgesic (%) n=579
Diclofenac	152(26.2 %.)
Aceclofenac	149(25.7 %.)
Ibuprofen	5(.0.3%)
Ketorolac	nil
Piroxicam	1(0.1%)
Combination analgesic	
Aceclofenac +paracetamol	149(25.7%)
Ibuprofen+ paracetamol	3(0.5%)
Centrally acting synthetic analgesic	
Tramadol	90(15.5%)

The most commonly prescribed analgesic was parenteral Paracetamol - 169 (31.77%), Diclofenac 152 (26.27%), Aceclofenac 147 (25.7) Ibuprofen 3(0.5%), Piroxicam 1 (0.1%). In this study, 544(93%) number of analgesic being co prescribed with gastroprotective drugs namely PPI 233 (38.26%), H2 blockers 17(2.9%), antibiotics 290 (50%), enzymes 6 (1%) and other – 8 (1.8%) (**Table 3**). There was no record of ADEs (adverse drug events).

TABLE 2(A): DDD/100 BEDS-DAY STUDY AND ATC CLASSIFICATION

Drugs	ATC code	DDD (mg)	DDD/100 beds-day =480.77
Aceclofenac	MOIAB16	200	23.01
Diclofenac	MOIAB05	100	46.02
Ibuprofen	MOIAE0I	1200	3.83
Ketoralac	MOIABI5	30	153.52
Piroxicam	MOIAC0I	20	230.1
Aceclofenac +paracetamol	MOIAX	200+ 1000	3.635
Ibuprofen+ paracetamol	NO2BE0	400+5 00	5.11
Tramadol	NO2AX02	300	15.35

Further the total utilization of analgesic was studied in terms of DDD/100 bed-day was 480.77 (**Table 2a**) (Calculation of DDD/ 100 bed-days= total dose in mg during study period X 100 divided by assigned DDD of drug (mg) X study duration (days) X bed strength X average bed occupancy rate) [10].

TABLE 3: CO-PRESCRIBED DRUGS WITH ANALGESICS N (%), N=579

Category of drugs	
Analgesics	305(52.5%)
Gastroprotective	240(95.12%)
PPIs (pantoprazole)	223(38%)
H2 blockers(ranitidine)	17(2.9%)
Antimicrobials	290(114%)
Enzymes	6(1%)
Others	8(1.8%)

DISCUSSION: Fractures are among the most common orthopaedic problems, and about 6.8 million people seek medical care attention in India and most common indication for prescribing diclofenac was fracture [14, 15]. During the screening of BHTs, the most common indication for hospitalisation was fracture and diclofenac was the most commonly prescribed drug.

The promotion of RUM, prescribing the drugs by generic name according to safety, cost-effectiveness was not much considered by the prescribers. Therefore, suggestion for prescribing drugs in generic name may be the benefit for rationalisation in analgesic used and to reduce the cost of drugs [16, 17]. We observed that no one prescribed in generic name in contrast to 60% of generic name prescription observed from 26 countries [18].

Globally NSAIDs are most commonly prescribed drug for management of pain and inflammation. The same was reflected in this study Prescribers prescribed gastro-protective drugs like PPIs, H_2 blockers etc. for prevention of GIT disturbances with NSAIDS [19]. We found 305- (52.5%) of analgesics being co-prescribed with gastro-protective drugs.

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 practices. Essential drugs list or formulary issued to measure the degree to which practices confirm to a national policy, as indicated by prescribing from the national essential drugs list or formulary for the types of facility surveyed. Only 1.66% (62.67%) analgesics were

prescribed from NLEM / WHO [11, 12] whereas the finding from Sen and Bathini 20 was 81.94% and Salman *et al.,* [21] were 23 (62.20%) respectively. Out of 37 study reports, in the eight studies reported that only 60% of the drugs were prescribed from the essential medicines list [18].

The average number of drugs per prescription (*i.e.* 2.33) was an important parameter while taking up a prescription audit. Multiple drug prescribing results in poly pharmacy leading to cause irrational prescribing and induce adverse effects. Many similar findings were reported in several countries (Indonesia, Niger, Nigeria, India, Ghana, and Pakistan) in which three or more drug were prescribed per prescription [18].

This study revealed that the average cost of treatment per patient was Rs2954/ (approx) [13] whereas 100% cost of treatment was borne by the patient. The analgesics were prescribed for appropriate indications and the duration of prescribing of analgesic was also found satisfactory. The most common co-prescribed drugs were PPIs-233(33%). Analysing the results of those assessed indicators, essential information was obtained about the "quality of prescribing drug" in quality of different circumstances of use (time; duration; age of patient, route of administration etc").

The calculation of DDD/100 bed - days for drug utilization was used as a tool to measure the pattern of consumption of analgesics. The total drug utilization of analgesics at the In-patients Dept during the study period in form of DDD/100 bed-days was 480.77. According to WHO, ATC classification/ DDD system may be used as a drug utilisation research tool for improving the quality of drug use [10]. Therefore the recommended drug dose and the trend in drug utilisation with indicators for measurement of drug consumption are shown (**Table 2a**)

CONCLUSION: The percentage of analgesics prescribed from essential medicines list and the use of the generic name were found to be unsatisfactory, but the average number of drug per prescription was high. This study highlights the need to minimize the average number of drugs per prescription. NSAIDs were commonly co-prescribed with gastro-protective agents. Therefore the regular CME (continuing medical education) at different levels may be mandatory for promotion the rational prescribing of analgesics in the hospital.

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