Original Research Article

Prescription audit of patients in a teritiary care hospital

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ABSTRACT

Background: This study was prescribed errors to promote irrational use of drug and decrease patience compliance. Prescription audit can improve prescribing practices and patients to receive high quality drugs.
Methods: The study was observational carried out in 150 patients attending outpatient department for period of 6 months from April 2019 to October 2019. Data was analysed using WHO core indicators
Results: 16% of prescriptions demographic details like age, sex, age were incomplete. In few (15%) prescriptions omission of diagnosis and irrational combination was reported. Dosing errors like doses and duration of treatment were not mentioned in some of prescriptions. Percentage of antibiotics per prescription was found to be 23.64%, which is much higher than the ideal value recommended by WHO.
Conclusions: The average number of drugs was higher in prescriptions and trend of polypharmacy was noted with antibiotics usage. Dosing error and few prescriptions were irrational FDCs. Generic drugs were written in majority of prescriptions from essential drug list. Our study need to highlight to write rational prescription by adhering to WHO guidelines with feed back to prescribers and training session regarding safe use of drugs.

Keywords: Prescption audit, Polypharmacy, Generic drugs

INTRODUCTION

Rational use and thus rational prescribing of drugs requires that patients receive medicines appropriate to their clinical needs in doses that meet their own individual requirements, for an adequate period of time and at the lowest cost to them and their community.

A review of a large number of prescribing quality indicators has been proposed and many are used routinely in quality management. Often the content and face validity of indicators have been assessed by consensus methods. Prescription data are frequently used for indicators, but they do not provide any direct information about disease and patient factors important for judging the quality of prescribing. The concurrent validity of indicators should be assessed by comparing to a gold standard quality assessment at the patient level using all available clinical information. In the future, detailed clinical information from practice databases and computerized hospital records will be an important data source for indicators and for validation studies.

Why do we need prescribing quality evaluation? In spite of all measures developed at various stages like local, state, national and international level, the situation still needs improvement and as reviewed previously inappropriate or irrational prescribing is widespread all

over the world. This was to improve the situation further stringent continuous efforts will be required. Several tools have been developed and introduced from time to time for this purpose. They ranged from simple tools (WHO core prescribing indicators) to complex tools (Beer's criteria, explicit criteria, medication appropriateness index).

Prescription order is an important transaction between the physician and the patient. It is an order for a scientific medication for a person at a particular time. It brings into focus the diagnostic acumen and therapeutic proficiency of the physician with instructions for palliation or restoration of the patient's health .Prescription is a written document that engages the medical and legal responsibility not only of the physician but of all those subsequently involved in its execution . Unfortunately, times have changed. More often than not we find incomplete and illegal prescriptions being handed over to patient and has resulted in a disturbing trend of putting the patients safety at risk; and there is an urgent need to put things right.

Worldwide more than 50% of all drugs are prescribed, dispensed or sold inappropriately. Moreover, about one-third of the world's population does not have access to essential medicines. This incorrect use of medicine may take the form of overuse, underuse and misuse of prescription or non-prescription drugs. In developing countries, the proportion of patients managed as per clinical guidelines for common diseases in primary care is less than 40% in the public sector as well as 30% in the private sector. Common types of irrational medicine use are: the use of more than two medicines per patient (polypharmacy), inappropriate use of antimicrobials, often in inadequate dosage, for non-bacterial infections, over-use of injections when oral formulations are available.

Inappropriate prescribing of medications in older people is an important cause of morbidity and mortality and has been studied well. It encompasses the overuse of drugs, prescribing drugs that are predictably tolerated poorly by older people, prescribing drugs that are likely to exacerbate a clinical problem in an older person (e.g. benzodiazepines) and the underuse of appropriate medication. This may in part result from the lack of suitable screening tools designed to alert the clinician to consider indicated drugs when identified in individual patients.

Studies conducted in developed countries showed that approximately 5 % of all hospital admissions were drug related and 50 % of those were avoidable.[1] An error of prescription can occur at any stage of the prescription process like choosing a medicine, prescription writing, formulation used, dispensing of medication, administering/taking the medicine and monitor therapy. Failing to alter therapy on real time may sometimes account for serious errors.[2]

Thus medical audit is a systematic approach to peer review of medical care in order to identify opportunities for improvements and provide a mechanism for realizing them.[3] Prescription audit is a quality improvement process that seeks to improve patient care. It supports health professionals in making sure their patients receive the best possible care.[4] An audit is defined as "the review and the evaluation of the health-care procedures and documentation to compare the quality of care which is provided, with the accepted standards.[5-7]

Potential benefits of prescription audit; identify and promote good practice, improve professional practice and quality standards, supports learning and development of staff and organizations, identify and eliminate poor or deficient practice, identify and eliminate waste, promote working with multidisciplinary teams, allocate resources (financial, human) to provide better patient care and develop opportunities to present findings with relevant faculty and facilitate shared learning.

The aim of present study was to; improve the quality of prescriptions by reducing medication errors, prescribe drugs from the essential medical list of the hospital which are safe and occurrence of adverse drug reactions can be avoided, reduce cost of prescription by promoting doctors to write generic drugs and encourage regular prescription audit by the decision making bodies of the hospital and also by the stake holders.

METHODS

The study was prospective observational conducted by departments of pharmacology in Rajiv Gandhi institute of medical sciences, Adilabad, Telangana and Mahavir institute of medical sciences, Vikarabad, Telangana.150 patients were enrolled in the study and was conducted over a period of 6 months from April 2019 to October 2019.

Prescriptions of respiratory tract infections, gastrointestinal infections, all ages and both sexes from outpatients department were included in the study. Prescriptions advised with investigations and admitted in the hospital for surgical procedure were excluded from the study. Informed consent and confidentiality of patients was maintained throughout study. Study was conducted after taking institutional ethics committee permission. Demographic data (number of patients, age, sex, OPD), diagnosis, route of drugs administration, duration of treatment, use of generic or brand names, fixed dose combinations and comments if any on each prescription were recorded. WHO core drug use indicators were used for prescription analysis. Total cost of prescription for 7 days were also analysed.

Statistical analysis

The observed data was expressed in number and percentage by using SPSS software version.

RESULTS

Total of 150 prescriptions were analysed in the study from patients attending general medicine, surgery and pediatrics outpatient department. Among them 106 (70.6%) were males and 44 (29.3%) were females. Prescribing indicators were based on diagnosis (respiratory tract infections and gastrointestinal diseases), drugs prescribed, route of drug administration, frequency of administration, comments and suggestions.

Table 1: Demographic details.

Age group (years)	N (%)
<2	2 (2)
2-10	12 (8)
10-20	22 (14.6)
20-30	30 (20)
30-40	32 (21.3)
40- 50	25 (16.6)
>60	26 (17.3)

Table 2: Sex difference among different illness.

Sex	N (%)
Males	106 (70.6)
Females	44 (29.3)

DISCUSSION

Drug prescription is essential in the management of patients. Bad prescription leads to ineffective and unsafe treatment. It can prolong illness and results in harm to the patients. Parameters analyzed in the study are based on patient's demographics; age, sex, number and date of prescription received, clinical diagnosis, department, prescribing standards; drugs prescribed, dosage, route and frequency of drug administration, generic name, brand name, duration of treatment and irrational prescriptions, doctors name and signature. Majority of the patients were males and onset of illness was younger age group between 30 to 40 years (Table 1 and 2). The primary cause of chronic obstructive pulmonary disease (COPD) is tobacco smoke and gastrointestinal disease is several reasons such as viral or bacterial infection. In 16% (150) of prescriptions demographic details like age, sex were incomplete. Studies auditing have found patient details incomplete in hand written prescriptions.[8]

15% of prescriptions omission of diagnosis was reported (Table 3). Mentioning diagnosis in the superscription is a part of correct prescription writing and is mandated by WHO. Mention of a diagnosis may help the pharmacist to correlate and interpret the correct medicine or formulation if the handwriting is not completely understood.[9] Majority of drugs were written from essential drug list (EDL) which is satisfactory. The principle concept of essential drug list is that a limited number of drugs leads to more rational prescribing, good quality drugs at lower costs and safety, better recognition of adverse drug reaction, easier storage and distribution. Few prescriptions were written in brand names but majority had generic drugs (Table 4). There is evidence to suggest that generic medicines are as good as branded medicines with regard to bioequivalence and therapeutic equivalence.[10-12]

Table 3: Prescribing indicators based on diagnosis (respiratory tract infections and gastrointestinal diseases), drugs prescribed, route of drug administration, frequency of administration, comments and suggestions.

Diagnosis	Drugs prescribed	Route of drug administration	Frequency of administrat-ion	Comments and suggestions
Respiratory tract infections				
Chronic obstructive pulmonary disease (COPD)	monocef 1 gm inj., pantaprazole 40 mg inj., deriphyllin inj., asthallin and budocort , paracetmol 500mg	IV IV IV Nebulisation Tablet	BD OD BD BD TID	No non pharmacological measures, sputum culture not advised, chest physiotherapy not advised.
Pleural effusion	cefotaxime 1gm , rantac 25 gm/2ml inj., paracetamol 500mg tab	IV IV Oral	BD BD SOS	Investigations not advised, nutrional therapy advised, beta lactamase inhibitors advised which are broad spectrums antibiotics.
Asthma	deriphyllin inj., monocef 1gm inj., pantaprazole 40 mg inj., hydrocortisone 100 mg inj., asthallin	IV IV IV IV Nebulisation	BD BD BD BD TID	Pantaprazole not required, asthallin not required as deriphylline inj., is given.

Continued.

Diagnosis	Drugs prescribed	Route of drug administration	Frequency of administrat -ion	Comments and suggestions
Bronchopneumonia	amoxyclav 1.2 gm inj., amikacin 500 mg inj., salbutamol 15 mg/5ml syrup, paracetamol syrup 500 mg, asthallin	IV IV Oral Oral Nebulisation	BD BD TID TID TID	
Acute bronchitis	monocef 1gm inj., asthallin, ambroxyl 30mg/5ml syrup, paracetmol 250 mg/5ml syrup, levocetrizine 2.5 mg/5ml syrup, hydrocortisone 50mg	IV Nebulisation Oral Oral Oral IV	BD TID TID TID TID TID	Hydrocortisone injection not required.
Lower lobe bronchiectasis	monocef 1gm inj., ambroxyl 30mg/5ml syrup, avil 10 mg tab, pantoprazole 40 mg inj.	IV Oral Oral IV	BD TID TID BD	
Lung abscess	monocef 1 gm inj., asthallin, pantoprazole 40mg inj	IV Nebulisation IV	BD TID BD	
Gastro intestinal diseases				
Diarrhoea and fever	metrogyl inj., ciplox inj., cyclopam inj., paracetmol tab, sporlac tab,	IV IV IM Oral Oral	TDS BD OD TDS TDS	Stool culture not done, paracetmol tab absorption altered in GIT infections.
Gastritis	monocef inj., pantoprazole inj., metoclopramide tab deriphyllin inj, zofer inj, vitamin B tab, mucain gel syrup,	IV IV Oral IV IV Oral Oral	BD BD OD BD BD OD TDS	Metaclopramide not required as zofer is given as injection, mucain gel not required, vitamin B tablets may cause vomiting
Acute gastroenteritis	monocef inj., pantaprazole inj., diclofenac sodium inj., doxy tab, sporolac tab,	IV IV IM Oral Oral	BD BD OD BD TDS	Diclofenac contraindicated as it increases epigastric pain , nausea, doxy cycline injection not required
Acute appendicitis	monocef inj., pantaprazole inj., tramadol inj.,	IV IV IM	BD BD BD	
Enteric fever	monocef inj., pantaprazole inj., paracetmol tab, chlorpheniramine tab, azithromycin tab,	IV IV Oral Oral Oral	BD BD QID BD OD	Azithromycin tab and chlorpheniramine tab not required.
Oraganophosphorus poisoing	gatric lavage iv fluids, atropine inj., pralidoxime inj., monocef inj., rantac inj., hydrocortisone inj., zofer inj.,	IV IV IV IV IV IV	OD BD BD BD BD SOS	Zofer and hydrocortisone inj. not required.

Continued.

Diagnosis	Drugs prescribed	Route of drug administration	Frequency of administrat-ion	Comments and suggestions
Ascites with abdominal distention	monocef inj.,	IV	BD	
	rantac inj.,	IV	BD	
	lasix inj.,	IV	BD	
	urodeoxycholic acid	Oral	OD	
	lacilactone tab,	IV	BD	
	optineuron inj.,		OD	
Malaria	Monocef inj.,	IV	BD	
	Diclofenac inj.,	IM	BD	
	Artisunate inj.,	IV	BD	
	Doxy tab,	Oral	BD	
	Primaquine tab,	Oral	Oral	
Chronic pancreatitis	Monocef inj.,	IV	TDS	Monocef inj. and rantac inj not required paracetmol tab nor required.
	Rantac inj.,	IV	BD	
	Tramadol inj.,	IM	SOS	
	Pantaprazole inj.,	IV	BD	
	Cyclopam inj.,	IM	BD	
	Paracetmol tab,	Oral	TDS	

Table 4: WHO core prescribing indicators.

Who core indicator	Percentage of prescriptions (%)
Average number of drugs per prescription	6.81
Percent of drugs prescribed by generic names	22.72
Percent of prescriptions with at least on injection	19.31
Percent of antibiotics per prescription	23.64
Percent vitamins/iron per prescription	Nil
Percent of drugs prescribed from EDL	34

Few prescriptions were irrational like gastritis, acute gastroentereitis, enteric fever, malaria, organophosphorus poisoning and bronchopneumonia. The irrational use of prescriptions will not only promote health problems can also be linked to adverse effects, high cost, drug interactions and emergence of drug resistance, especially in antimicrobial therapy. In our study few adverse drug reactions were reported to gastrointestinal tract like nausea and vomiting as compared to study done by Bashir et al.[13] Non pharmacological measures to improve patient compliance regarding usage of drugs were not adequately suggested. Dosing errors like doses and duration of treatment were not mentioned in some of prescriptions. Wrong duration and wrong dose are the common types of prescribing errors found in many studies.[14,15]

WHO recommends 2 drugs per prescription. In this study the average number of drugs was 6 higher as compared to studies done by Mirza et al (Table 4).[16,17] Polpharmacy increases the risk of adverse drug reactions and reducing patience compliance. Percentage of antibiotics per prescription was found to be 23.64% which is slightly higher than the ideal value recommended by WHO (20-26.8). This finding was lower than earlier study conducted in Gondar on drug use practice in which only 29.3% of the prescriptions contained an antibiotic.[18] It was also much lower than similar studies conducted in Addis Ababa teaching hospital and southern Ethiopia, in which antibiotics constitute 38% and 58.1%, respectively.[19] Overuse of antibiotics by health care workers can lead to antibiotic resistance. Antimicrobial policy should be introduced in every hospital for appropriate use of antibiotics.

In the report by Ajemi et al assessment of the impact of providing feedback and educational intervention on prescribing error types and rates in routine practice concluded that interventions lead to modest changes in prescription written and recommended that regular feedback and continuing prescriber education will sustain error reduction in prescription writing.[20]

Limitations

Limitations of this study were duration of study, number of patients and follow up of the prescriptions.

CONCLUSION

Prescription audit should be carried out at regular intervals for quality improvement of any hospital. Majority of drugs were written from essential drug list. The average number of drugs was higher in prescriptions and trend of polypharmacy was noted with antibiotics usage. Dosing error and few prescriptions were irrational

FDCs. Generic drugs were written in majority of prescriptions. Non pharmacological measures and warning signals suggestive of adverse events due to drugs were not advised adequately. Our study need to highlight to write rational prescription by adhering to WHO guidelines with feed back to prescribers and training session regarding safe use of drugs.

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