

Retrospective audit of prescription of drugs among inpatients of orthopedic wards at Medical College Teaching Hospital, Mandya

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ABSTRACT

Background: Irrational prescribing is a global problem. Irrational drug use leads to reduction in the quality of drug therapy, spoilage of resources, raised treatment expenditure, heightened danger for adverse drug reactions, and evolution of drug resistance. Rational use of medicines becomes even more important in developing countries such as India because of scarcity of financial resources and lesser affordability of the patients. Drug utilization research helps in enabling the rational use of drugs in populations. **Aims and Objective:** To assess and evaluate the prescribing pattern of drugs among inpatients of orthopedic department and to assess the rationality in prescription of drugs. **Materials and Methods:** A retrospective observational study was carried out at Medical College Teaching Hospital, Mandya, Karnataka, India. The inpatients case files of orthopedic wards from January 1, 2014 to December 31, 2014 were retrieved from Medical Record Department. Data were collected regarding patient's demography, diagnosis, complete prescription, and adverse drug reactions if any, using a predesigned pro forma over a study frame period of 1 month. Data were analyzed for rationality and the WHO core prescription indicators. **Result:** Of the 1,777 study subjects, 1,204 were male and 573 were female subjects. Majority of patients were in the age group of > 60 years (35.28%). Fractures of long bones (62.63%) were the most common indication for admission, followed by compression fracture of vertebrae (2.75%) and nonunion (2.3%). Hypertension and diabetes were the most common associated comorbidity in majority of study population. Analgesics were the most commonly prescribed drug constituting about 31.81%, and, among analgesics, Nonsteroidal anti-inflammatory drugs were most commonly prescribed than opioids. Next most commonly used drugs were antibiotics (22.24%), antihistamines (16.48%), and vitamins (4.24%). Average number of drugs per prescription was 5.30, and percentage of drugs prescribed by generic name was 61.90% and from essential drug list was 59.37%. **Conclusion:** Analgesics and antibiotics were the most commonly prescribed drugs. Percentage of drugs prescribed by generic name and from essential drug list is less and needs efforts to improve the situation.

KEY WORDS: Orthopedics; Fractures; WHO Prescription Indicators

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INTRODUCTION

Prescription auditing is a type of surveillance work, which is helpful in clinical practice with regard to decreasing the burden of disease because of medication mistakes and aids in rational use of medicines (RUM).^[1] RUM is a problem that has worldwide significance because it targets at reviewing the accessibility, availability, and correct prescribing of the drugs.^[2] According to

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the 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."^[1]

Irrational prescribing is a global problem. Irrational drug use leads to reduction in the quality of drug therapy, spoilage of resources, raised treatment expenditure, heightened danger for adverse drug reactions, and evolution of drug resistance.^[3] RUM becomes even more important in developing countries such as India because of scarcity of financial resources and lesser affordability of the patients.^[4] Drug utilization research helps in enabling the rational use of drugs in populations.^[5] The rational use of a drug implies the prescription of a well-documented drug at an optimal dose, together with the correct information, for an individual.^[6]

In order to increase the therapeutic benefit and decrease the adverse effects, periodic evaluation of drug utilization patterns needs to be done, which will enable suitable modifications in prescription of drugs. The study of suggesting patterns pursues to monitor, estimate, and, if necessary, suggest alterations in the prescribing manners of medical practitioners to make medical care rational and cost-effective. Drug prescribing studies offer response to the prescriber and generate awareness among them about RUM.^[7]

Nonsteroidal anti-inflammatory drugs (NSAIDs), antimicrobial agents, and corticosteroids are frequently prescribed for long periods in Department of Orthopedics. Injudicious use of these drugs increases mortality and morbidity owing to adverse effects. Keeping all these facts in consideration, this study has been planned to define the pattern of drug use among inpatients of Orthopedics Department in a Medical College Teaching Hospital, to evaluate the drug use pattern using the WHO core drug prescription indicators,^[8] and to find out the rationality of drug usage.

MATERIALS AND METHODS

A retrospective observational study was carried out at Medical College Teaching Hospital, Mandya, Karnataka, India, after obtaining approval from Institutional Ethics Committee. The study was carried out over a study frame period of 1 month. The inpatients case files of orthopedic wards from January 1, 2014 to December 31, 2014 were retrieved from Medical Record section. Data were collected regarding patient's demography, diagnosis, complete prescription, and adverse drug reactions if any, using a predesigned pro forma. Data were analyzed for rationality and the WHO core prescription indicators. Statistical analysis was carried by descriptive statistics using SPSS software, version 20.0. All the patients admitted to orthopedic wards were included in the study. Discharge against medical advice and medicolegal cases were excluded from the study.

RESULT

Demographic data have shown that, of 1,777 inpatients, 68% were male and 32% female subjects. Majority of patients

(35.28%) admitted were in the age group of more than 60 years, followed by 21–40 years (28.53%), 41–60 years (27.85%), and less than 20 years (9.11%).

Most common indication for admission to orthopedic wards was fracture of bones (65.38%) and sciatica (10.9%), followed by nonunion (2.3%), rheumatoid arthritis (1.9%), osteomyelitis (1.87%), dislocation of joints (1.68%), and bursitis (1.35%) as shown in the Figure 3.

Associated co-morbidities such as hypertension (HTN) and diabetes mellitus (DM) were present in 7.7% and 4.7%, respectively, followed by HTN and DM (7.5%), hypothyroidism (2.3%), bronchial asthma (2%), and others as shown in the Figure 4.

A total of 9,423 drugs were prescribed for 1,777 encounters. Maximum number of drugs per prescription was 10 in about 0.8% of encounters, followed by 9 drugs (1.7%), 8 drugs (2.96%) and 7 drugs (4.6%).

Most commonly prescribed class of drugs were analgesics and antibiotics constituting 35.49% and 22.2% of total prescription, respectively, followed by ulcer protectives, vitamins, intravenous fluids, and antihypertensives constituting about 17.55%, 4.2%, 4%, 4%, respectively [Figure 5].

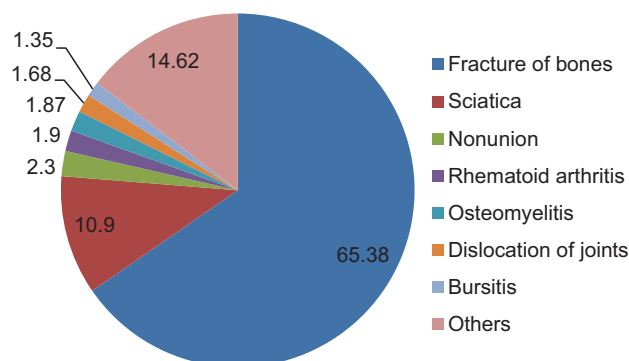


Figure 3: Disease pattern among patients.

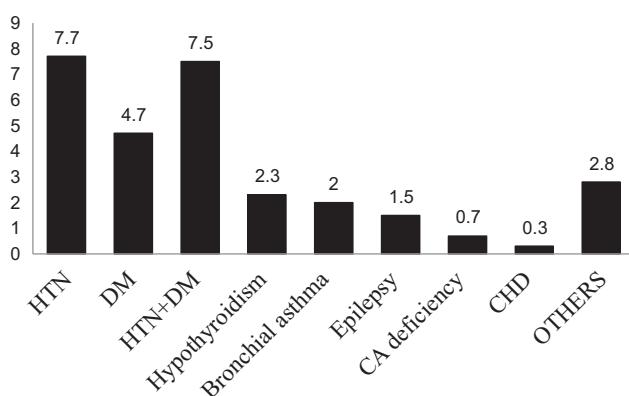


Figure 4: Associated comorbidities among patients.

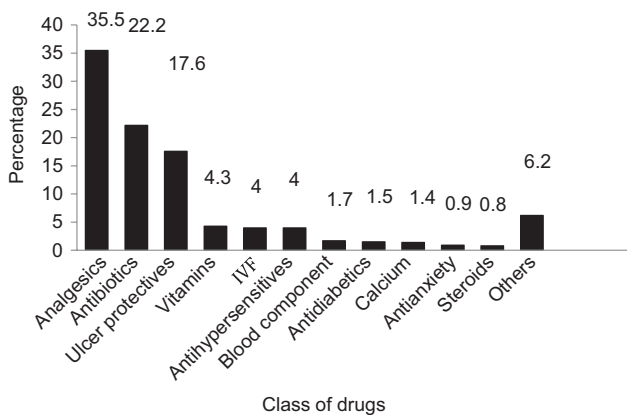


Figure 5: Most commonly prescribed drugs.

Among analgesics, NSAIDs were most commonly prescribed constituting 27.1% of encounters, followed by tramadol (4.71%), antiepileptics (2.85%), and paracetamol (0.83%).

Of 17.55% of ulcer protectives prescribed, H₂ antihistamines constituted 16.48%, followed by Proton Pump Inhibitor's (1.07%).

Analysis of the WHO core prescription indicators showed that average number of drugs per prescription was 5.3. About 61.9% of drugs were prescribed by generic name. Percentage of encounters with injections and from essential drugs list was 46.84% and 59.37%, respectively. Fixed drug combination (FDC) was prescribed in about 18.58% of prescriptions [Table 1].

DISCUSSION

Data regarding demographic details of patients in our study showed majority of patients admitted to orthopedic wards were male subjects, and majority of them were in the age of more than 60 years. Most common indication for admission was fracture of bones; this may be because majority of patients were more than 60 years of age, who will have age-related changes in the bones.

Our study highlighted that most commonly prescribed class of drugs were analgesics (35.49%), followed by tramadol, antiepileptics, and paracetamol. This finding was in accordance with the study conducted by Muraraiah et al in which majority

of drugs prescribed were analgesics, but, in their study, tramadol was the most commonly used analgesic when compared with our study. A study conducted by Elsy et al showed more prescription of tramadol as analgesic than NSAIDs, and it could be owing to their more safety profile in short-course therapy.^[9] Because majority of patients in orthopedic wards will experience pain and inflammation, analgesics are most commonly prescribed. Gastrointestinal toxicity is the major limitation of NSAIDs. Hence, they are coadministered with ulcer protectives. In our study, 17.55% of study population were administered with ulcer protectives, which was comparable with the study conducted by Kumar et al.^[10] from West Bengal. Antimicrobials and NSAIDs that were prescribed were used either preoperatively or postoperatively to relieve pain and treat various infections. Next most commonly prescribed class of drugs in our study were antibiotics. The antibiotics are prescribed both as prophylactically or to treat current infection. Percentage of encounters with antibiotics in our study was found to be 22.2%, which was more when compared with study conducted by Ubedulla et al.^[11] (16%) and less when compared with study conducted by Bithi et al (62%).^[12] Multivitamins were prescribed among 4% of patients; this was in accordance with study conducted by Shankar et al in Nepal.^[7] Analysis of the WHO core prescription indicators showed that average number of drugs per prescription was 5.3. The same was found to be 2.6 in Uttaranchal in India^[13] and 2.91 in Nepal.^[14] According to the WHO standard value, average number of drugs per prescription should be 2.012; so, the result from our study reflects polypharmacy, which may increase the chances of drug-drug interactions and adverse drug reactions and decreased compliance among elderly patients.

Percentage of drugs prescribed by generic name according to the WHO standard should be 100%, whereas, in our study, it was found to be 61.9%. A study conducted in Goa showed that less than 10% of drugs are prescribed by generic name and was 73.4% in another study.^[14-16] This shows a greater tendency of physicians to prescribe by brand name rather than by generic name, which has to be discouraged, because it will have an impact on economic burden of the patients. Factors that are responsible for this trend may include the influence of drug promotional activities, pressures of pharmaceutical men, lack of continuing education on the principles of rational prescribing, and non-familiarity with generic names among the physicians.

Percentage of encounters with antibiotics in our study was 22.24%. This was acceptable according to the WHO guidelines. This is encouraging as this can help in reducing drug resistance in the community. The WHO recommended target for injection exposure is 10% or less.^[17] Percentage of encounter with injection (46.84%) was high when compared with study conducted by Afsan et al,^[18] where only 3.33% injectables were prescribed. Minimum use of injectables should be advised, because this can reduce the risk of infection through parenteral route and cost of the health care. Majority of NSAIDs were prescribed as combination drugs. Hence, the percentage of drug prescribed as FDC in our study was 18.58%. On comparison of percentage of drugs prescribed from essential drug list, it was

Table 1: WHO core prescription indicators

WHO prescription indicators	Value
Average number of drugs per prescription	5.3
Percentage of drugs prescribed by generic name	61.90%
Percentage of encounters with antibiotic	22.24%
Percentage of encounters with an injection prescribed	46.84%
Percentage of drugs prescribed from essential drug list	59.37%
Percentage of drug prescribed by FDC	18.58%

found to be less in our study (59.37%) when compared with study conducted by Muraraiah et al.^[2] None of the patients showed any adverse drug reactions in our study, even though average number of drugs per encounter was high. Strength of our study is large sample size, and limitations are retrospective study, small study frame period, and single-centered study.

CONCLUSION

Analgesics, antibiotics, and ulcer protectives were the most commonly prescribed drugs. Most common indication for admission was fractures. Average number of drugs per prescription was high indicating polypharmacy. Percentage of drugs prescribed by generic name and from essential drugs list was less. This type of study helps in evaluating the existing drug use pattern and in planning appropriate interventions to ensure rational drug therapy; hence, further studies are required so as to provide optimum health care to improve the overall health of the community. There is a need to educate and train doctors to prescribe rationally by emphasizing this aspect in pharmacology teaching and continuing medical education programs in order to rationalize the medical care to the community.

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