

# Research in Pharmacy and Health Sciences

## Research Article

### Comparative prevalence of prescription errors in randomly collected samples from hospital pharmacy and community pharmacy, Punjab, Pakistan

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#### ABSTRACT

**Objective:** This study was conducted to analyze and evaluate the prevalence of prescription errors, to optimize the medication effectiveness and patient safety and to encourage the rational prescribing practices. **Method:** sample of 250 prescriptions was randomly collected from outdoor hospital pharmacy (n=157) and from community pharmacy (n=93) and analyzed manually to estimate the prevalence of prescription errors. **Results:** Results calculated by using SPSS Version 23 and MS Excel 2013 are as follow; 41.4% prescription collected from outdoor hospital pharmacy presented significant prescribing errors while 54.7% in sample collected from community pharmacy. The prescriptions were segregated and errors were estimated using following parameters; dose, dosage form, dosing frequency, drug-drug interactions, spelling, and duplication of generic, therapy duration and unnecessary drugs. **Conclusion:** The prevalence of prescribing errors in sample of community pharmacy was 12.37% greater than found in prescriptions of hospital pharmacy. The prevalence of prescription errors can be reduced by physician education, using automated prescribing systems and immediate review of prescription by pharmacist before dispensing of prescription items to patients.

**Received:** 20-5- 2017

**Revised:** 2-6-2017

**Accepted:** 12-6-2017

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**Funding:** Nil

**Competing Interests:** None

**Keywords:** Prescribing errors, duplication of therapy, dosage regimen, rational prescribing

## INTRODUCTION

Prescription is the basic component of therapeutic interaction b/w patient, prescriber and pharmacist which mainly consist of two parts; technical part and intellectual part. Essential information like drug, dosage regimen (dose, dosage frequency, dosage form) and therapy duration is prescribed in technical part while intellectual part is decision making part which includes evaluating the prescription for drug-drug interaction, contraindication, duplication of therapy [1,2]. Prescription errors contribute significantly to overall medication errors that affect the patient safety and therapeutic effectiveness of drug therapy [7-10]. An error can occur at any step of prescription writing but commonly encountered prescribing errors are in dose, dosage form, dosing interval, poly-pharmacy, unnecessary drug prescribing, down prescribing, spelling mistakes, lack of proper plan for prescription writing and ignoring FDA approved guidelines for prescription writing, lack of prescriber information and authenticity and patient demographic information. Prescription error may be generated by slips, lapses are mistakes [4-6]. Different studies has been conducted to highlight the reasons and consequences of prescription errors on quality of patient life and health care system [14]. The purpose of this study is to compare the quality of prescribing systems both in hospital and local clinical

setups and to promote the pharmacist role in basic health care team.

## METHODOLOGY

Sample of 250 prescriptions was randomly collected from outdoor hospital pharmacy (n=157) and from community pharmacy (n=93). In this study, only prescriptions containing four or more than four medicines were included. All the collected prescriptions were prescribed by registered practitioners. Prescriptions were evaluated manually and errors were reported on the basis of following parameters; dose, dosage form, dosing frequency, drug-drug interactions, spelling, and duplication of generic, therapy duration and unnecessary drugs. Results were calculated using SPSS version 23 and MS Excel 2013. Then a comparative analysis was performed to evaluate the prevalence of prescription errors using SPSS version 23.

## RESULTS

In hospital pharmacy, 64.42% prescriptions were without prescription errors, 30.51% were with single type of errors and 5.09% were with multiple type errors while in community pharmacy, 52% were without errors, 39.57%

were with single type of error and 8.3% were with multiple errors (Table 1).

**Table 1: Prescription errors on the basis of type of error**

Error type	Hospital pharmacy (n = 157)	Community pharmacy (n = 93)
Without error	64.42%	52%
Single error	30.51%	39.57%
Multiple errors	5.09%	8.4%

Prescriptions were segregated on the basis of different parameters and results are calculated (Table 2).

**Table 2: Frequency of prescription errors on the basis of selected parameters.**

Parameters		Hospital Pharmacy (n = 157)	Community Pharmacy (n = 93)
Spelling error	Incorrect spelling	16.34%	19.21%
	Missed spelling	21.45%	26.43%
	Non-interpretable	12.76%	19.57%
Drug-drug interaction	With significant complication	34.67%	45.31%
	without significant complication	22.59%	29.48%
Therapy duration error	Less than recommended	21.34%	26.63%
	Greater than recommended	32.55%	29.49%
Duplication error	Same generic with same dosage form	25.83%	33.75%
	Same generic with different dosage form	34.11%	39.27%
Dose error	Low dose than patient need	11.23%	16.79%
	High dose than patient need	17.37%	26.81%
Dosage form error	Unavailable dosage form	9.36%	10.48%
	Inappropriate dosage form	5.43%	7.71%
Unnecessary drug	drug without indication	12.64%	17.51%
	Vitamins and iron supplements	21.31%	28.59%
	Unnecessary analgesics	29.54%	35.61%

When a comparative analysis was performed b/w sample of prescriptions collected from hospital pharmacy and community pharmacy, errors were 12.37% more prevalent in prescriptions collected from community pharmacy. The most common prescribing was unnecessary drugs both in hospital and community

pharmacy. Drug-drug interaction and dose errors were more prevalent in prescriptions collected from hospital pharmacy as compared to other selected parameters for error evaluation. While in sample collected from community pharmacy, most significant errors were drug-drug interaction, dose and therapy duration errors.

Comparative prevalence of errors in both hospital and community pharmacy prescriptions on the basis of selected parameters is given in Table 3 [ 13,15].

**Table 3: comparative prevalence of prescription errors in hospital and community pharmacy.**

Parameters	Hospital Pharmacy (n= 157)	Community Pharmacy (n= 93)
Spelling error	22.55%	24.21%
Drug-drug interaction	27.26%	34.79%
Therapy duration error	23.89%	30.12%
Duplication error	19.94%	23.02%
Dose error	22.60%	26.60%
Dosage form error	14.79%	18.19%
Unnecessary drug	63.49%	81.71%

## DISCUSSION

The prevalence of prescription errors has been studied in different retrospective, prospective and cohort studies and their results varies significantly due to many variable factors [8,9]. Prescription errors are most common type of errors among medication errors and accounts for 70% of medication errors [12,16]. Different studies are conducted in different areas of Pakistan both in hospital and community setups. Different pharmacist intervention based studies are also conducted to encourage the rational prescribing and role of pharmacist [11]. In a one month interventional study, medication order of 100 patients were analyzed. During this study, incidence of errors was as follow; omission errors 41%, dose direction error 11.25%, legal requirement error 55%, quantity mentioned error 15%, duration of therapy error 41.2 % [3].

## CONCLUSION

Prescription errors are equally prevalent in both general practice and in hospitals and significantly effecting the patient health and quality of health care system. Prescribing errors are more prevalent in community pharmacies as local prescription are entertained there. Novelty of this study lies in the fact that previously no comparative study between community and hospital pharmacy has been conducted in Pakistan. This study encourage the need of pharmacist at community level pharmacies. Active interventions are required which mainly focus on reducing the prevalence of prescription errors. Education and training of prescriber and

immediate review of prescription by pharmacist play a significant role in reduction of irrational prescribing trends. Introduction of uniform prescribing charts and automated prescribing systems can also improve the rational prescribing.

## ACKNOWLEDGMENTS

We as author of this work pay gratitude to our worthy teachers Dr Alia Erum and Prof. Rauf Akram (Assistant Professors at faculty of pharmacy, university of Sargodha, Sargodha, Pakistan) who urged the interest for research work, both hospital and community pharmacy staff for their help in data collection.

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