Healthy Tadulako Journal (Jurnal Kesehatan Tadulako)
Vol. 12 No. 1, January 2026
P-ISSN : 2407-8441/e-ISSN : 2502-0749

Original Research Paper

Access this article online
Quick Response Code :

DOI : 10.22487/htj.v11i4.1925

Profile of *Medication Error* Incidents in the *Prescribing* and *Transcribing* Phases of Outpatients at the Pharmacy Installation of Tidore Islands City

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Article History:
Received: 2025-06-23
Revised: 2025-10-15
Accepted: 2026-01-31

Published by:
Tadulako University, Managed by Faculty of Medicine.

Website :
https://jurnal.fk.untad.ac.id/index.php/htj/index

Abstract

Background: Medication error is one of the most common types of medical errors and can significantly impact patient safety. Such errors may occur at various stages of the medication process,including prescribing, transcribing, dispensing, and administering drugs to patients.**Objective:** To identify the profile of medication error incidents during the prescribing and transcribing phases in outpatients at the Pharmacy Installation of the Regional General Hospital (RSD) of Tidore Islands City. **Method:** This study used a descriptive observational design with a cross-sectional approach, focusing on outpatient prescriptions during the period of October to December 2024.**Results:** A total of 600 *prescription*s (23.3%) were found to contain *medication errors*. In the *prescribing* phase, 200 prescriptions (7.77%) had errors, mainly due to the absence of the doctor's registration number (SIP) (7.77%) and the patient's body weight (2.33%). In the *transcribing* phase, 400 prescriptions (15.5%) contained errors, including incorrect dosage (8.94%), route of administration (0.04%), and drug units (14.57%). **Conclusion:** Medication errors occurred more frequently in the transcribing phase than in the prescribing phase. These findings are expected to serve as a basis for improving the completeness of prescription writing to prevent medication errors and enhance patient safety at the Pharmacy Installation of RSD Tidore Islands City.

Keywords: Medication Error; Prescribing; Transcribing; Outpatient.

Introduction

Medication errors are incidents that are actually preventable but can lead to inaccuracies in drug administration or even pose a danger to patients (NCCMERP, 2016). These errors can occur at four stages: errors in *prescribing medication (prescribing errors), errors* in copying prescriptions *(transcribing errors), errors* in preparing or compounding *medications (dispensing errors*), and *errors* in administering the *medication* to patients *(administration errors*)**[1].**

According to the National Patient Safety Incident Map Report, *medication errors* are the most frequently reported incidents, accounting for 24.8%. They rank first among the ten main incidents that occur in the medication use process, particularly during the *prescribing* and *transcribing* stages[2].

A study by Bayang (2019) at RSUP H. Adam Malik showed that in the prescribing stage, there were potential errors such as: missing usage instructions on 34% of prescriptions, absence of the route of administration on 49%, no information on the dosage form on 84%, missing medical record

numbers on 62%, and the patient's body weight not included on 88% of prescriptions[3].

In the t*ranscribing* phase, errors often occur due to illegible handwriting by doctors, which makes prescriptions difficult to read and can potentially lead to *medication errors.* A study by Nurnisa (2023) at RSUD Sanana found that during the *transcribing* stage, errors in reading drug names occurred in 4.61% of cases, while errors in reading drug dosages occurred in 1.90% of cases[4].

Medication error is a preventable event that can cause or lead to inappropriate medication use or harm to the patient while the medication is under the control of a healthcare professional, patient, or consumer. Medication errors may include prescription writing errors by doctors, prescription reading errors by pharmacists, medication preparation errors by pharmacists, and medication administration errors by pharmacist[5.]

Medication errors encompass all types of mistakes that occur throughout the medication process, including prescribing, packaging, labeling, administration, distribution, patient education, and the use of medication by the patient[6].

The American Society of Health-System Pharmacists identifies several common factors that contribute to the occurrence of medication errors, such as illegible handwritten prescriptions, labeling errors, excessive workload among physicians, nurses, or pharmacists, and limited drug supply from manufacturers. The organization also classifies medication errors into several categories, including prescribing errors, omission of prescribed medications, wrong-time errors, unauthorized drug use (outside of approved prescriptions), incorrect dosage, wrong dosage form, errors in drug preparation, improper administration technique, use of expired medications, failure to monitor toxicity or effects through laboratory data, and patient non-compliance with therapy[5].

In general, individual factors are the most dominant causes of *medication errors*. These include personal issues, limited knowledge about medications, and errors in drug dosage calculation[6].

Several factors contribute to the occurrence of medication errors during the prescribing stage, including an imbalance between workload and the number of healthcare personnel, lack of education or training in writing prescriptions according to completeness standards, interruptions during work processes such as phone calls, and an environment that is not conducive to effective communication among healthcare workers[7].

Research on *medication error*s is still rarely conducted in North Maluku, and specifically, no studies have been carried out at RSD Kota Tidore Kepulauan, making this a novel aspect of the current study.

Based on the background described above, the prescribing and transcribing phases are the stages with the highest number of medication error incidents. Therefore, the researcher is interested in examining the profile of medication error occurrences in these two phases among outpatients at RSD Kota Tidore Kepulauan.

Materials and Methods

This study is a descriptive observational study with a *cross-sectional* approach. Data collection was carried out retrospectively to obtain information on the incidence of medication errors during the prescribing and transcribing stages in outpatients at RSD Kota Tidore Kepulauan. The collected data were analyzed descriptively in the form of percentages. Outpatient prescription data obtained from the Pharmacy Department of RSD Kota Tidore Kepulauan were then processed using *Microsoft Excel.*

Results

This study aims to identify the incidence of *medication errors* during the *prescribing* and *transcribing* phases in outpatients at the Pharmacy Department of RSD Kota Tidore Kepulauan. Data were obtained from outpatient prescriptions during the period of October to December 2024, with a total of 2.574 prescriptions meeting the inclusion criteria. Among these, 600 prescriptions were found to have medication errors in the *prescribing* and *transcribing* phases. The study was conducted in accordance with established procedures, and the data collected were processed using *Microsoft Excel* and presented in the following table 1:

Based on Table 1, the total number of outpatient prescriptions at RSD Kota Tidore Kepulauan during the period from October to December 2024 was 2,574. Of this total, 600 prescriptions experienced medication errors, which were divided into two phases: 200 prescriptions (7.77%) in the prescribing phase and 400 prescriptions (15.5%) in the transcribing phase. Thus, 1,974 prescriptions (76.69%) did not experience any medication errors

Table 1. Percentage of *Medication Errors* in the *Prescribing* and *Transcribing* Phases for Outpatients at the Pharmacy Department of RSD Kota Tidore Kepulauan, October–December 2024.

Aspect	Number of Incidents	Percentage (%)
Prescribing Phase	200	7,77
Transcribing Phase	400	15,5
Prescriptions Without *Medication Errors*	1974	76,69
Total	**2.574**	**100,00**

Table 2. Percentage of *Medication Error* Incidents in the *Prescribing* Phase for Outpatients at the Pharmacy Department of RSD Kota Tidore Kepulauan.

No	Assessed Parameter	Number of Incidents	Percentage (%)
1.	No prescribing doctor	0	0
2.	Doctor's practice lincense (SIP) not included	200	7,77
3.	Patient addres not included	0	0
4.	Doctor's signature (barcode) not included	0	0
5.	Prescription date not included	0	0
6.	Medical record number not include	0	0
7.	Patient name not included	0	0
8.	Patient age not included	0	0
9.	Patient weight not included	60	2,33
10.	Patient gender not included	0	0
11.	Usage instructions not included	0	0

Table 3. Percentage of *Medication Error* Incidents in the *Transcribing P*hase for Outpatients at the Pharmacy Department of RSD Kota Tidore Kepulauan

No.	Assessed Parameter	Number of Incidents	Percentage (%)
1.	Patient name not included	0	0
2.	Drug name not included	0	0
3.	Dosage not included	230	8,94
4.	Route of administration not included	1	0,04
5.	Dosage unit not specified	375	14.57
6.	Quantity of drug not included"	0	0
7.	Dosage form not included	0	0

Based on Table 2. in the prescribing phase, the most frequently identified type of *medication error* was the absence of the doctor's Practice License (SIP), accounting for 7.77%, followed by the absence of patient weight information at 2.33%. Meanwhile, out of the 11 evaluated parameters, 9 showed no *medication errors*, each with a percentage of 0%. These nine parameters include: absence of the prescribing doctor's name, patient address, doctor's signature, prescription date, medical record number, patient name, patient age, patient gender, and usage instructions.

Based on Table 3. in the *transcribing* phase, which was evaluated using 7 parameters, several types of medication errors were identified. These included the omission of dosage information (8.94%), absence of route of administration (0.04%), and failure to specify the dosage unit (14.57%). Meanwhile, four parameters showed no errors (0%), namely: patient name, drug name, quantity of drug administered, and dosage form.

Discussion

Medication error is an incident that can lead to inaccuracies in drug administration or even endanger patient safety. Such errors can occur at any stage of the medication process, starting from prescribing, transcribing, dispensing, to administration. Based on the results of this study, out of 2,574 outpatient prescriptions from October to December 2024, a total of 600 prescriptions were found to contain medication errors. Among these, 200 prescriptions (7.77%) had errors at the prescribing stage, while 400 prescriptions (15.5%) had errors at the transcribing stage.

These data indicate that medication errors remain a significant issue and require serious attention, particularly in the early phases of medication delivery namely prescribing and transcribing. Errors at these stages have a considerable impact, especially on patient safety, as they tend to lead to further errors in subsequent stages such as dispensing and drug administration.

Therefore, it is crucial for all healthcare professionals to ensure the completeness and accuracy of prescriptions. In line with the data above, the findings also show that medication errors during the transcribing stage at RSD Kota Tidore Kepulauan occurred more frequently than in the prescribing stage. This is due to the higher number of errors found in electronic prescriptions during the transcribing phase.

According to a study conducted by Aldughayfiq (2021), the use of electronic *prescribing* systems has not been fully effective in preventing *medication errors.* Moreover, there are still risks that arise from the adaptation process of prescribers to the system, as they need to adjust to the various features included in electronic *prescribing*[8].

Based on the Regulation of the Minister of Health (Permenkes) Number 58 of 2014 concerning Standards of Pharmaceutical Services, every prescription must include the name of the doctor, the Practice License Number (SIP), and the doctor's initials. The inclusion of the SIP is intended to ensure that the prescribing doctor holds a valid practice license and is legally authorized to provide treatment to patients[9].

Based on Table 2. the most common error in the *prescribing* phase is the absence of the doctor's Practice License Number (SIP), accounting for 7.77% of cases. Out of the 11 parameters assessed in this phase, only two showed occurrences of medication errors: the absence of the SIP and the lack of patient weight information.

The second most prominent error is the omission of the patient's body weight, with a total of 60 cases or 2.33%. Body weight information is a crucial data point, especially for patients with specific conditions such as

pediatric and geriatric populations. In these groups, drug dosages must be accurately adjusted based on body weight to avoid dosing errors. Incomplete weight data can lead to the risk of overdose or underdose, which may ultimately result in toxic reactions or therapeutic failure[10].

In the *prescribing* phase, 11 parameters were evaluated, but 9 of them showed no errors, with a percentage of 0%. These nine parameters include: the prescribing doctor's name, patient address, doctor's initials, date of prescription, medical record number, patient name, patient age, gender, and usage instructions. This finding indicates that most administrative and patient identity information has been properly fulfilled. However, greater caution is still needed in providing clinical and legal information, such as the doctor's Practice License Number (SIP) and the patient's body weight, to ensure the safety and effectiveness of treatment.

The high rate of *medication errors* in the *prescribing* phase is caused by several key factors, such as heavy workloads among doctors, a lack of oversight and evaluation mechanisms, and limited training on proper prescription writing in accordance with established standards. In certain situations, incomplete data such as the patient's body weight or the doctor's name may occur due to time constraints during prescription preparation, especially in emergency care settings. Therefore, even minor errors in the prescribing stage can potentially impact subsequent phases, including transcribing, dispensing, and medication administration[11].

According to a study conducted by Fatimah *et al*. (2021) on medication errors during the prescribing phase at a hospital in Cilacap, Indonesia, a relatively high rate of medication errors was found. Out of 423 prescriptions examined, 30.46% contained errors in the prescribing stage [12]. In a study by Kumorowani *et al*. (2024), it was found that medication errors in the prescribing phase at Pratama Warmare Hospital in Manokwari were predominantly due to the absence of the doctor's Practice License Number (SIP), with approximately 100% of *prescriptions* lacking this information [13]. In the prescribing phase, the absence of patient body weight is often the most frequent error, as observed in a study by Jaya *et al*. (2024) at RSUD Ganesha Gianyar in the outpatient department. Out of 50 *prescriptions* reviewed, 100% failed to include the patient's body weight [14]. The high rate of this error is likely due to a lack of attention to the importance of including the patient's body weight. Nevertheless, several components of the prescribing phase at RSD Kota Tidore Kepulauan already include patient information written in accordance with prescription writing guidelines. This indicates an effort to reduce the risk of medication errors, although there are still some aspects that remain lacking and require further attention.

Based on the data from Table 3. in the transcribing phase, the most frequent *medication errors* were the absence of dosage instructions (8.94%), the absence of the route of administration (0.04%), and the omission of dosage units (14.57%). Additionally, out of the 7 parameters assessed, 4 showed no medication errors, each with a percentage of 0% these include the absence of the patient's name, drug name, quantity of medication, and dosage form.

Writing the quantity and unit of drug dosage must be done clearly to prevent errors in medication administration. This is crucial because some drugs are available in multiple dosage strengths, and the dosage itself represents the amount intended to produce a therapeutic effect on impaired bodily functions. Therefore, dosage information must be written accurately and completely. Furthermore, if the route of administration is not specified in the prescription, it can pose serious risks to the

patient, including long-term side effects and even the risk of death[15,16].

Medication errors in the transcribing phase represent a significant issue within the healthcare system, as they can directly impact patient safety. This phase involves the process of re-recording the doctor's prescription into the system either manually or electronically to ensure that patients receive the correct medication according to their needs[17,18].

Transcribing errors occur during the reading of prescriptions. These may include misreading prescriptions due to illegible handwriting, unclear information, or the improper use of abbreviations[19].

Another error is the absence of the route of administration, found in 1 prescription (0.04%). The omission of the route of administration or the use of abbreviations to indicate it can lead to mistakes during medication administration. This may reduce the drug's effectiveness in the body, increase the risk of allergic reactions, or even result in no therapeutic effect at all. Therefore, it is essential to clarify such prescriptions with the prescribing doctor, as this significantly affects the accuracy of medication delivery to the patient. An error in drug administration can have fatal consequences, as the route of administration greatly influences the drug's metabolism in the body[20,21].

A preventive effort that can be undertaken to improve this situation is by enhancing communication and coordination among healthcare professionals. One example of such communication occurs when a pharmacist needs to confirm the accuracy of a drug dosage in a prescription with the doctor. If the pharmacist identifies any omissions or errors in the prescription, they are obligated to promptly contact the prescribing doctor to clarify or complete the missing information.This clarification process must be thoroughly documented in the relevant recording system so that it can serve as evidence and reference in the future. Once the necessary information is obtained, the pharmacist can compound the medication according to the confirmed prescription and provide patient education on the proper use of the medication. Additionally, all healthcare professionals must uphold the principle of patient safety by ensuring that the medication provided meets established standards and does not pose any risk to the patient[22].

Conclusion

Based on the results of the study conducted at the Pharmacy Department of RSD Kota Tidore Kepulauan, which analyzed 2,574 outpatient prescriptions, a total of 600 prescriptions were found to have *medication errors*. Of that number, 200 prescriptions (7.77%) had errors in the *prescribing* phase, and 400 prescriptions (15.5%) in the *transcribing* phase. Errors in the *prescribing* phase included the absence of the doctor's practice license (SIP) (7.77%) and the patient's body weight (2.33%). Meanwhile, in the *transcribing* phase, errors found included omission of dosage information (8.94%), route of administration (0.04%), and dosage unit (14.57%).

The findings of this study are expected to serve as a reference for RSD Kota Tidore Kepulauan in improving and evaluating the completeness of prescription writing, thereby helping to prevent medication errors in the outpatient pharmacy department. In addition, further research is needed on medication errors in the dispensing and administration phases, particularly for outpatient prescriptions, which have not yet been widely studied.

Acknowledgment

Acknowledgments are extended to all parties who contributed to this research, from the initial preparation, during data collection, to the completion of the research report.

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