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RESEARCH **Open Access**

Medication Error at the Prescribing Phase

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Abstract
Medication errors are accidental failures in a therapeutic process that lead to and have the potential to cause or harm the patient. Medication errors can endanger patient safety, inconvenience and economic burdens. Medication errors can occur at the prescribing, recording, issuing, and administering stages. Reducing the risk of medication errors is a shared responsibility among patients, healthcare professionals, regulators and the pharmaceutical industry at all levels of healthcare delivery. This research is a quantitative research with a descriptive approach. The population taken was 912 prescriptions written by general practitioners at the PKU Muhammadiyah Cepu Hospital in March-May 2019. The sampling technique used was non-probability sampling, which was total sampling. The instrument used in this study was an observation sheet, then the collected data were processed by editing, coding, scoring, and tabulating stages which were then concluded descriptively. The results showed that the incidence of drug prescribing errors in inpatients at PKU Muhammadiyah Cepu Hospital in March 2019 found that all written prescriptions were 100% administratively incomplete. The incidence of prescription medication errors, especially the doctor's name, was 65.9%, the doctor's practice license number was 100%, the date of the prescription was 48.9%, the sign of R/70.9%, the doctor's initial 48.7% and the patient's address 97.4%. Incomplete administrative prescription writing can result in medication errors that are detrimental to health and add to the economic burden of patients.

Keywords: Medication Error, Prescription, Administration.

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1. INTRODUCTION

Medication error is an accidental failure in the therapy process that leads and has the potential to cause or harm the patient. Reducing the risk of medication errors is a shared responsibility among patients, healthcare professionals, regulators and the pharmaceutical industry at all levels of healthcare delivery (Goedecke, et al., 2016). Medication errors occur every day leading to injury to patients and even death. Health workers are not fully aware of the problems caused by medication errors causing discomfort and economic burden on patients (Riaz, et. al., 2017). Medication errors can not only be detrimental to patients but can also endanger patient safety by health workers, especially in terms of preventable patient treatment services. Medication errors can occur at the stages of prescribing, transcribing, dispensing, and administering (Khairurrijal & Putriana, 2018). In accordance with the Regulation of the Minister of Health of the Republic of Indonesia, errors in prescribing and dispensing are two things that often occur in medication errors.

Maalangen, et., al., (2019) revealed that there is still a Medication Error in the prescribing and dispensing phases in a hospital in Manado. A similar study was also conducted by Küng et al., (2013), at the University Hospital of Bern, Switzerland which reported 288 Medication Errors from a total of 24,617 treatments given to patients, of which 29% of the Medication Error was prescribing error, 13 % transcribing errors, and 58% in the form of administration errors.

In screening pharmaceutical technician prescriptions and pharmacists, it must pay attention to the standardization of administration completeness of prescriptions so as to minimize the occurrence of medication errors. Therefore, the authors are interested in examining the frequency of medication errors in the prescribing stage that occur in hospital pharmacy installations. In this case, the authors conducted research at the PKU Muhammadiyah Cepu Hospital with the objective of monitoring inpatient prescriptions written by general practitioners to inpatients. The researcher's consideration for choosing the hospital was based on the results of the initial survey conducted in the second week of February 2019 on 4 prescriptions. It is known that all of them (100%) did not meet the requirements of the prescribing stage such as not writing the prescribing date which could affect the prescribing administration process if one day occurred tracking prescriptions, not including the patient's weight so that the pharmaceutical technician and the pharmacist is difficult to determine the dose to be given, does not include medical record numbers which will affect the entry of drugs and there is a concern that errors will occur.

Treatment errors can occur in each treatment process, both in the prescribing process, in the reading of prescriptions (transcribing), preparation to delivery of drugs (dispensing), and in the process of drug use (administering). Errors in prescribing and dispensing are two things which often occur in medication errors (Romdhoni, 2020). The objective of this study is to identify the incidence of medication errors in the prescribing process written by general practitioners for inpatients at PKU Muhammadiyah Cepu Hospital. The results of this study are expected to provide information to medical officers to be more thorough in writing prescriptions to minimize the incidence of medication errors in the prescribing phase.

2. RESEARCH METHOD

The research design used is quantitative with a descriptive approach which is a research design that aims to describe important events that occur in the present.

Description of events is performed systematically and emphasizes factual data rather than conclusions (Nursalam, 2016). Meanwhile, the approach technique used in this study was a survey approach, which is a design used to provide information related to prevalence, distribution, and relationships between variables in a population (Nursalam, 2016). The research was conducted from January 2019 to May 2019 at the Pharmacy Installation of PKU Muhammadiyah Cepu Hospital, Blora Regency. The population in this study were inpatient prescriptions written by general practitioners at PKU Muhammadiyah Cepu Hospital in March-May 2019, totaling 912 prescriptions. In this study, the sampling used was non-probability sampling with a total sampling technique of 912 recipes. The variable in this study was the prescribing stage Medication error written by general practitioners in inpatients. The completeness of writing a prescription includes: doctor's name, doctor's license number, date of prescription writing, R/sign on the left side of each prescription writing, name of each drug and its composition, written drug usage rules (*signatura)*, signature or initials of the prescribing doctor, patient identity and patient address. The instrument used in this study was an observation sheet to identify incidents of medication errors in the prescribing stage. The collected data was then processed with the editing, coding, scoring, and tabulating stages and then concluded descriptively.

3. RESULTS AND DISCUSSION

Research that has been conducted on 912 prescriptions written by general practitioners at PKU Muhammadiyah Cepu Hospital for the period March-May 2019 shows that all written prescriptions are administratively incomplete (100%).

Table 1. Distribution of Administrative Completeness of Prescriptions Written by General Practitioners in Inpatients at PKU Muhammadiyah Cepu Hospital in 2019.

Administrative Completeness of Prescription	Frequency	Percentage (%)
Complete	0	0
Incomplete	912	100
	912	100

Source: Seconder Data of the Research on March 2019

Based on table 1, it can be seen that all written recipes are incomplete. The medication error in the prescribing stage includes 9 indicators, which are the written name of the doctor, the number of the doctor's practice license, the date of writing the prescription, the R/sign on the left of each prescription, the name of each drug and its composition, the written drug use rules (signatura), signature or initials of the prescribing doctor, patient identity and patient address.

A prescription is a written request from a doctor, dentist, or veterinarian to a pharmacist to make and deliver medicine to a patient. A person who is authorized to write a prescription is a doctor, dentist (limited to dental and oral medicine), veterinarian (limited to veterinary medicine). The prescription consists of six parts, which is the Incriptio which includes the doctor's name, address, and practice license number and the date of writing the prescription. Narcotics drugs only apply to one city within the province. Invocatio is an R/sign on the left side of each prescription. A doctor's written request in the Latin acronym "R/=resipe" means take or give functioned as an opening word for communication between the prescribing doctor and the pharmacist in a pharmacy. Prescription/ordinatio consists of the name of the drug desired, the dosage form of the drug, the dosage of the drug, and the amount of the drug

requested. Signatura is a drug use guide for patients consisting of a sign for how to use it, the dosage regimen, route and time interval of administration. The writing of the signatura should be clear for the safety of the use of the drug and the success of therapy. Subscriptio is the signature/initials of the prescribing doctor which acts as the legality and validity of the prescription. Pro (intended) consists of the name, address, age, gender, and weight of the patient (Dina & Sukohar, 2014).

Table 2. Distribution of medication errors in the prescribing stage based on indicators on inpatient drug prescriptions at PKU Muhammadiyah Cepu Hospital in 2019.

Medication eroron the step of prescribing	**Percentage (%)**
Doctor's name	65,9
Practice license number	100
Date of prescribing	48,9
Sign R/ in the left corner of the prescription	70,9
Name of each drug and the composition	0
Written drug use rules (*signatura*)	0
Signature or initials of the prescribing doctor	48,7
Patient's name	0
Patient's address	97,4

Source: Seconder Data of Research

Based on the results of observations on 912 writing prescriptions for inpatients at the PKU Muhammadiyah Cepu Hospital in March 2019, it is known that all written prescriptions are incomplete. The incompleteness of writing a prescription is especially on the indicators for the doctor's license number, patient's address, and the absence of an R/ sign on the left side of each prescription was written. Meanwhile, there were 3 indicators that were written completely on 912 prescriptions, which are the name of each drug and its composition, the written rules for drug use (*signatura*), and the name of the patient.

The incompleteness of prescription writing in this study was not much different from previous studies conducted by Pratiwi, et. al., (2017), which is research on outpatient prescriptions that were entered at Bhumi Bunda pharmacies and revealed that 75.79% of prescriptions were incomplete administratively, particularly the doctor's practice license number of 77.9% and the patient's address 70.53 and only 35.78% mentioned the patient's weight. Administratively, incomplete prescriptions have the potential to cause medication errors. Another study conducted at the Sthira Dhipa clinic revealed that administratively incomplete prescriptions had a negative impact on patient health.

Writing incomplete prescriptions can result in incomplete information received by patients about drugs, both those given by doctors and pharmacists, and can lead to improper use of drugs. The disadvantages experienced by patients are due to errors in writing prescriptions, which are the possibility of unwanted effects so that patients need longer treatment, higher costs, even death.

The research results shown in table 2 show that of the 912 *inscriptio* recipes the recipe is incomplete. *Inscriptio* in the prescription includes the name of the doctor, practice license number, address/telephone/cell phone/city/place, date of writing the prescription. *Inscriptio* serves as the identity of the prescribing doctor. The *inscriptio* format of a prescription from a hospital is slightly different from a prescription in private practice (Kementerian Kesehatan, R. I., 2016).

The results of the prescribing stage medication error observation showed that most of the doctors' names were not written, as many as 601 prescriptions (65.9%). Writing prescriptions from hospitals was slightly different from prescriptions in private practice. Most of the drug prescriptions at the hospital are not written with the doctor's name because the format of the prescription used is the letterhead of the hospital where the doctor is practicing. Besides, the number of patients has to be served so that the doctor does not have time to write his name in the recipe given to the patient. The absence of the doctor's name on the prescription can cause difficulties for pharmacists to verify the prescription if there is unclear information on the prescribing to the doctor who wrote the prescription.

Further identification of the doctor's practice license number can be seen that of the 912 prescriptions, all (100%) do not have the doctor's license number written. The writing of the doctor's practice license number in the prescription is necessary to ensure the safety of the patient, that the doctor concerned has the right and is protected by law in providing medication for his patient. It is because in the writing of a prescription to a doctor in the hospital, it does not need to be written because the doctor's license has been legalized by the hospital permit.

Observations on the date of prescription were written, it was found that out of 912 prescriptions, 446 of the prescriptions were written (48.9%). The date of prescription was given priority for prescriptions containing narcotics and other strong drugs. The prescription date indicates the time the patient made contact with the prescription. Through the prescription writing date, pharmacists can determine whether a prescription can be handled or not. For instance, when an opiate is prescribed for severe pain, a can serve the prescription if the writing date is not more than two weeks (Athijah, 2011). Writing the prescription date determines when the prescription is written and served according to the medicine requested. The results of this study are in line with the results of research conducted by Ismaya, et. al., (2019), which stated that there are still 7% unwritten prescription on the date of prescribing. Prescription date inclusion is required as it relates to patient safety. Pharmacists or personnel from North Sulawesi can determine whether the patient is still fit to use the prescription or recommended to return to the doctor.

The results showed that most of the written R/ sign was not written on the left side of each prescription, as many as 647 prescriptions (70.9%). *Invocatio* is a doctor's written request in the Latin abbreviation "R/= *resipe*" which means take or give, as an opening word for communication with a pharmacist in a pharmacy (Kementerian Kesehatan, R. I., 2016). The results of observations on 912 writing prescriptions for inpatients at the PKU Muhammadiyah Cepu Hospital in March 2019, it is known that most of them do not have an R/ sign written on the left side of each prescription writing. The incompleteness of writing the R/ sign on the left side of each prescription does not really have an impact on patient safety because the R/ sign means take or give it, as an opening word for communication between the prescribing doctor and the pharmacist. This R/ sign serves as a marking in the prescription to indicate the number of medicinal items used. It is caused by the large number of patients and the need for fast treatment by doctors so that they forget to write down the prescription correctly, because patients, especially in the Emergency Room, require a fast response time.

A total of 912 prescriptions were studied, all (100%) had the name of each drug and its composition and drug use (*signatura*) written on it. *Prescription/Ordonatio* is *the* name of the drug and the amount and desired dosage. Writing drug names that are unclear or difficult to read has the potential to cause medication errors, considering that many drugs have almost the same names, especially if the drugs have the same route of

drug administration (Kementerian Kesehatan, R. I., 2016). Based on the results of observations on 912 writing prescriptions for inpatients at the PKU Muhammadiyah Cepu Hospital in March 2019, it is known that all (100%) written the names of each drug and its composition. Drug requests must be confirmed correctly so that the officer who receives the request is absolutely clear about the type of drug requested (Khairurrijal & Putriana, 2018). In writing the name of each drug and its composition on the prescription, it should be written completely and clearly to ensure the safety of the patient. Signatura is a sign of how to use it, the dosage regimen, route and time interval of administration must be appropriate so that the safety of using the drug and the success of therapy can be achieved (Sari & Oktarlina, 2017).

The results of the research on doctor's initials showed that of the 912 prescriptions, most of them had signatures or initials of the doctors who wrote the prescriptions, as many as 444 prescriptions (48.7%). Subscriptio is the signature/initials of the doctor who wrote the prescription which is useful as the legality and validity of the prescription (Sari & Oktarlina, 2017).

Observation of the patient's name revealed that of the 912 prescriptions, all (100%) were written the name of the patient. Pro (intended) includes the name, age and address of the patient. For narcotic drugs, the patient's address must also be included (for reporting to the local health office) (Megawati & Santoso, 2017). Writing the patient's name completely and clearly can prevent the accident of receiving drugs or confusing drugs with other patients. As many as 97.4% or almost entirely not written the patient's address. The patient's address can also be a differentiator when there is the same patient name when redeeming a prescription. If there is the same patient name or the patient's name is not included on the prescription, the pharmacist can ask directly based on the patient's address, thus the medicine prescribed by the doctor will not be confused and if the drug is wrongly administered, it can be addressed to that address.

Prescribing is a complex and high-risk task (Lloyd, et. al., 2017). Prescription errors often occur in hospitals. Prescription-writing interventions require evaluation and feedback on one potential intervention to improve prescribing practice. Doctors have reported a lack of feedback on their previous prescriptions so that the evaluation is limited (Lloyd, et. al., 2017). A good prescription must meet sufficient information so that the pharmacist and nurse concerned understand what drugs will be given to patients (Katzung, et., al., 2014). Prescription writing must be done correctly with respect to accuracy and completeness. Every mistake in prescribing must be eliminated. Irrationality in prescribing leads to medication errors leading to increased morbidity or length of stay and economic losses. Rational use of drugs must be practiced starting with determining the therapeutic goal, selecting the right and specific drug for the patient's needs, followed by monitoring the response to drug therapy (Batta & Singh, 2018).

At each stage of the prescription service flow, efforts are made to prevent medication errors. Prescription assessment is performed to analyze any drug-related problems. If a drug-related problem is found, it is necessary to consult the doctor who wrote the prescription. Pharmacists must conduct a prescription review according to administrative requirements, pharmaceutical requirements, and clinical requirements for both inpatients and outpatients (Kementerian Kesehatan, R. I., 2016).

An Institute of Medicine report on quality of care in the United States found, more than one million injuries and at least 44,000 deaths occur each year as a result of medication errors. Medication errors are the main category of medical errors that cause more than 7,000 deaths per year. Medication error is a type of medical error which often

causes harm to patient treatment, especially in the use of inappropriate drugs, thus, causing harm to patients. Medication errors are associated with increased length of stay and higher hospitalization costs (Odukoya, et. al., 2014). Mistakes during the prescribing process can cause problems for the patient. The results of this study are in line with those reported by Reed-Kane, et. al., (2014) which revealed that the prescription error rate was 63%. When prescribing errors occur, patient care and workflow is interrupted.

Other researchers also revealed that errors in treatment occurred mostly in the prescribing phase with a total of 58.07% and was the highest number of other stages in the treatment process. Potential errors in the form of illegible prescription writing, abbreviated drug names, no dosage given, no amount given, no dosage unit written down, no usage rules, no route of administration, no dosage form, no prescription request date, and incomplete patient identity (no written medical record number, height, gender of the patient, age, and body weight). One of the problem points in prescribing error is the prescription maker or doctor as a health worker, for that rational prescribing needs to be applied (Sari & Oktarlina, 2017). The results of this study are also in line with those expressed by Yusuf, et., al., 2019 in Tasikmalaya that the prescribing stage of Medication error which meets the standards of Health Ministry Rules number 58 of 2014 administratively is 12%, while pharmaceutically is 44%. Prescription review is a very important aspect in prescribing because it can help reduce the occurrence of medication errors.

4. CONCLUSION

Incidence of medication errors in prescribing stage in inpatients at PKU Muhammadiyah Cepu Hospital in March 2019, it is known that all written prescriptions are 100% incomplete administratively. The incidence of medication error in the prescribing stage, especially the doctor's name was 65.9%, the doctor's practice license number 100%, the date of prescription 48.9%, the sign of R/ 70.9%, the doctor's initial 48.7% and the patient's address 97.4%.

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