Research Article

Cost Effective Auditing of Prescriptions of Indoor Patients in a Tertiary care Teaching Hospital: A Retrospective Study

Suman Lata*, AK Yadav, RK Sharma, M Jindal, Akanksha Suman, Lalendra Yadav, P Malik

Department of Pharmacology, MMC, Muzaffarnagar, U.P., India

Abstract

Background: Poverty and large population are important issues in India, though it is one of the fastest growing economies in the world. According to WHO regional advisor, a majority of Indians spend a good amount of their income on medicine and health care. Therefore cost control by rational prescription in very important. In this context the auditing of prescription was done for creating awareness for rational prescribing. Present study was conducted for having an insight into the good prescribing practices for low - middle income country like India.

Methods: The data were collected by noting the details of prescriptions of 300-patients admitted in various departments during a period of three-months, in a tertiary care hospital. Prescriptions were analyzed on the basis of the objectives of our study i.e. total number of drugs prescribed, numbers of antimicrobials / drugs for gastrointestinal symptoms/NSAIDS and others per prescription. The cost per prescription per day was analyzed.

Results: On an average 9.39 drugs (range: 6-17 drugs) were prescribed in each prescription/day. Total cost ranged from Rs 205-3797 (average 559.21)/ prescription/day. Out of this maximum expenditure was on antimicrobials (69.05%) with average cost of Rs 386.04 (range from Rs 90-3590). Most of the prescriptions contained more than 3 antimicrobials simultaneously and many of them had piperacillin and tazobactam without getting the culture sensitivity test done.

Conclusion: More frequent use of newer and multiple antimicrobial agents is likely to cause resistance in microbes and also adds to the cost.

Keywords: Prescription auditing, rational drug utilization, average cost analysis, antibiotic resistance.

INTRODUCTION

A majority of Indians spend a good amount of their income on medicine and health care due to various reasons like prevalent diseases, healthcare infrastructure, large population, illiteracy, etc. Prescription

**Corresponding Author: Dr Suman Lata, Professor and Head, Department of Pharmacology, MMC, Muzaffarnagar, U.P., India. Email:dr.sumanlata@yahoo.com*

auditing in this context helps in creating awareness among the clinicians for rational prescribing of drugs.[1] Such analysis helps in assessing the extent of wastage (health-wise and moneywise) due to irrational prescribing and in developing the ways to overcome these problems.[2] Drug utilization patterns have been evaluated in terms of defined daily dose along with pharmacoeconomic analysis in patients.[3] Other prescribing indicators commonly used to assess rational prescribing are the total number of antimicrobial drugs per patient, proportion of fixed dose combinations (FDCs), use of drugs by generic and brand names.[4,5]

Rational prescribing of drugs is a skill, for which proper, knowledge about drugs, pharmacoeconomics, pharmacovigilance and clinical experience is necessary. If the drugs are overused, they increase occurrence of toxic reactions and if underused, there will be therapeutic failure. Misuse leads to chances of development of resistant strain to antibiotics leading to unnecessary adverse drug effects and drug interactions. An optimal pharmacotherapy is achieved when the right drug in the correct dosage and quality reaches the right patient at the right time.[6,7] In this context the present study was conducted for having an insight into the good prescribing practices for low - middle income country like India.

MATERIALS AND METHODS

Present study was done on patients of either sex of all age groups from newly born to the old age 0 to 65 years by noting the details of prescriptions of 300-patients admitted in various departments during a period of three months, in a tertiary care hospital. Prescriptions were analyzed on the basis of the objectives of our study i.e. total number of drugs prescribed, numbers of antimicrobials / drugs for gastrointestinal (GIT) symptoms and other drugs, per prescription per day. The cost per prescription per day was also assessed.

The data was collected in a proforma, containing information regarding -

- Age and sex of the patients,
- Trade /generic name of drugs
- Number of drugs prescribed (Antimicrobials, GIT drugs & others),
- Dosage and frequency
- Route of administration
- Duration of therapy
- Clinical diagnosis

RESULTS

Demographic data of patients were recorded (Figure 1 and 2). On an average 9.39 drugs (range: 6-17 drugs) were prescribed in each prescription/day. Total cost ranged from Rs 205-3797 (average 559.21) /prescription/ day. Out of the total cost, maximum expenditure was on antimicrobials (69.05%) with an average cost of Rs 386.04 (range from Rs 90-3590), while on GIT acting drugs (11.94%) with an average cost of Rs 66.76 (range Rs 14-202). The remaining expenditure (19.01%) was on the other drugs viz. NSAIDS, vitamins etc. Most of the prescriptions contained more than 3 antimicrobials and many of them had piperacillin and tazobactam without getting the culture sensitivity test done. (Image 1, Figure 3 & 4)

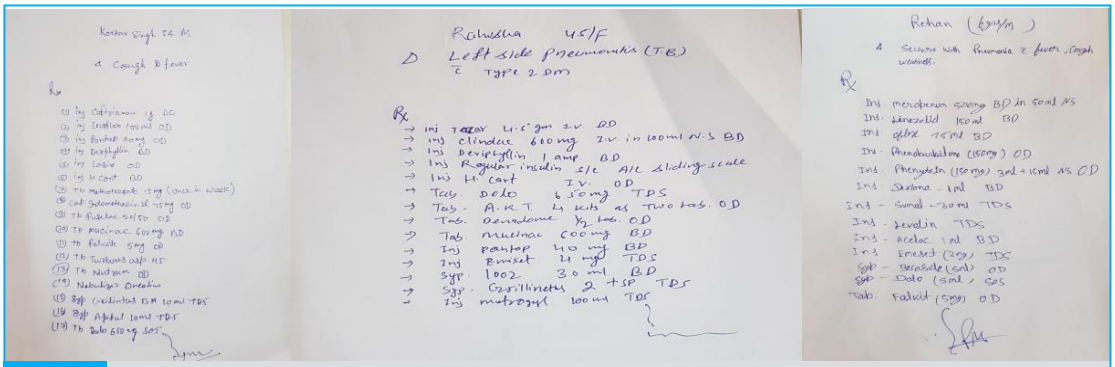

Image 1 List of drugs prescribed in three of the study prescriptions.

Demographic Profile of patients:

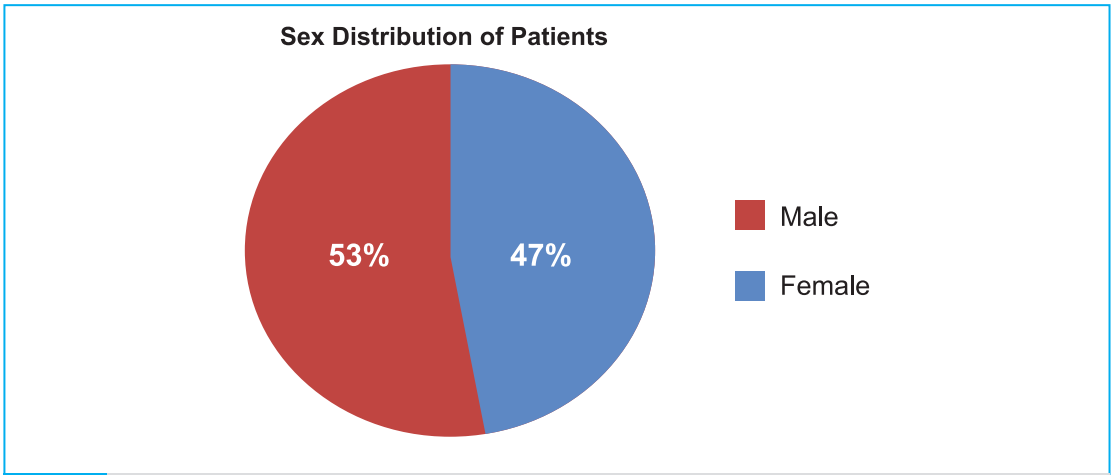

Figure 1 Sex distribution of patients

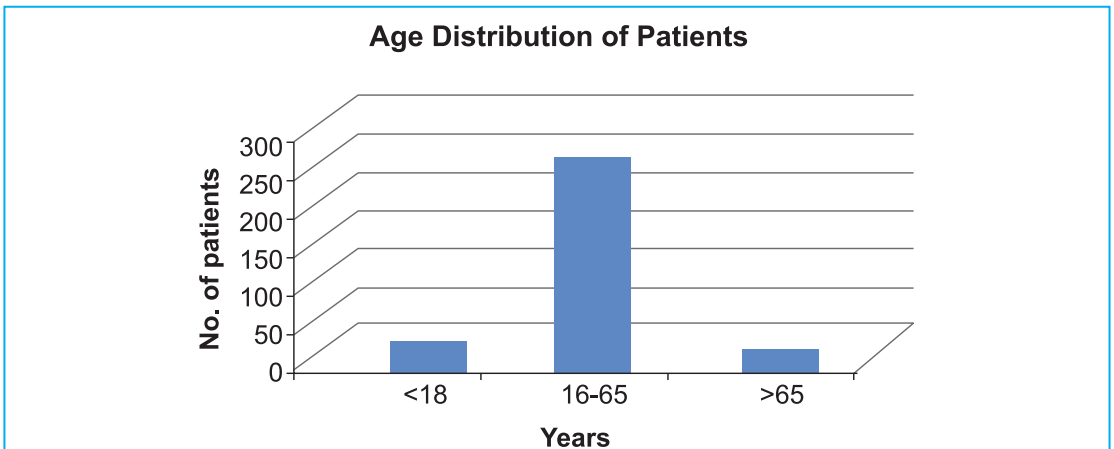

Figure 2 Age distribution of patients

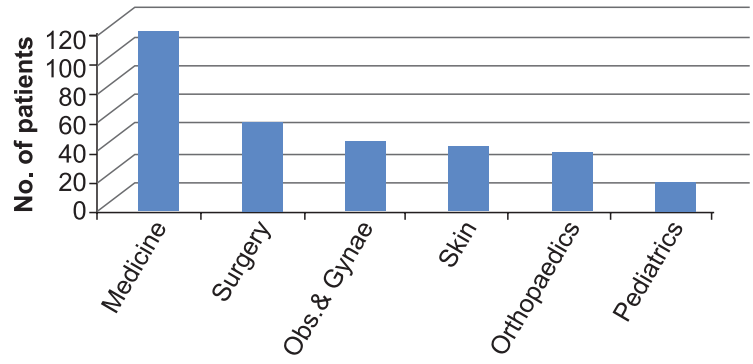

Figure 3 Department wise distribution of patients

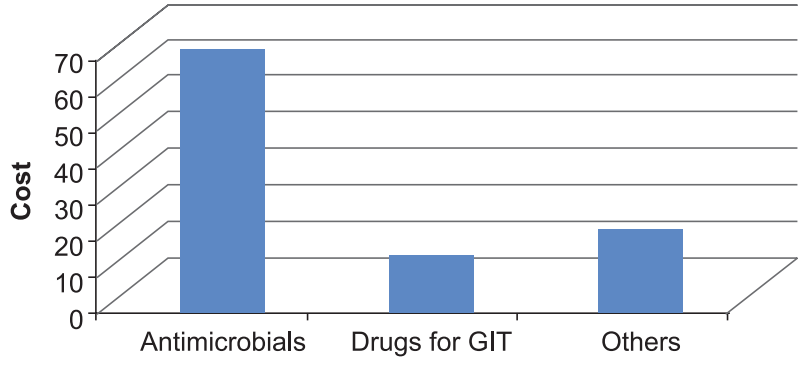

Figure 4 Cost incurred on various drugs

DISCUSSION

Our study shows that there is still scope of improvement in areas of dosage calculation, proper documentation, prescribing patterns in areas of writing generic names of drugs, essential drugs, writing legible and complete prescriptions.[8] WHO has developed Essential Medicines List to promote rational prescribing.[9] In the present scenario only appropriate antimicrobial should be prescribed at a time except in certain special circumstances. This will reduce the chances of development of resistance in bacteria, less number of drug-drug interactions and also the cost per prescription. Multiple NSAIDS, vitamins and minerals should not be prescribed simultaneously as it again increases the risk of drug-drug interactions and the cost as well, without adding any extra benefit to the patient. Irrational prescribing is common worldwide with different prevalence rates in a different set up.[10] Most of the drugs were prescribed by brand names and not by their

generic names as shown in other studies as well.[11,12]

This type of study helps in assessing the extent to which irrational prescribing is practiced by clinicians in government as well as private set ups. Pharmacological management is the most common and important form of treatment and irrational prescribing may lead to drug-drug interactions, development of resistance, adverse effects of drugs and high cost of therapy. The drug combinations meant for resistant bacteria such as the pipracillin and tazobactum combination should not be used frequently and should be kept reserved for the resistant cases or those not responding to the other agents. This will reduce the cost of treatment. Judicious use of drugs as and when necessary avoids drug-drug interactions and adverse drug reactions. Development and implementation of Standard Treatment Guidelines based on essential and generic drugs concept for promoting economical rational therapy should be accepted.

CONCLUSION

Polypharmacy and more frequent use of newer and multiple antimicrobial agents add to the cost of therapy to the patients and causes resistance in microbes. Periodic prescription analysis and effective feedback to clinicians should be done based on results to ensure rational prescribing and effective health care management.

REFERENCES

1. Nishita HD, Hardik VV, Chintan MD, Rutvij HH, Shilpa PJ, Hiren R. Prescription audit in the inpatients of a tertiary care hospital attached with medical college. J Clin Exp Res. 2015; 3:197-200
2. Kaur B, Walia R. Prescription audit for evaluation of prescribing pattern of the doctors for rational drug therapy in a tertiary care hospital. J Drug Del Ther 2013;3:77-80.
3. Patel N, Shah S, Asari P, Amin A. Prescription auditing and drug utilization pattern in indoor patients of pediatrics department. Int J Cur Res Rev 2016;23:13
4. Kapure NL, Nayak BB, Raul AR, Vijaykumar AN, Vijayprasad S, Vakade KP, et al. Study of prescribing pattern of antimicrobial agents in an IPD of a tertiary care hospital in Ahmednagar, Int J Med Res Health Sci 2014;3:110-4.
5. Vipul P, Bhatt JD. Study of prescribing patterns of antimicrobial agents in the paediatric wards at tertiary teaching care hospital, Gujarat. IJPSR, 2012;3: 2348-55
6. Meena VK, Atray M, Agrawal A. Evaluation of Drug Utilization Pattern In Indoor Patients Of Medicine Department At Tertiary Care Teaching Hospital In Southern Rajasthan. IJPSR. 2016;7:3835-40.
7. Maryam GF, Shekar HS. Audit of prescriptions in a tertiary care hospital- a retrospective study. W J Pharm Pharmaceutical Sc 2016; 10:886-94
8. Srividya BP, Shashikumar NS, Amardeep G. Retrospective audit of prescription of drugs among inpatients of orthopedic wards at Medical College Teaching Hospital. Nat J Phy Pharm and Pharmacol 2016;6:282-5.
9. Introduction to drug utilization research. Available from: http://apps.who.int/medicinedocs/en/d/Js4876e/2.html. Accessed on May 17, 2017.
10. Irrational Prescribing. Available from: http://apps.who.int/medicinedocs/documents/s22206en/s22206en.pdf. Accessed on May 17, 2017
11. Binit NJ, Tejas KP, Manish JB, Tripathi CB. Drug utilization pattern and pharmacoeconomic analysis in geriatric medical in patients of a tertiary care hospital of India. J Pharmacol Pharmacother 2014;5:15–20
12. Alkahtani SA. Drug Utilization Patterns in the Emergency Department of Najran University Hospital, Najran. Journal of Pharmacy Practice and Community Medicine 2018; 4:12-15.