

MEDICATION ERRORS IN OUTPATIENTS OF A GOVERNMENT HOSPITAL IN YOGYAKARTA INDONESIA

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ABSTRACT

Background. Medication errors are important problems in hospitalized patients. Medication errors are inevitable and are affected by human factors. Nevertheless, the epidemiological data about medication errors in outpatients in Indonesia is still limited.

Objectives. This study was purposed to know the occurrence of medication errors including prescribing error, pharmaceutical error and dispensing error and the occurrence of the most type happened in these errors.

Methods. A prospective study with outpatients of a government hospital in Yogyakarta, Indonesia as study subjects. The study was carried out from June to September 2007 start at 9 am-12 am.

Results. We observed the prescription of 229 outpatients. We found 226 prescriptions with medication errors. Of the 226 medication errors, 99.12% were prescribing errors, 3.02% were pharmaceutical errors and 3.66% were dispensing errors. The most type of prescribing error was incomplete prescription orders. Physician ordering was the most common stage of errors (99.12%). The pharmaceutical errors were including over dose and under dose of drugs. The dispensing errors were including improper drug preparation and incomplete or no drug information.

Conclusion. Medication errors are still common problem in outpatients in Yogyakarta, Indonesia. Pharmacists needed to prevent and to overcome the medication errors.

Keywords: medication errors, outpatients, government hospital, Indonesia

INTRODUCTION

Medication errors are frequent problems in the hospitalized patients. The study about medication errors in paediatric inpatients setting showed that there were 5.7% medication errors from 10778 medication orders (1). The other study reported that the most location for errors in paediatric setting were NICU (Neonatal Intensive Care Unit), general care units, paediatric units and inpatient pharmacies. Most errors were related to medication administration, largely due to improper dosing (2).

Medication errors can cause serious adverse effect and potentially to evoke the fatal risk of the disease. Monitoring the safety and efficacy of the drugs adequately can prevent the occurrence of adverse effect. In the hospital setting, acquisition of drug information and control of the drug administration has proven highly challenging. Nevertheless, in the outpatients setting, the control of drug used and the severity of adverse effect have not been well monitored. Drug interaction with other drugs, food and other chemical agents can affect the therapeutic outcome of outpatients.

The study about medication errors in outpatients setting reported that, in average, the patients received 10.9 medications and they experienced adverse effects which were related with medication errors (32%). The study concluded that medication errors in outpatients setting were abundant and associated with significant adverse effect (3). Outpatients setting become more important for medication errors, because not only more procedures take places in non-hospital setting but also more hazardous and less regulated hospital setting (4).

The goal of this study was purposed to know the occurrence of medication errors including prescribing error, pharmaceutical error and dispensing error and the frequency of errors which were happened in each types of medication errors.

METHODS

This study was carried out at government hospital in Yogyakarta, Indonesia during 2 months. We observed prospective prescription data from the patients who visited the government hospital June to July 2007 start at 9 am-12 am. We also recorded the information which were given to the patients when they took their medications.

We defined the medication errors as errors in drug prescribing (prescribing errors), drug preparation (pharmaceutical errors) and drug information (dispensing errors).

Medication errors data were collected and were analyzed descriptively.

RESULT AND DISCUSSION

We reviewed 229 outpatients prescriptions. There were 226 (98.69%) prescription orders with medication errors. The type of medication errors and stage of error were listed in table 1.

Table 1. Type of medication errors

Type of medication errors	N(%)
Prescribing Error	
No doctor's name	15 (6.55)
No date	17 (7.42)
Wrong drugs' name	14 (6.11)
No rule of administration	60 (26.43)
No patient's name	1 (0.44)
No patient's age	120 (52.40)
Missing patient's weight	226 (98.69)
Pharmaceutical Error	
Over dose	2 (0.87)
Under dose	5 (2.15)
Dispensing Error	
Improper drug preparation	1 (0.48)
Incomplete or no drug information	5 (2.18)
Stage of error	%
Physician ordering	99.12
Pharmacy dispensing	6.22

Prescribing errors included the incomplete or unclear of handwriting prescription order which were written by the physicians. The incomplete of handwriting prescription orders in the rule of administration included

- 1] Advise about drug consumption (8.24%), as before or after meal, in the morning or before bed time,
- 2] Improper use of antibiotics (10.48%) and
- 3] Formulating the medications without directions (5.47%).

Physician ordering was the most common stage of errors (99.12%). This result is similar to the other study in 2007. In the outpatients setting, the study showed that the prescription errors were being the second cause of medication errors after the patient errors (3). The patient errors were the most common cause of medication errors. We could not show the patient errors, because we did not follow the patient compliances. The physicians do not know much about the drugs, such as the brand name, the strength of the drug, the formulation, also the dose in specific conditions. Pharmacists are needed to make the medications proper with patients' condition.

We also observed that, the pharmacists made some confirmations to the physicians in order to decrease the prescribing errors. Nevertheless, some of the pharmacists did not need to make confirmations to the patients, because of the time limited and the high number of prescriptions.

Pharmaceutical errors were improper doses and inappropriate dosage form. The overdose prescriptions were found on salbutamol and digoxin, whereas the under dose prescriptions were found on spiramycine, pirazinamide, phenytoine, barbiturate and carbamazepine. Digoxin is one of the drugs with narrow therapeutic index. The overdose of digoxin can cause digoxin toxicity such

as hypokalemia and arrhythmia (5). On the other hand, the under dose of antibiotic can cause ineffective drug therapy.

The study about preventing medication errors using quick-list to computerized physician order entry system in pediatric patients can eliminate the errors of dose, formulation, drug interaction and allergy. The introduction of the quick-list was followed by a significant reduction in prescribing errors (6). The quick-list could be used in community setting in Indonesia, but it will need high cost to prepare the computerized order entry system and the infrastructure.

The dispensing errors were the wrong drugs which were given to the patients, wrong labels and patients did not receive drug information. In this study, the dispensing errors, were improper drug preparation and incomplete or no drug information (3.66%). These errors could be caused by the high number of prescriptions and the limited number of pharmacists. Incomplete or no drug information to the patient can cause discrepancies between the doctors prescription and what the patient take in actual practice. The impact of medications misuse because of these discrepancies can lead to morbidity and mortality (7). To avoid the medications misuse, the pharmacists should give information and education to the patients until they understand the role of medications in their health.

In order to prevent the medication errors, potential strategies could be followed, such as;

- 1] Educating the physicians about the risk factors of medication errors, also about the impact of medication errors in therapeutic outcome,
- 2] Preparing the structured medication system for outpatients setting,
- 3] Educating the pharmacists to increase their roles in community setting.

The limitations of our study that, we could not follow the patients behavior during drug consumption, therefore, we could not find the adverse events which were related with the medication errors. Further studies are needed to confirm our finding and to evaluate other types of medication errors in outpatient setting.

CONCLUSION

We reported that the medication errors were common in outpatient setting in this government hospital in Yogyakarta, Indonesia. The most common type of error was prescribing error. The incomplete or unclear handwriting of the physicians was the main reason of prescribing errors. The pharmacists' role should be intended to decrease the rate of medication errors.

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