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ANALYSIS OF INPATIENT PRESCRIPTIONS IN DEPARTMENT OF SURGERY: A RETROSPECTIVE, CROSS SECTIONAL AND OBSERVATIONAL STUDY

Pharmacology

Dr Gurpreet Kaur Randhawa Associate Professor Department of Pharmacology Government Medical College Amritsar

Aanandita Singh MBBS Final-I student Sri Guru Ram Das Institute of Medical Sciences and Research Amritsar

Dr. Navreet Kaur Natt* Senior Resident Department of Pharmacology Government Medical College Amritsar
*Corresponding Author

ABSTRACT

Background: Irrational prescribing is a major contributing factor towards increase in mortality, morbidity and health costs.
Methods: The inpatient case records of 200 patients were analysed using the WHO/INRUD prescribing indicators and the data was presented using descriptive statistics.
Results: The study showed average number of medicines prescribed/encounter 5.97±2.33, percentage encounters with antibiotic and injectables 23.64% and 47.46% respectively, percentage drugs prescribed from EDL-WHO was 29.33%, NLEM India 42.36% and Punjab State EDL 43.05%.
Conclusion: Polypharmacy, overuse of injectables and prescribing by brand names were the challenges identified.

KEYWORDS

WHO core drug use indicators, poly-pharmacy, Essential drug list

INTRODUCTION

Rational drug use(RDU) is the core element of good prescribing practices. As per the World Health Organization(WHO) definition "rational use of drugs means patients receiving medications 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"[(1).]

Worldwide more than 50% of all medicines are prescribed, dispensed, or sold inappropriately, while 50% of patients fail to take them correctly[(2).] Irrational prescribing is a major contributing factor towards exacerbation of morbidity, mortality and health related costs. Thus, there is a need to assess the drug use patterns, quantify the problem of irrational drug use and identify the deficient areas. It is possible to minimize the incidence of prescription related problems by means of a periodic medication review in accordance with the prevailing needs of patient.

WHO/INRUD (International Network of Rational Use of Drugs) has developed drug use indicators (DUI) to be used as a measure of performance in rational use of drugs called core drug use indicators [(2).]These indicators have been accepted as a global standard to quantify the RDU and have been used in many developing countries for this purpose [(3)] . The present study was undertaken to analyse the prescriptions in Department of Surgery based on WHO/INRUD criteria.

MATERIALS AND METHODS

This retrospective, cross-sectional, observational study was conducted in the hospitalized patients in the Department of Surgery at Sri Guru Ram Das Institute of Medical Sciences and Research, Amritsar, Punjab over a period of four months from March 2017 to June, 2017.

The inpatient case records of 200 patients selected randomly were analysed for the demographic data and prescribing patterns. The data from each prescription was recorded methodically on anexcel sheet. The prescription information was then analysed using the WHO/INRUD prescribing indicators [(2)] recommended for primary health care facilities.

1 *Average number of drugs prescribed per patient:* Average calculated by dividing total number of different medicines prescribed, by number of encounters surveyed.
2 *Percentage of drugs prescribed by generic name:* Percentage, calculated by dividing number of drugs prescribed by generic name, by total number of drugs prescribed and multiplied by 100.
3 *Percentage encounters with an antibiotic prescribed:* Percentage, calculated by dividing number of patient encounters during which an antibiotic was prescribed, by total number of encounters surveyed and multiplied by 100.
4 *Percentage encounters with an injectionprescribed:* Percentage, calculated by dividing number of patient encounters during which injection is prescribed, by total number of encounters surveyed and multiplied by 100.
5 *Percentage of drugs prescribed from EDL-WHO*

EDL by WHO was compared with that of National EDL India and State EDL Punjab.

The indicators were calculated using standard methods. The data was presented using descriptive statistics in the form of total numbers, averagesand percentages.

Results

Among the 200 prescriptions collected randomly from Department of Surgery, a total of 115 different drugs/ medicines including fixed dose combinations (FDCs) were prescribed. These 115 drugs were prescribed for a total of 1159 times/ drug encounters. The number of drugs per prescription ranged from 2 to 16 with an average of 5.97±2.33 drugs.

The prescription analysis as per the WHO/ INRUD drug use indicators was as per Table 1.

Table 1

	WHO/ INRUD Prescribing Indicators (n=200)	
1	Average number of medicines prescribed per patient encounter	5.97±2.33
2	%medicines prescribed according to generic name	26.09%
3	%encounters with an antibiotic prescribed	23.64%
4	%encounters with an injection prescribed	47.46%
5	% drugs prescribed according to EDL – WHO (3)	29.33%

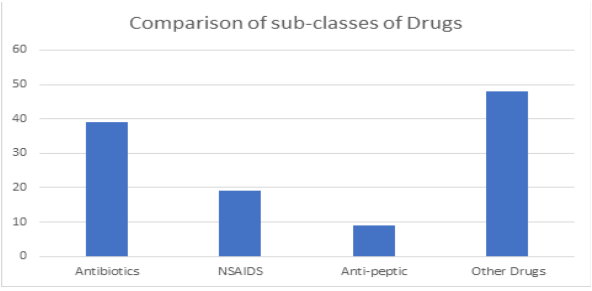
The percentage of drugs prescribed from the EDLs was 42.36% from NLEM India (2015)[(4)] and 43.05% from Punjab State EDL(2016)[(5)].

The frequency of injectables and oral drugs prescribed out of a total of 1159 drug encounters in 200 prescriptions. The drugs prescribed by oral route were 512 (44.18%) and injectables were 550 (47.45%), so that a total of 1062 (91.63%) drugs were prescribed by these two routes. 8.37% drugs were prescribed by other routes of drug administration like inhalational, subcutaneous and topical routes. Out of a total of 115 drugs, 26.09% were prescribed by generic name and

73.91% by brand name.

40% antibiotics were prescribed from a total of 115 prescribed drugs, whereas antibiotic prescription encounters was 23.64% from a total of 1159 encounters. The comparison of subclasses of drugs among the 115 prescribed drugs was as per Diagram 1.

Diagram 1



Out of a total of 1159 drug encounters, 274(23.64%) encounters were of antibiotics. Among the prescribed antibiotics, most commonly prescribed antibiotic was Ceftriaxone followed by Amikacin. The frequency of administration of other commonly prescribed antibiotics was as shown in Table 2.

Table 2

Most commonly prescribed antibiotics	Frequency/ encounters	Percentage (out of 274)
Ceftriaxone	68	24.82%
Amikacin	58	21.17%
Metronidazole	30	10.95%
Amoxycillin+Clavulanic acid	15	5.50%
Cefuroxime	13	4.74%
Cefuroxime+ Clavulanic acid	11	4.01%
Cefixime	11	4.01%
Tinidazole	6	2.20%
Piperacillin	6	2.20%

Discussion

The average number of drugs per prescription in our study was5.97±2.33, which was comparable to other studies in inpatients from tertiary care hospitals in India in which these were approximately 5 to 6 drugs per prescription[6][7][8]. This is however higher than the WHO recommended value of <2 drugs per prescription [2].Our observation was however higher than some other studies in the developing countries in which average number of drugs per encounter ranged between 1.3 and 2.93[3][10]. The reason for this could be the difference in study settings as our study was conducted in inpatients of surgery department while these studies were conducted in outpatient departments of primary health care centres. The practice of polypharmacy may result in increased incidence of adverse drug reactions, drug-drug interactions, drug resistance and an increase in treatment costs. But, at times, it may be justified on clinical basis in peri-operative patients, inpatients, emergency conditions and complicated cases where the net benefits might outweigh the risks.

Drugs prescribed by generic names in the present study were 26.09%, which was lower than the WHO standards of 100%. The number of drugs prescribed by generic names was in coherence with some previous studies[11], [12], [13]. WHO recommends prescribing drugs by generic names as it lowers the economic burden on the patient and ensures better exchange of information among the health care providers due to uniformity of drug names[14].

The percentage encounters with injectables were 47.45% in our study. This is higher than the WHO standard of 13.4–24.1 % for the use of injectables[2]. But, similar results with rate of injectable use between 36% and 48% were shown in Uganda, Sudan and Nigeria[15]. Use of injectables should be minimized due to the associated risk of blood-borne infections. Oral drugs should be preferred over injectables for the ease of self-administration, cost considerations and requirement of less stringent sterile precautions.

Out of the total number of drug encounters 1159, 23.64% were with antibiotics. Among the prescribed antibiotics, Ceftriaxone was the most prescribed (24.82%).The rationality of antibiotic use cannot be assessed by our study as it was not a part of our study design. However, the rate of antibiotic use is comparable to a study by Pathak et al (24.27%) in India.[7]

In this study, the percentage of drugs prescribed from WHO EDL was 29.33%. Although the proportion of drugs prescribed from EDL India and EDL Punjab were 42.36% and 43.05% respectively. The drug prescribing trend from EDL was in coherence with a study in India where drugs prescribed from WHO EDL and NLEM, India were respectively 23.04% and 76.06% [6]. The rate of prescribing from EDLs showed higher trends of more than 80% in studies from developing countries [12][16][17]. The practice of prescribing drugs from EDL is highly recommended by WHO as the drugs in EDLs are more cost-effective, time tested and easily available.

Conclusion

The results of the study as per the WHO core drug indicators were suboptimal with respect to the number of drugs per prescription, generic prescribing, prescribing from EDL and overuse of injectables. The study generated data which can be used for analysis of RDU and identify the weak areas in rational prescribing in a tertiary care centre. Larger sample size studies involving more research sites will be desirable for drafting regulations aiming at RDU at state and national level.

Limitations

The study design included the analysis of what is prescribed and not why it is prescribed. The reasons for irrational use of drugs were not included in the study.

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