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Study on dispensing errors of inpatient prescriptions in a tertiary care hospital

Sonal Sekhar M, Mini Anne Mathew, Suja Abraham, Asha Anand, Shalini Sasidharan

Department of Pharmacy Practice, Amrita School of Pharmacy, Amrita Vishwa Vidyapeetham University
AIMS Health Sciences Campus, Kochi, Kerala, India

ABSTRACT

Dispensing is an integral part of drug therapy and errors in it can cause some major complications. This study was aimed to assess the prevalence and determine the various types of dispensing errors occurring in inpatient prescriptions; also to create awareness among the pharmacy professionals about the various types of dispensing errors and thus help to minimize them. The present study is a prospective one which involves the inpatient prescriptions from a period of Dec 2007 to September 2008. The prescriptions of the patients admitted in the general wards were included in the study. The errors reported by the nurses, were documented by the pharmacist in a dispensing error report form. All the documented errors were collected, analyzed and categorized into the various types. The frequency of occurrence of different types of dispensing errors was calculated. The incidence of dispensing errors was found to be 4.8% and the most frequent type of dispensing error was found to be wrong medication (43.1%).

Key words: Dispensing errors, medication errors, drug safety, prescriptions.

INTRODUCTION

Medication errors are serious problems in health care and can be a source of significant morbidity and mortality in the health care settings. A report from the Institute of Medicine suggested that medical errors account for 44,000-98,000 deaths per year and is recognized as the eighth leading cause of death.[1] According to the National Coordinating Council for Medication Error Reporting and Prevention (N.C.C.M.E.R.P.), medication error is any preventable event that

might cause or lead to inappropriate use or patient harm while the medication is in the hand of the healthcare professional, patient or consumer.[2]

There is growing concern about the number of patients harmed by medication errors; the volume of research on this subject is growing exponentially. However majority of the research is focused on prescribing and administration errors. While dispensing errors can also result in significant patient harm, there is relatively less research work done in this area.[3] The process of drug dispensing involves providing the medication to the individual who will administer the drug and dispensation is considered as one of the sensitive phases of the medication process. The term dispensing error refers to the medication errors linked to the pharmacy or to the health care professional who dispenses the medication.[4]

Today, there are different dispensing systems in hospital units and a different expectation of errors is associated with each of them. In American, British, and Canadian hospitals where unitary dose system is used, the rate of medication errors has reduced from 1 error/patient/day to 2-3 errors/patient/week.[5] India is a developing country and lack certain resources that exist in countries that have created and evaluated safe medication systems. While there are more pharmacists in India than other countries, most do not practice in settings where they can work closely with prescribers or nurses to discuss medication related problems and develop safer medication use systems.[6] So, it is a necessity to conduct studies relating to medication errors and disseminate the findings among the professionals. This realization will help in reducing the frequency of errors and thus help the pharmacist to ensure that patient make the best use of medication.[1]

The present study was carried out with the aims-

1) To find the prevalence of dispensing errors among the hospitalized patients and to categorize such errors.
2) To publish the findings in order to educate the pharmacy professionals about the various dispensing errors that occurs in a hospital pharmacy.

MATERIALS AND METHODS

Methodology

The present study was carried out in a 1100 bedded tertiary care teaching hospital which is a well established hospital with all the clinical services and facilities as in developed countries. The hospital is equipped with an established pharmacy with various satellite pharmacies in each floor and is integrated to a School of Pharmacy conducting postgraduate and research programme. This was a prospective study carried out for a period of seven months including a pilot study of three weeks.

The pilot study was conducted in which the students of the School of Pharmacy and selected hospital pharmacists were involved. The study was conducted for a period of 3 weeks from which they got familiarized with the setup of the pharmacy and the system of dispensing in the IP pharmacy. They observed and noted all the steps involved in the dispensing system and finally designed a dispensing error report form. This semi structured form was made to file any

dispensing errors that occurred among the inpatients of the hospital. The dispensing error report form included the patient details, details of the error that occurred, reason for the occurrence and the necessary action taken to correct it.

On the basis of the pilot study that was conducted, a prospective study was carried out for a period of 10 months (Dec 2007-September 2008). The study was based on a cross-sectional design and was an individual prescription centered study. The patients admitted in the general wards were selected for the study. The patients who did not purchase the complete medicines as per the prescription were excluded from the study. The prescriptions of the hospitalized patients were evaluated on random basis. Five nursing staffs of the general ward that were in charge of four patients each were assigned to detect any dispensing error that occurred and report to the pharmacy staff immediately.

During the study, the medicines of each patient that were dispensed from the IP pharmacy as per the request from the ward were checked by the respective nursing staff. Whenever a dispensing error was detected, the nursing staff informed the pharmacist of the IP pharmacy. The IP pharmacist documented it in the dispensing error report form that were made in the pilot study and all the forms were filed.

The dispensing errors that were documented in the file were collected and analyzed on a monthly basis. After the 10 months of the study, all the collected dispensing errors were analyzed and categorized into the various types according to their occurrence (Table 1). They were also analyzed for their incidence of occurrence (Table 2) and their month wise distribution (Table 3).

RESULT

A total of 3598 hospitalized patient prescriptions were analyzed during the study period and 174 dispensing errors were detected. The dispensing errors obtained were categorized into 7 different types according to their occurrence. The incidence of dispensing errors was found to be 4.8%.

Table 1: **Classification of the types of dispensing errors**

TYPE OF DISPENSING ERROR	DEFINITION
1) WRONG QUANTITY	The quantity of the drug dispensed was higher or lower than that prescribed. Eg: Karvol plus inhalant capsule 3 numbers were billed but dispensed only 2
2)WRONG STRENGTH	A strength lower or higher than that prescribed was dispensed. Eg: Febrex 500mg. Tab billed but dispensed Febrex 650mg.
3)WRONG MEDICINE	A medication was prescribed but another was dispensed. Eg: Pot.chloride inj billed but dispensed Ca. gluconate inj. (Look alike error)
4)NON DELIVERY OF DRUG	The billed medicines were not delivered to the patient. Eg: Three Dextose 25% inj were billed but not dispensed.
5)WRONG DOSAGE FORM	The type of dosage form dispensed was different from that prescribed. Eg: Emeset 4mg tab was billed but dispensed Emeset 4mg inj.
6)DETERIORATED DRUG DISPENSING	Date expired and damaged medicines were dispensed. Eg: dispensed expired Metrogyl Gel
7)WRONG DIRECTION DISPENSING	The medications dispensed were given without directions. Eg: Dispensed Atacard 25mg tab. without proper labeling.

Table 2: Incidence of different types of dispensing errors

TYPES OF DISPENSING ERRORS	***NO. OF DISPENSING ERRORS***
1. WRONG QUANTITY	12 (6.89%)
1.1 Lesser quantity	2
1.2 Higher quantity	10
2. WRONG STRENGTH	18 (10.34%)
2.1 With higher strength	13
2.2 With lower strength	5
3. WRONG MEDICINE	75 (43.1%)
3.1 Look alike	26
3.2 Sound alike	30
3.3 Others	19
4. NON DELIVERY OF DRUG	22 (12.64%)
5. WRONG DOSAGE ERROR	38 (21.83%)
6. DETERIORATED DRUG DISPENSING	5 (2.87%)
7. WRONG DIRECTION DISPENSING	4 (2.29%)
TOTAL	174

Table 3: Month-wise distribution of dispensing errors

Month	**Dispensing errors**
Dec 07	10 (5.7%)
Jan 08	25 (14.3%)
Feb 08	9 (5.17%)
Mar 08	19 (10.9%)
Apr 08	16 (9.19%)
May 08	20 (11.49%)
Jun 08	17 (9.77%)
Jul 08	22 (12.64%)
Aug 08	15 (8.6%)
Sep 08	21 (12.06%)

DISCUSSION

In this study, hospitalized patient prescriptions have been analyzed and the dispensing errors so obtained have been categorized into seven types according to their occurrence. The dispensing error rate found in an American study in 2003 was 3.6%, while in this study the rate was found to be higher. A British study from 2002 reported a 2.1% rate of dispensing error. The most frequent type of error was medication dispensed with an incorrect dose. In another study conducted to determine dispensing errors conclusion drawn was that dose omission error was the most frequent at 57.3% of the total cases[5]. Whereas in this study, it was observed that the most frequently occurring errors were dispensing of the wrong medication (43.1%), followed by dosage errors (21.83%) and non delivery of drugs (12.64%). A study in U.K. reported that dispensing the wrong medication was the most common (72%) of the dispensing errors.[7]Another

study dealing with occurrence of drug errors in in-patients reported 11% of the errors were owing to dispensing errors related to the wrong drug or strength.[8]

Also, the month wise distribution of dispensing errors were analyzed and concluded that the rate was higher in the month of January (14.3%) while in another study it was found to be in April (21%).[1]

CONCLUSION

From the various studies conducted, it was evident that a number of factors are responsible for occurrence of dispensing errors. The main factors are type of dispensing system, organization of the work process, Interruptions during the separation of drugs, environment and excessive workload. Hence, we can conclude that dispensing errors are common and it is required to pay attention to prevent the same. Pharmacists can play a vital role in avoiding these errors. Safe, organized and effective dispensing systems are therefore fundamental to ensure that drugs are properly dispensed according to the prescription order forms, and to reduce the possibility of errors.

REFERENCES

[1] Acharya Leelavathi D, Shareef Javed, Rao Padma GM. *Indian Journal of Hospital Pharmacy* **2008**; 45: 54-8
[2] Kohn LT, Corringan JM, Donaldson MS. To Err Is Human: Building a Safer Health System. National Academy Press; Washington DC; **1999**
[3] Beso Adnan, Franklin Bryony Dean, Barber Nick. *Pharmacy World And Science* **2005**; 27: 182-90
[4] Cohen Michael R. Medication Errors; American Pharmacists Association; II Edition; **1999**; 55-67
[5] Anacleto TA, Perini E, Rosa MB,Cesar CC. *Clinics* **2007**; 62(3): 243-250
[6] Parthasarathi G, Hansen Karin Nyfort, Nahata Milap C. A Textbook Of Clinical Pharmacy Practice; Orient Longman Pvt. Ltd.; Chennai: 424-37
[7] Cox Anthony, Marriott John. *The Pharmaceutical Journal* **2000**; 264: 724
[8] Bond CA,Raehl CL. *Pharmacotherapy* **2001**; 21(5): 614-26