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Research Article

A RETROSPECTIVE ANALYSIS ON A SURVEY OF HANDWRITTEN PRESCRIPTION ERRORS IN GENERAL PRACTICE

MINAKSHI MARWAHA[1*], RAKESH KUMAR MARWAHA[1], JYOTI WADHWA[1] PADI S.S.V.[2]

[*1]S.B.M.N.I.P. S & R, Asthal Bohar, Rohtak, Haryana Pin code - 124 001, Maharishi Dayanand University Rohtak, Haryana Pin code - 124 001 [2]I.S.F. College of Pharmacy Moga, Punjab Email: gndu_research@rediffmail.com, minakshi_rkm@yahoo.co.in

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ABSTRACT

The main aim of the study is to identify and classify errors on medical prescriptions from general practices and to measure the frequency of these errors as a part of prescription event monitoring, to determine whether error rates differ between prescribers in different general practices and to determine whether error rates are higher on handwritten prescriptions. The study was designed to collect the data in a retrospective manner. The study was conducted on handwritten prescriptions from seven general practice physicians presented to community pharmacies over the course of two months. The results showed 196 errors from 3151 prescribed items collected giving an error rate of 6.09 per 100 items (95% CI 5.78-6.41). The most common errors related to direction giving an errors rate of 2.6 per 100 items (95% CI 2.47-2.74). Doctors from the two different health centers had significantly different errors rate. (kruskal wallis chi-square $p<0.005$) Errors were found in hand written items presented during the study. In summary, prescribing errors on general practice are common and this study has demonstrated a wide range of different types of error. Significantly different errors rate was found between prescribers in different general practices and relatively high errors rate was found on hand written prescriptions.

Keywords: Prescriptions, Prescribing errors, General practices, Community Pharmacies.

INTRODUCTION

Various regulatory systems govern the process of prescription generation and dispensing the purpose of which is to maximize the safety and efficiency of the product supplied. Community pharmacists have an important role in checking prescription to ensure they are appropriate to dispense. Error can happen in all stages of care process from diagnosis to drug administration. Error is defined as the failure of a planned action to be completed as intended or the use of a wrong plan to achieve an aim.[1] Medication errors have been found in a wide variety of clinical environments, ranging from ophthalmology clinics[2] to pediatric critical care units.[3] Such errors may lead to prolonged hospitalization, unnecessary diagnostic tests, treatments and deaths.[4-5]Error occur as result of two kinds of failure; either the correct action does not proceed as intended (an error of execution) or the original intended action is not correct (an error of planning). [6] Writing a prescription is a vital part of a patient's management and Studies in New York, Colorado, Utah and Australia have shown rates of adverse events caused by medical mismanagement of 3.7-10.6% of all admissions.[7-8] In addition to the human cost, there is an annual financial cost of £500 million.[9] This problem has been documented in several publications and attention has been focused on it by the department of Health in its publication building a safer NHS for patients: improving medication safety.[10]

The pharmacist's responsibility is to encourage the patient to use the medicine in the best possible manner. This is achieved by communication with the patient to make sure that he or she has the ability, will and knowledge to use the dispensed medicine correctly.[11] The use of computerized and daily updated medication charts has the potential to improve the quality of medication distribution process in hospitals.[12-17]Several studies have shown that incorrect prescribing, inadequate information given by the prescriber or pharmacist and incorrect use of medicine by the patient can cause suffering to patients.[18-20]Computer-assisted prescription were more than three times less likely to contain errors and five times less likely to require pharmacist clarification than were handwritten prescriptions.[21] Implementation of computerized physician order entry in a neonatal intensive care unit was associated with a significant decrease in the rate of medication administration variances.[22-24]The advent of new technology, new understanding and change in legislation may give the community pharmacist better access to this vital information in the future.[25-28] So we decided to determine the frequency of prescription errors in two different health centers within 5 mile distance of each other with the intention of developing strategies to reduce erroneous prescription and thereby minimize the risk for patients. The main aim of the study was to identify errors associated with prescription from general practices and classify them on prescription from general practices. We have also measured the frequency of these errors. We also looked at whether there were differences in error rates of prescribers from different general practices and whether errors rate were higher on hand written prescriptions.

METHODS

Setting

The study was done in two different health centers within a five mile distance of each other. In one of the health centers, there were four doctors and in other health center there were three doctors. The data were collected without the knowledge of doctors.

Design

A pilot study was done in one of the two community pharmacies to develop a system to classify the prescribing errors. All the data were collected and each of us was involved in developing and refining the classification system. We included all type of errors, including administrative and legal errors. We excluded prescription for unlicensed medicines or unlicensed indication, since it can be difficult to determine whether or not these constitute errors. Few categories of drugs (antacids, non-opioid, analgesics, topical skin treatment, and laxatives), were excluded from our data collection and analysis. Because incomplete directions (including terms such as "as directed") are common with these group of drugs and do not always imply error.

Analysis

All prescriptions presented to the two pharmacies were analyzed during the two-month study period .Prescription errors were identified in two other ways. First, the prescription return book used by pharmacies to record details of prescriptions sent back to prescribers was checked. Secondly, any errors identified by patients, e.g., incorrect quantities or extra prescriptions, were recorded by pharmacy staff during the course of the study. We did not undertake a formal validation of the data collection procedures, but the data were checked to make sure that errors were being classified accurately.

Table 1: Prescribing errors listed in rank order

S.No.	Type of errors	No. of errors	Error rate per 100 prescriptions	Per cent of Total errors (%)
1.	Directions not mentioned at all	49	1.555	25.53
2.	Regular Medications incorrectly transcribed.	35	1.111	17.86
3.	Direction incomplete not legible or written "as directed"	22	0.698	11.22
4.	More than one month's supply given on separate repeat prescription without the patient request	21	0.666	10.71
5.	Strength of preparation not stated where a product existed in various strengths.	18	0.571	9.18
6.	The prescribed quantity was not clearly written, missing or too large	16	0.507	8.16
7.	Prescriber's signature missing	10	0.317	5.10
8	Prescribing two drugs of the same type	5	0.158	2.55
9	Details of prescribed appliance not correct	4	0.127	2.04
10.	Medicinal products discontinued for over 3 months and stock unavailable	4	0.126	2.04
11.	Prescribing a drug as number(s) of tablets without specifying the dose or formulation (slow release etc.)	3	0.095	1.53
12.	Name of the medicine was not clear due to bad handwriting	2	0.063	1.02
13.	Direction were potentially hazardous and were changed after contacting the prescriber	2	0.063	1.02
14.	Date absent on prescription	2	0.063	1.02
15.	Wrong strength was prescribed and was changed after contacting the prescriber	1	0.031	0.510
16.	Patient suffering from short supply of medicine due to special pack rules	1	0.031	0.510
17.	The strength was not clear where a product existed in various strength and no guidance was available	1	0.031	0.510
		196	6.21	

RESULTS

A Total of 3,151 prescribed items were analyzed and 196 errors were detected giving an error rate of 6.09 per cent (95 per cent CI 5.78-6.41). Of these errors, 29 (15.0%) were identified by patients or their representatives. Table 1 gives details of the error rate for the different types of error. The highest error rate was found for instances in which the directions for use of a medicine were absent. The combined rate for all errors related to directions (S.No. 1, 3 and 13 in Table 1) was 2.8 per cent (95 per cent CI 2.6-3) and this constituted 37.5 per cent of all errors. The combined rate of all the errors related to strength and dose (S.No. 5, 6, 15, 17) was 2.096 per cent (95 per cent CI 1.99- 2.20) and this constituted 18.7 per cent of all the errors. Error rate for the errors related to prescribing two drugs of the same type (S.No.8) was 0.159 per cent (95 per cent CI 0.151-0.167) and this constituted 2.6 per cent of all the errors. Some of these errors originated from using trade rather than generic names. Prescribing errors are a global problem and have been reported in both inpatient and outpatient settings.[2,29-30] The reported frequency varies widely[31] and this reflects variable definition of prescribing error employed by different investigators and differences in trial design.

DISCUSSION

This study has demonstrated a wide range of different type of errors associated with prescription from general practice. Also, we have shown that prescribers from different practices vary in their error rates and that handwritten prescriptions are associated with a relatively high proportion of errors.

Accumulating data indicates wide variations in prescription error rates (from less than 1 per cent to over 40 per cent). The reasons for these variations relate mainly to study design. The lowest rates have been found in studies that focus on clinically significant problems and interventions made by patients and pharmacists. The highest rates have been found in studies that include even minor errors and where there are strict criteria as to what constitutes an error. Most of these "errors" were due to indication for the medication not being included on the prescription. With respect to the present studies, the error rate found in study is more precise and we reported serious errors that can be time consuming for pharmacists and patients in understanding the dosage regimen. Also, it is likely that the minor errors represent deficiencies in the prescribing system that might increase the risks of more serious errors taking place. It is clear that community pharmacists and physicians continue to have an important role in checking prescriptions. Prescription errors have been defined as either an error in writing the prescription, or an error in the prescribing decision, which may impair the effectiveness of treatment administration or have the potential for harming a patient.[30]Medical students are spending less time in a ward environment and more time in tutorials and lectures and as a result the practical aspects of a junior doctor's work such as prescribing safely, may be overlooked. In addition, medical students are spending less time studying pharmacology.[32]So there is no quick-fix for reducing prescription errors and the problem has to be addressed at various levels. Better understanding of fundamental pharmacological concepts and improved undergraduate word-based training in prescribing should help to improve prescribing practice. Any initiative to reduce the prescription error rate must involve knowledge of why, where, and when these errors occur. Inadequate knowledge of pharmacology will obviously predispose to poor prescribing, but environmental factors such as time, pressures, staff shortages and fatigue can also be the contributory causes. We suggest that an increased awareness of the problem of drug errors together with teaching good prescribing skills should be included in any induction programme for junior doctors. There are even greater potential difficulties for locum doctors working in an unfamiliar environment and a drug designed to be used nationally might help to obviate this problem. Electronic prescribing may ameliorate the problem of transcription errors and some programmes can also warn of potential drug interactions.[33-34]In this regard, 'NHS connecting for Health'[35] is the agency of the Department of Health in the UK which aims at modernizing the NHS by delivering a new integrated IT system with services to link general practitioners and community services with hospitals. Computerized prescriber order entry systems (CPOE) would improve practitioner prescribing, design and implementation of a CPOE should focus on errors with the greatest potential for patient harm. Pharmacist involvement in addition to a CPOE system with advanced clinical decision support, is vital for achieving maximum medication safety.[36]

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