

Evaluation of prescription pattern in terms of essentiality and rationality and assessment of Hospital pharmacy services utilization in tertiary care teaching rural hospital.

Shah AM *, Dhanani JV, Shah RB, Agrawal A, Gajjar BM

Department of Pharmacology, Pramukh Swami Medical College, Karamsad (Gujarat), PIN 388325

Address for Correspondence: dr_amit84@yahoo.co.in

Abstract

To evaluate the prescription pattern in terms of essentiality and rationality and assessment of Hospital pharmacy services utilization in tertiary care teaching rural hospital. A Prospective Observational Study was conducted. Total 100 patients attending various outpatient departments of Shree Krishna Hospital, a tertiary care teaching hospital were interviewed at their exit from the hospital and necessary information was gathered. Average time taken for interview with patient was 8.3 minutes with range of 7 to 10 minutes. All the prescriptions collected were analyzed for different parameters. Total 350 drugs were prescribed and average number of drugs per prescription was 3.5. Out of these 350 drugs, 60 (17.14%) were prescribed by generic name and the rest 290 (82.86%) were prescribed by brand name. Only 18 (5.14%) drugs were not prescribed from hospital formulary. 264 (75.43%) drugs were dispensed from the hospital pharmacy. On the basis of rationality score 53% prescriptions were rational, 30% semi rational and 17% irrational. Average rationality score was 20.56. In a hospital, where hospital formulary is based on WHO Essential medicine list, hundred percent utilization of hospital pharmacy services by doctors and patients would ensure rational prescribing for the benefit of the patients.

Key words: prescription, out-patient, WHO, formulary

INTRODUCTION

Essential medicines are the drugs which satisfy health care need of majority of population and they should be available within the context of functioning health system at all time in adequate amount in appropriate dosage form with assured quality and adequate information with affordable price¹.

The WHO essential core list presents a list of minimum medicine needs for a basic health care system, listing the most efficacious, safe and cost-effective medicines for priority conditions. Priority conditions are selected on the basis of current and estimated future public health relevance, and potential for safe and cost-effective treatment².

The WHO essential complementary list presents essential medicines for priority diseases, for which specialized diagnostic or monitoring facilities, and/or specialist medical care, and/or specialist training are needed. In case of doubt medicines may also be listed as complementary on the basis of consistent higher costs or

less attractive cost-effectiveness in a variety of settings².

WHO Essential drug list helps in promotion of Rational Drug Therapy. Rational drug therapy means right drug to the right patient in a right manner (dose, duration, frequency and route of administration) at affordable cost¹. Our hospital is a rural based tertiary care teaching hospital and the Hospital Formulary is based on WHO Essential drug list. Establishing the hospital formulary based on essential medicine list is not enough, assessing adherence of clinicians to the formulary is equally important.

This study aims to check the compliance of doctors with hospital formulary, evaluation of utilization of hospital pharmacy services by doctors and patients, and evaluation of rationality of prescribing.

METHODOLOGY

A Prospective Observational Study was conducted in the Shree Krishna Hospital during the month of Jan-Feb 2009. The study was conducted under the aegis of Pharmacy Committee as a measure of audit. Permission from CEO was obtained prior to study. Ethics Committee approval was also taken. Written informed consent was taken from all participants after explaining detailed

methodology to them. Total 100 patients attending various outpatient departments of Shree Krishna Hospital, a tertiary care teaching hospital were interviewed at their exit from the hospital and necessary information was gathered. Average time taken for interview with patient was 8.3 minutes with range of 7 to 10 minutes. All the prescriptions collected were analyzed for following parameters.

- Extent of utilization of hospital pharmacy services by doctors and patients.
- Reasons in cases of non-utilization of hospital pharmacy services.
- Prescription pattern in terms of essentiality and rationality.
- Whether medicines prescribed from Hospital Formulary.
- Whether medicines prescribed by generic or brand names.
- Appropriateness of drugs prescribed.

For assessment of appropriateness of prescribing we have followed Phadke's criteria³. According to this criteria maximum 30 points score system was assigned as follows:

- Main drugs – 20 points
- Complementary drugs – 10 points

Out of these total points, half the points for each of these two categories of the drugs were allocated for the correctness of the type of drug chosen for the condition and half for the correctness of the dose given, including route and frequency of administration and the duration of therapy. So for the 1st choice 100% points, 2nd choice 60% points & 3rd choice 30% points were allocated. If more than two drugs were needed to be given in a condition, the points allocated were subdivided accordingly.

Negative points were given for use of (a) irrational drug or irrational drug combination: -5; (b) unnecessary drug or injection: -5; (c) hazardous or banned drug: -10.

These categories were defined as follows:

- (a) Irrational drug or irrational drug combination: a drug not recommended in the standard textbook of pharmacology or other established scientific literature.
- (b) Unnecessary drug or injection: a category of drug or formulation not recommended for that particular condition in the standard textbooks.
- (c) Hazardous or banned drug: drug listed under the heading 'Banned and bannable drugs' (Voluntary

Health Association of India, 1996, updated in 2003)⁴.

Based on above mentioned criteria for analysis, net score was calculated and each prescription was graded accordingly as mentioned below:

- (a) 0 to 14 points- Irrational
- (b) 15 to 24 points- Semi rational
- (c) 25 to 30 points- Rational

RESULTS

Total 100 prescriptions from various outpatient departments were collected. In these prescriptions, total 350 drugs were prescribed. Average no. of drugs per prescription was 3.5. Department wise distribution of these prescriptions and average no. of drugs prescribed are shown in Table 1. Maximum number of drugs per prescription (4.58) was in medicine and ENT departments while lowest number per prescription (2) was in dental, ophthalmology and superspeciality clinics. Out of these 350 drugs only 60 (17.14%) were prescribed by generic name and rest 290 (82.86%) were prescribed by brand name.

Out of 350 drugs prescribed, 332 (94.86%) drugs were prescribed from hospital formulary and only 18 (5.14%) drugs were not prescribed from hospital formulary. 264 (75.43%) drugs were dispensed from the hospital pharmacy and rest 86 (24.57%) were not dispensed from hospital pharmacy (figure 1). Total 38 patients had not taken some or all of the medicines prescribed, from the hospital pharmacy. We also tried to evaluate reasons for not purchasing drugs from hospital pharmacy, as shown in Table 2.

On evaluating the prescriptions for appropriateness of prescribing 53% prescriptions were rational, 30% semi rational and 17% irrational (figure 2). Average rationality score was 20.56.

DISCUSSION

Rational prescribing is essential part of patient care. WHO has developed an essential drug list for promotion of rational drug therapy. Hospitals should have a formulary based on essential drug list. In our study we found that majority of prescriptions (94.86%) were from hospital formulary which is based on WHO essential drug list.

In our study average no. of drugs per prescription was 3.5 which is almost similar to 3.52 reported by a similar study done by Ansari et al⁵. One of the studies conducted in Taiwan by Lai MS has reported average 4.3 drugs per prescription.⁶ Inappropriate polypharmacy and potential

Table.1: Department wise distribution of prescriptions collected

Sl.No.	Name of department	No. of prescriptions	Total No. of drugs prescribed	No. of drugs per prescription
1	Medicine	31	143	4.58
2	Surgery	15	43	2.86
3	Skin	14	64	4.57
4	Orthopedics	11	26	2.36
5	ENT	8	37	4.58
6	Obs & Gyn	6	13	2.16
7	Paediatrics	5	12	2.4
8	TB chest	4	17	4.25
9	Psychiatry	2	7	3.50
10	Dental	2	4	2
11	Ophthalmology	1	2	2
12	superspeciality	1	2	2
Total		100	350	3.5

Table.2: Reasons for not purchasing drugs from hospital pharmacy (n=38)

Sl. No.	Reason	No. of patients (%)
1	Drugs not available in pharmacy store	14 (36.84%)
2	Drugs already present at home	12 (31.57%)
3	Long queue	7 (18.42%)
4	Cheaper drugs/ brands available outside	4 (10.52%)
5	Free drugs available from drug bank/ samples/ other sources	3 (7.89%)
6	Advised by doctor to take from outside	1 (2.63%)
7	ADR with brand available in hospital pharmacy	1 (2.63%)

Figure 1: No. of drugs dispensed from hospital pharmacy

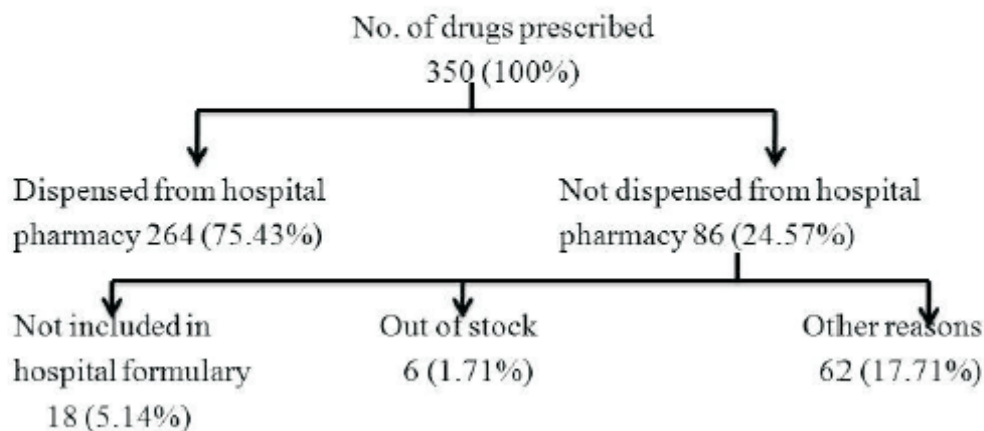
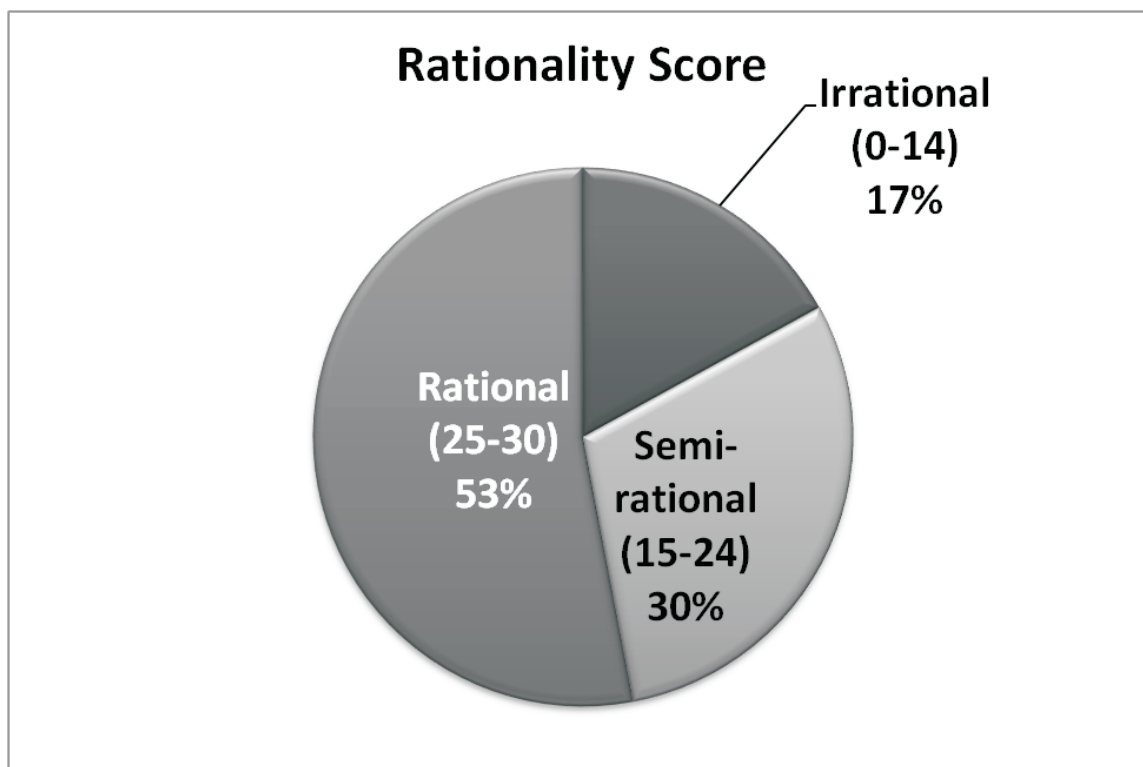


Fig.2: Rationality score



drug therapeutic problems showed strong positive correlation with the number of drug per prescription⁷. The less no. of drugs per prescription carries less risk of adverse drug reactions and drug interactions. In our study 17.14% of drugs were prescribed by generic name and 82.86% by brand name. This suggests that there is a need for encouragement for prescribing medicines by generic name, particularly in a hospital attached to medical college.

In this study 94.86% of drugs were prescribed from hospital formulary and only 18 (5.14%) drugs were not from hospital formulary. As our hospital formulary is based on WHO essential medicine list, it has direct impact on number of rational prescriptions. 86 drugs were not purchased from hospital pharmacy. Various reasons were given by patients for not purchasing drugs from the hospital pharmacy. Out of those, reasons like long queue, drugs out of stock and availability of cheaper brands outside are the issues which can be taken care of by the hospital authority for improving the compliance to hospital pharmacy. Steps can be taken for improvement like keeping enough stock and increasing pharmacy windows.

In our study 53% of prescriptions were rational, which is

near to 59.2% reported in a study done by Ansari et al⁵. In our study 17% of prescriptions were irrational which is comparable to the nationwide multicentre study done by Krishnanangshu R et al which reported 4 to 26% of prescriptions as irrational⁸.

This type of study is helpful in assessing adherence of doctors to the hospital formulary as well as compliance of both patients and doctors with the hospital pharmacy services. Further it is also helpful in finding out the issues responsible for noncompliance to the hospital pharmacy services.

In conclusion, in a hospital, where hospital formulary is based on WHO Essential medicine list, hundred percent utilization of hospital pharmacy services by doctors and patients would ensure rational prescribing for the benefit of the patients.

REFERENCES

1. Sharma HL, Sharma KK. Principles of pharmacology. 1st ed. Hyderabad: Paras medical publisher; 2007. p. 108-114
2. World Health Organization. WHO Model list of Essential Medicines. 15th list. (last cited 2008 Nov2). Available from URL: <http://www.who.int/medicines/publications/EML15.pdf>
3. Phadke A. Drug supply and use: Towards rational

- policy in India. 1st ed. New Delhi: Sage publications; 1998. p. 85-100.
4. Community Development Medicinal Unit Documentation Centre. Banned and Bannable Drugs in India. 4th ed. (last cited 2008 dec 24). Available from URL: [http://www.cdmubengal.org/other_info/Banned Drugs India.pdf](http://www.cdmubengal.org/other_info/Banned%20Drugs%20India.pdf)
 5. Ansari KU, Singh S, Pandey RC. Evaluation of prescribing pattern for rational drug therapy. *Ind J Pharmacol*; 1998; 30: 408-410.
 6. Lai MS, Chu CS, Lin SH, Lin MS. Prescribing pattern in primary health care in Taiwan. *Int J Clin Pharmacol*: 1995; 33: 437-441.
 7. Muazu J , Ikunaiye NY , Abubakar A , Sadiq GU , Zarma SY and Umar YH. Assessment of Quality of Out-patient Prescriptions in the National Health Insurance Scheme Unit of a Tertiary Hospital in Nigeria. *Res J Pharm Biol Chem Sci*;2010: 1(1): 557-561.
 8. Krishnangshu R, Ghosh JM, Chandhri SB, Mandal A, Prasad S. Prescription audit analysis-A study of drug prescription practices in India. Calcutta: Voluntary Consumer Action Network (V-CAN), Consumer Utility & Trust Society, 1996.