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SHORT COMMUNICATION

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Evaluation of Rational Drug Use at Teaching Hospitals in Punjab, Pakistan

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ABSTRACT

Introduction: Rational drug use is a function of prescription practices having medical, social, and economic implications. **Methods:** This study was conducted to assess the drug use patterns at four government hospitals from major cities of Pakistan by using WHO drug use indicators. **Results:** Results showed that on average, 3.53 drugs were being prescribed per encounter. Percentage of antibiotics prescribed was 69.9% and the use of injection was 34.95%. Only 39.5% drugs were being prescribed by their generic names. Mean consultation time and dispensing time in the four hospitals were 3.64 minutes and 51.91 seconds respectively. Only about 73.47% of prescribed drugs was being actually dispensed. On the average, only 3.96% prescriptions were adequately labelled and 54.98% of the patients were found to have adequate knowledge regarding drug dose. Availability of drugs was also not satisfactory though; greater but not all drugs were being prescribed from EDL. **Conclusion:** The results indicate that there is urgent need for improving rational drug use, availability of drugs and educate the patients about drug use.

Key words: Rational drug use, WHO, Teaching hospitals, Punjab, Pakistan.

INTRODUCTION

The scarcity of resources in developing countries requires that drugs are used rationally. In simplest words rational use means "prescribing right drug in adequate dose for the sufficient duration and appropriate to the clinical needs of the patient at lowest cost.[1] Different studies have been conducted in developing countries to evaluate the rational drug use.[2,3] Irrational prescribing not only increases the financial budget of health care[4] but also is responsible for causing different challenges like increased emergence of bacterial resistance, ineffective treatment and adverse effects.[5,6]

In Pakistan, majority of people are dependent on government hospitals for satisfying their health care needs as the treatment offered by private hospitals is very costly. To analyze the rational drug use in healthcare facilities, World Health Organization (WHO) has developed a list of Core Drug Use Indicators.[7] The core prescribing indicators do not require the collection of any information on signs and symptoms. These quantitative indicators are now widely accepted as a global standard for problem identification and have been used in over 30 developing countries.[8] In this study, we focused four government hospitals from major cities of Pakistan to have an idea of the present situation and to add to previously available knowledge about rational drug use in Pakistan.

Methodology

The prospective, quantitative study design was adopted to describe the rational drug use at main government hospitals of 3 different cities of province Punjab, Pakistan. The hospitals were District Headquarters Hospital-Chakwal (Facility 1), Holy Family Hospital-Rawalpindi (Facility 2), Allied Hospital-Faisalabad (Facility 3), and District Headquarters Hospital-Sargodha (Facility 4). Prior approval was obtained from the administration of all hospitals for conducting the study. Patients were guided about the purpose of study, a verbal informed consent was obtained and complete anonymity was maintained during the study. The ethical review board, University of Sargodha, Sargodha,

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Pakistan, approved all procedures. Data of randomly selected 30 patients from each facility were collected and used according to WHO guidelines. This study lasted for four weeks between July to August 2014. Prospective data was obtained from the prescriptions of patients who attended the facilities for diagnosis and treatment of general illness. This indicator study was restricted to a patient sample of general illness encounters, representing a mix of health problems and patient ages. The sampling unit was patient encounters taking place at the outpatient health facility for the treatment of acute and chronic illness. Patient selected in the study were spread throughout the clinic days. Various prescribing Indicators, patient care indicators and facility. Model list of key drugs recommended by WHO for testing drug availability has been shown in Table 1. Indicators were evaluated according to WHO guidelines.[7]

Data collection and analysis

The specific types of data necessary to measure the prescribing and patient care indicators were recorded for each patient encounter and entered directly into an ordinary prescribing indicator form as soon as the prescriptions were generated. Patient care indicator specific information was obtained by interviewing the patient after he/she left the dispensing area. All data were first analyzed manually and then using Microsoft Excel software version 2007. Statistical analysis included analysis of frequencies, averages/means and percentages.

RESULT AND DISCUSSION

A brief summary of results has been shown in Table 2. The average number of drugs prescribed in facility 1, 2, 3 and 4 were 4.7, 2.76, 3.2 and 3.46 respectively. A high average number of drugs prescribed per prescription at all the four facilities was found i.e., 3.53. This implies that polypharmacy (the use of multiple medications and/or the administration of more medications than are clinically indicated, representing unnecessary drug use)[9] was quite common problem in these hospitals.

The percentage of drugs prescribed by their generic name in facility 1, 2, 3, and 4 was 14%, 4.81% 39.5% and 30.08% respectively. The mean drugs prescribed by their generic name in all four facilities were 22.09%. Facility 3 had highest percentage of drugs being prescribed by their generic name while facility 2 had lowest number of drugs prescribed using their generics names. Economic factors play a role as some pharmaceutical companies pay heavy rewards to physicians who prescribe their products and this discourages Generic Prescribing. Improper prescription practices will not improve without consumer targeted interventions that educate and empower communities regarding the hazards of inappropriate drug use.[5]

A much higher percent of total drugs being prescribed was antibiotics. The percent antibiotics prescribed in facility 1, 3, and 4 was simply alarming i.e., 90%, 83.3% and 90% respectively. Only facility 2 had its value significantly lesser i.e., 16.6%. The mean percentage of antibiotics prescribed in all the four studies was 70%. Our findings suggest that antibiotic prescribing needs to be regulated. Lack of awareness has been a major factor contributing to misuse of antibiotics in Pakistan in earlier studies.[12]

Percentage of injection prescribed within facility 1 was 90%, 6.6% in facility 2, 16.6% in facility 3 and in facility 4 it was 26.6%.The mean percent injectable prescribed in all the 4 facilities was 34.9%. Facility 1 has alarming use of injectables. This facility belonged to lesser-developed areas of Pakistan. Patients commonly believed that injections were much more effective and showed their effect in very short period than drugs given through oral route. Injectables use in other facilities was satisfactory, implies that population living in comparatively developed areas had more awareness.

We found that mean 62.6% of drugs were being prescribed from EDL, with maximum of drugs being prescribed from EDL in Facility 1. It was found that physicians generally did not like to restrict themselves to drugs in EDL. Furthermore, essential drugs only apply to certain common ailments and it is therefore not possible to have

Table 1: Model list of key drugs by WHO for testing drug availability[7]

Disease	Key Drugs
Diarrhea	Oral rehydration salts
	Cotrimoxazole tablets
Acute respiratory tract infections	Cotrimoxazoletablets
	Pocaine penicillin injection
	Pediatric Paracetamol tablets
Malaria	Chloroquine tablets
Anemia	Ferrous salt+folic acid tablets
Worm infestations	Mebendazole tablets
Conjunctivitis	Tetracycline eye ointment
Skin disinfection	Iodine, gentian violet or local alternative
Fungal skin infection	Benzoic acid+salicylic acid ointment
Pain	ASA or PCM tablets
Prophylactic drugs	Retinol (vitamin A)
	Ferrous salt+folic acid tablets.

Table 2: Summary of selected drug use indicators at the healthcare facilities

Indicator Studied	Value in Facility 1	Value in Facility 2	Value in Facility 3	Value in Facility 4	Optimal /Ideal value
Prescribing Indicators					
Average Drugs/prescription	4.7	2.76	3.2	3.46	1.6-1.8[10]
Percent Generics	14%	4.81%	39.5%	30.08%	100%[10]
Percent Antibiotics	90%	16.66%	83.3%	90%	20.0-26.8%[10]
Percent Injections	90%	6.6%	16.6%	26.6%	13.4-24.1[10]
Percent drugs on EDL					100%[10]
Patient Care Indicators					
Consult Time (min)	2.1	6.5	2.8	3.0	≥30 min[11]
Dispensing Time (sec)	51.3	51	47.8	57.5	60 sec[11]
% Drugs Dispensed	76%	50%	83.3%	84.6%	100%
% Adequate Label	0%	15.85%	0%	0%	100%
% Adequate Knowledge	100%	83.3%	16.6%	20%	100%
Facility Indicators					
% Drugs in Stock	53.3%	33.3%	20%	20%	100%
Availability of EDL/ Formulary	No	Yes	Yes	Yes	Yes

100% drug prescribing out of EDL. Since Pakistan`s EDL does not contain all medications for all illnesses or diseases but only for most common ailments , prescription of highly scheduled, more costly medications that do not appear on the EDL is permitted but requires extensive motivation on the part of medical doctor or specialist.

The results of the present study demonstrated that the mean average consultation time of four facilities was short i.e., 3.64 min. The average consultation times reported from other developing countries has been ranging from 2.8-7 min.[13] The optimal consultation time of ≥30 minutes is recommended for proper history-taking, complete physical examination, appropriate health education instructions and prescribing therapy. The short times reported at facilities in this study could be due to a high workload of patients per physician. One major reason is the brain drain from Pakistan to developed countries.

The mean average dispensing time reported of four facilities in this study (51.91s) was shorter than the optimal dispensing time of ≥60s. This was still lesser than other developing countries which had been reported to >79s.[11] It was observed that although pharmacist had been appointed at the health facilities, they had no involvement while dispensing medicines to the patients. It is recommended that use of computer-generated prescriptions should be encouraged along with active involvement of pharmacist in medicine dispensing and patients counseling.

It is highly desirable that all the prescribed drugs are actually dispensed. In this study, only 73.47% prescribed drugs were actually being dispensed. The major reason was the inadequate supply of drugs. Pakistan is a developing country where health and education is not given much preference.[14] Patients may receive very less or even no medicines at all. This may lead not only to individual's sufferings but also the suffering of whole community, e.g., a consequence of less than optimal doses of antibiotics leads to resistant bacterial strains.[15]

WHO recommends that each medicine should be properly labeled i.e., it should at least contain the dose regimen, patient name and drug dose.[7] On the average, only 3.96% drugs were found to be properly labeled whereas it is highly desirable that all drugs are labeled properly. During patient interviews, it was found that most of them did not know exactly when they should take medicines. Not even a single drug had been labeled properly in three out of four facilities.

Unfortunately, patient's knowledge of the correct dosage of drugs was low (54.98%) compared with the desirable value of 100%. The results for the facility indicators showed that one out of four facilities had no EDL/formulary available. WHO recommends adherence of physicians to the drug listed in the EDL/formulary when prescribing medications in order to ensure effective health care for all.[7] The mean percentage of key drugs in stock was very low (31.65%) compared with the optimal value of 100%. Our studies shows that facility 1 has maximum key drugs in stock while facility 3 and 4 has minimum no. of key drugs present in their stock. A shortage of supplies of essential drugs that treat common health problems is detrimental to the health status of patients.

CONCLUSION

The situation of rational drug use indicators in the hospitals where the study was conducted is alarming. There is an urgent need for intervention to improve the situation. This study was conducted mainly at government hospitals. It is recommended that this study should be conducted at a large scale level in order to have a clearer picture of the situation.

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CONFLICT OF INTEREST

All the authors declare that they have no conflict of interest whatsoever.

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