

Drug Prescription Pattern in a Tertiary Care Hospital in Pakistan

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ABSTRACT

Objective: To determine the drug prescription patterns and frequency of polypharmacy in the outpatient department of a tertiary care hospital in Lahore.

Study Design: Cross sectional study

Place and Duration of Study: This study was conducted at the Medical and Surgical outpatient Departments of Shalamar Hospital Lahore from January to March 2017.

Materials and Methods: A desired sample of 400 prescriptions was selected using multistage sampling technique, with 200 prescriptions each from medical and surgical outpatient departments. Prescribing trends of drugs were reviewed and compared to the available WHO prescribing indicators.

Results: Average number of drugs per encounter in this study was 3.56 with 48% of prescriptions having more than 3 drugs. Antibiotics and analgesics were prescribed in 34.3% and 62.8% of the encounters respectively. Percentage of prescriptions containing only oral medication, injectables and topical drugs was 79.3%, 2.8% and 17.8% respectively. None of the prescriptions had drugs with generic names. Statistically significant difference in the prescribing trend of analgesics was noticed between medical and surgical prescriptions with p value of <0.001.

Conclusion: Polypharmacy and prescribing brand names, instead of generic names of the drugs, continue to be the major problems in tertiary care hospitals of Pakistan. These inappropriate prescription trends need to be addressed by observation of WHO guidelines for drug prescription to avoid unwanted consequences.

Key Words: Prescribing pattern, Polypharmacy, Generic names, Tertiary Care Hospital.

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INTRODUCTION

Drugs and medicines are amongst the most cost-effective treatment interventions to-date and different countries spend considerable proportions of their health budgets on medicines, ranging from 10-20% in developed countries and 20-40% in developing countries¹. In 2007, Pakistan spent a total of PKR 112,000 million (US \$ 1,844 million) on medicines and the per capita pharmaceutical expenditure was PKR 683 (US \$11.3). This made 1.29% of the GDP and was 46.28% of the health expenditure for that year². Since medicines constitute such a large part of healthcare expenditure, adoption of rational and appropriate prescribing trends, is imperative. Evidence dictates that developing countries are not using medicines appropriately accounting it to greater than 50%, leading to a waste of already limited resources¹.

Despite the continued efforts and technical guidelines of World Health Organization (WHO), irrational drug prescription remains a problem of paramount intensity in both developing and developed countries^{3, 4, 5}. Polypharmacy, excessive use of antibiotics and injectables and use of drugs of dubious efficacy are the main problems encountered in drug prescription in developing countries.³ Several studies based in Pakistan have portrayed a similar picture.⁴ Studies done in public hospitals in the Punjab province of Pakistan have demonstrated average number of drugs per encounter and average number of antibiotics prescribed to be well outside the range specified by WHO.^{6, 7} Shalamar Hospital is a Private Teaching Hospital located in Lahore city of Punjab, Pakistan. It is a 500-bedded multi-disciplinary hospital which provides services to about 500,000 patients annually, including Outdoor, Indoor and Emergency patients.⁸ This study aims to explore the drug prescription pattern in the Outpatient department of Shalamar Hospital.

MATERIALS AND METHODS

This cross sectional study was carried out at the medical and surgical outpatient departments of Shalamar hospital Lahore over a period of three months (Jan-March 2017). Ethical review board of Shalamar Institute of Health Sciences granted approval for the study protocol. Sample size was estimated using Open

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Epi software, taking 5% margin of error, 80% power of study, expected frequency of probable factor as 43%³ from a total population of 30,000 (average number of patients utilizing outpatient services per month). The calculated sample size came out to be 372 which was rounded off to 400. Multistage sampling technique was used to take the desired sample from the total population. At first step, medical and surgical OPDs were selected from a total of ten running OPDs through convenient sampling, followed by selection of 200 prescriptions each from medical and surgical OPDs through random sampling. Data collection form was prepared by investigators keeping in view WHO prescribing drug indicators.⁹ Informed consent was taken from all the physicians whose prescriptions were to be reviewed. The data for this study was collected from online prescribing system being operated at Shalamar hospital. Data collected was entered and analyzed using SPSS version 20. Analysis of data was done according to WHO prescribing indicators namely: i) average number of drugs per prescription, ii) percentage of drugs prescribed by generic name and iii) encounters with an antibiotic prescribed, iv) encounters with an injection prescribed and v) percentage of drugs prescribed from essential drug list of institution. Results were presented using descriptive statistics (frequency and percentages). Difference in the drug prescribing patterns among medical and surgical OPDs was analyzed using Chi-square test.

RESULTS

To find out drug prescription pattern in a tertiary care hospital, all 400 prescriptions generated from the outpatient department of Shalamar hospital, were reviewed successfully as per sample size and entry was done in the data forms for this study. Each prescription contained drugs, out of which 33.3% prescriptions had 3 drugs, followed by 29% prescriptions having 4 drugs (figure 1).

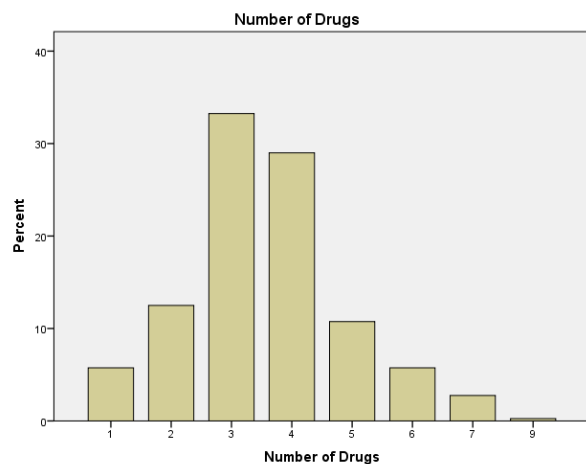


Figure No.1: Histogram showing Number of drugs on prescription

Table No.1: Drug prescription trends in a tertiary care hospital of Lahore (n=400).

Prescribing Indicators	Frequency	%age
Poly-pharmacy	Yes (>3drugs)	192
	No (\leq 3drugs)	208
Antibiotics Prescribed	Yes	137
	No	263
Number of Antibiotics prescribed	Nil	263
	1	110
	2	27
Analgesics Prescribed	Yes	251
	No	149
Number of Analgesics Prescribed	0	149
	1	161
	≥ 2	90
Oral medication only	Yes	319
	No	81
Prescriptions with injectables	Yes	11
	No	389
Prescriptions with topical drugs	Yes	71
	No	329

Table No.2: Speciality-wise drug prescription patterns (n=400)

Speciality	Polypharmacy		Total	P-value
	Yes (>3)	No (≤ 3)		
Medicine	102	98	200	0.23
Surgery	90	110	200	
Total	192	208	400	
	Antibiotics prescribed			
	Yes	No		
Medicine	60	140	200	.073
Surgery	77	123	200	
Total	137	263	400	
	Analgesics Prescribed			
	Yes	No		
Medicine	93	107	200	<0.001 **
Surgery	158	42	200	
Total	251	149	400	

**P-value highly significant

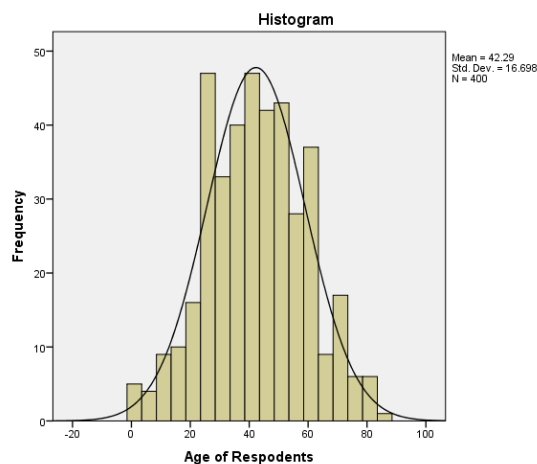


Figure No.2: Age of patients visiting out-patient department

More than 3 drugs were prescribed in 192 prescriptions (48%). 34.3% of prescriptions had antibiotics prescribed, out of which 80.2% had only one antibiotic prescribed. Analgesics were present in 251 prescriptions (62.8%), with 161 prescriptions containing only one analgesic. Percentage of prescriptions containing only oral medication, injectables and topical drugs was 79.3%, 2.8% and 17.8% respectively (Table 1). Significant difference in prescribing trends of analgesics between medicine and surgery was evident from p-value of <0.001 (Table 2). Mean age of patients visiting general out-patient department was 42.29 ± 16 (figure 2).

DISCUSSION

A prescription is a useful tool in order to study attitude of a prescriber towards the diseases and various practices of health care delivery systems running in the community³. This study describes the prescribing practices being carried out at Shalamar Hospital, a private sector tertiary level care facility. This study resulted in an average of 3.56 drugs per encounter in contrast to the recommended WHO reference values of 1.6 to 1.8 drugs per encounter mentioned in WHO prescribing indicators. T. Igbiki and F. Joseph carried out a study in a tertiary hospital of Nigeria to evaluate the prescribing patterns of clinicians in general outpatient units. In their study, average number of drugs per encounter was 3.04, and greater than 60% of prescriptions had three drugs, which is closer to our study's 62.3%.³ Niti R. Mittal and S. Malhotra in India performed a similar study, demonstrating average number of drugs per prescription to be 3.6 with 78% of encounters containing more than three drugs¹⁰. Similar high figures for average number of drug prescriptions are mentioned in different studies of Cambodia, Nepal and Burkinafaso among clinicians in various institutions^{11,12,13}.

Polypharmacy is the prescription of >3 drugs to a single patient. A systematic review of rational drug use in Pakistan conducted at University of Lahore showed prevalence of polypharmacy in Pakistan to be 34%⁴, whereas our study showed it to be 48%. This figure is comparable to the Nigerian study's 43.2%³. Polypharmacy is notorious for causing drug interactions and affecting compliance. Medication adherence is affected adversely resulting in poor treatment outcomes. Grymonpre RE and fellows in Winnipeg demonstrated association between number of drugs and drug related adverse patient events¹⁴.

Recommended practice for physicians is to use generic names for prescribing the drugs and not any brand or trade name^{15,16}. But in our study, not a single encounter had drugs prescribed with generic names due to online prescribing system and list of drugs available in brand names. Drug prescription by brand names should be negated as it decreases the cost effectiveness of drugs

both for patients and pharmacies. Moreover, prescription with generic name also prevents unwanted events like drug duplication and confusion of taking the wrong drugs, bearing similar brand names but having different salts.³ However, overall trend of prescribing drugs using generic names is very low with disappointing figures of 15.1%, 10% and 4.4% mentioned in various studies in Saudi Arabia, India and UAE respectively^{17,5,18} with a few reports from Bangladesh and Cambodia standing out with high figures.¹⁹

Non-judicious antibiotic use is a large scale problem in developing countries. Literature has shown it to lead to the emergence of antibiotic resistance, hence causing an increase in the use of more expensive antibiotics, even for treating common infections. Different studies have demonstrated wide range of variability in antibiotic prescription in South Asia, ranging from 9.6% in an Indian study to 57.2% in a Peshawar-based study.^{20,21} Similarly, a study by Hogerzeil et al showed encounters having antibiotics with a range of 47.5% to 100%.²² In this study, 34.3% of prescriptions were with antibiotics, being greater than the reference of 20.0 to 25.4% set by WHO, but still lower than the incidence of antibiotic prescription shown in previous countries in Pakistan.²¹ This could be attributed to an improvement in the antibiotic prescription behaviours of physicians over the years.

Analgesics make the largest portion of the drugs prescribed in any medical facility, and our study also displayed this trend with 62.8% of encounters with analgesics prescribed. Results of other studies done in Nigeria, showing 64.3% and 41%, are also compliant with our result.¹⁹ Such a high practice of prescribing analgesics could be due to patient's demands as well as physician's instinct to instantly relieve the patient's pain.

Prescriptions with injectables constituted 2.8% of the total prescriptions reviewed, which was less than the set reference of 10.1% to 17.1% by WHO. This is also in contrast to the results of studies done in Sudan and Uganda²². This low percentage of injectable prescription in this study is because of the reason that prescriptions were only taken from running out patient departments and not from the emergency department, where injectables are frequently prescribed. Increased awareness about blood borne diseases and other risks associated with injectable use might also be a contributor to the low prescribing trend of injectables. In Shalamar Hospital, online prescribing system is in use, therefore the drugs prescribed were in accordance with the local formulary provided.

In order to study the differences among drug prescription patterns present in medical and surgical specialties, cross tabulation was done with application of chi square test. It was found that out of total 200 medical prescriptions, 102 had more than three drugs,

whereas 90/200 surgical prescriptions had more than three drugs. Chronic nature of diseases dealt in medical out-patient departments could be held responsible for this difference. Antibiotic use was seen more in surgical outpatient departments, with 77 prescriptions having antibiotics as compared to the antibiotics in only 60 medical prescriptions. However, statistical significance of both these differences couldn't be established.

Statistically significant difference was found regarding analgesic prescription between the two departments, with 158 surgical prescriptions having an analgesic prescribed, compared to 93 medical prescriptions with an analgesic (p value <0.001).

CONCLUSION

This study demonstrates judicious use of antibiotics and injectables as compared to previous trends but polypharmacy and high rate of prescriptions with trade/brand names, continue to be the points of greater attention. There is a need for periodic check on the prescribing trends in order to bring them in accordance with WHO prescribing indicators.

Conflict of Interest: The study has no conflict of interest to declare by any author.

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