Evaluation of Medication Errors in The Prescribing Phase Outpatients with Acute Respiratory Tract Infections at The X Health Center in East Lampung in 2025

Anna Aufa Nurrohmah[1*], Nurma Suri [1], Ervina Damayanti [1], Yulianasari Pulungan[1]
[1]Department of Pharmacy, Faculty of Medicine, Universitas Lampung, Bandar Lampung, Indonesia

*Corresponding Author: nurrohmahaufa03@gmail.com

ABSTRACT

Medication errors are considered as avoidable or preventable events which can lead to inappropriate medication use, potentially detrimental to the patient's condition, and it can occur in patients with Acute Respiratory Infection The aim of this study is to determine the incidence of medication errors during the prescribing phase in patients ARI and the relationship between medication errors and age and number of courses of therapy. It was an observational analytical study with a cross-sectional design. Moreover, sampling was conducted by using accidental random sampling from April 2025 until Mei 2025 at the X Community Public Health Center. In addition, data were analyzed by using the Chi-square test and it was presented in tabular form. The characteristics of ARI patients are 39% male and 59.4% female, with a predominant age group of 34.3%. 83.3% of patients receive ≤ 4 courses of therapy. The incidence of medication errors is 82.3% which occurs in both administrative and pharmaceutical aspects. There is a relationship between the number of courses of therapy and medication errors (p-value <0.05) which shows that the number of therapy received by the patient is a factor in the incidence of medication errors. There is no relationship between age of the patients and medication errors (p-value >0.05). There is a relationship between the number of therapies and the incidence of medication errors. However, there is no relationship between age and the incidence of medication errors.

Keywords: Acute respiratory infection, medication errors, prescribing

INTRODUCTION

Pharmaceutical services are a form of service that is directly responsible for patients in relation to pharmaceutical preparations in order to achieve the desired results so that the quality of life of patients improves. Pharmaceutical services are intended to be able to identify, prevent and resolve problems related to medicines . The philosophy of pharmaceutical services adopts this paradigm in an effort to improve the quality of pharmaceutical services. Medication errors can occur due to inappropriate pharmaceutical services (Permenkes, 2016).

Medication errors are preventable incidents that can lead to inappropriate medication use, which may be harmful to the patient's condition (NCCMERP, 2024). Medication errors can occur in four stages, including prescribing errors, transcribing errors, dispensing errors, and administration errors (Putri, et al., 2023). According to The Institute of Medicine (IOM), in the United States, preventable adverse events result in approximately 44,000 to 98,000 deaths (Tariq, et al., 2024).

Acute respiratory infections (ARI) are one of the health problems in Indonesia that have the potential to cause medication errors. ARI is an acute inflammatory disease of the upper or lower respiratory tract that can last for 14 days (Masriadi, 2017). Based on the 2022 health profile report for Lampung Province, ARI ranked first among the top ten diseases in Lampung with a prevalence of 5,526 cases (Dinkes Prov. Lampung, 2022). Research on ARI patients conducted at Gunung Jati Hospital in Cirebon showed the potential for treatment errors. Out of a total of 130 prescriptions, potential treatment errors were found in the prescribing phase at a rate of 99.2%. Errors occurring in the prescribing phase included the absence of a doctor's signature, failure to record the patient's weight, failure to specify the strength of the medication, and incorrect dosing (Selawati et al., 2022).

METHODS

The study was a cross sectional study in which the researchers evaluated medication errors, particularly in the prescribing phase, and identified

factors associated with medication errors at the pharmacy of Health Center X, East Lampung. The sample used consisted of prescriptions for patients with acute respiratory infections (ARI) that were submitted to the health centre and met the inclusion and exclusion criteria. The sampling technique used was accidental random sampling.

RESULTS AND DISCUSSION

Based on the results of the study of medication errors in ISPA patient prescriptions in the prescribing phase at the X Community Health Centre Pharmacy, out of a total of 100 prescriptions studied, 96 prescriptions met the inclusion criteria and 4 prescriptions did not meet the inclusion criteria because the prescription is not from an outpatient. Of the 96 prescriptions, 79 prescriptions (82.3%) were found to have medication errors. Data on prescribing errors can be seen in Table 1.

Table 1. Prescribing Error

Prescribing Error	Frequency	Percentage
Administration		
No/unclear patient name	0	0
No/unclear patient gender	0	0
No/unclear patient weight	0	0
No/unclear patient adsress	6	6,3
No/unclear doctor's name	0	0
No/unclear doctor's SIP	42	42,8
No/unclear date of prescription	0	0
Pharmaceutical		
No/unclear form and strengh of pharmaceutical preparation	0	0
No/unclear dosage and quantity of medication	73	76.0
No/unclear stability and avaibility of medication	0	0
No/unclear rules and methods of drug use	4	4,2
Clinical		
Inappropiate indication and timing of medication use	0	0
Duplication of treatment	0	0
Drug allergy	0	0
Contraindication	0	0

Errors in treatment were found in the administrative aspect, namely unclear patient addresses in 6 prescriptions (6.3%) and no doctor's SIP in 42 prescriptions (43.8%). In the pharmaceutical aspect, 73 prescriptions (76%) did not include the dosage and quantity of medication, and 4 prescriptions (4.2%) did not include the rules and methods of use. No medication errors were found in the clinical phase.

In this study, the absence of doctor's SIPs was due to the fact that the SIPs of the doctors on duty had not been entered into the e-prescribing system. A doctor's licence to practise is a legal document that proves that a doctor has met the requirements to practise medicine. This document serves as a form of legal protection for the public, as it ensures that the doctor has met the professional qualifications set by the Indonesian Medical Association.

The electronic prescription system does not include the doctor's signature or address, but the prescription filling process is still carried out by the doctor on duty. Based on Minister of Health Regulation No. 74 of 2016 concerning Pharmaceutical Service Standards in Community Health Centres, the administrative aspects of prescriptions include the doctor's initials. The doctor's initials are considered proof of the authenticity of the prescription and serve as its legality and validity (Mukaddas, et al., 2021). The patient's address is used as their identity in the event of an error in administering medication or if the medication is mixed up with another patient's. The patient's address is also required if there are patients with the same name to avoid errors in medication service.

Errors in dosage and quantity are predominantly due to the absence of dosage information for Guaifenesin, as it is not listed in the e-prescribing system. In the medication instructions, some prescriptions do not include instructions regarding the timing of medication use, such as whether the medication should be

taken before or after meals. The dosage and quantity of medication in prescriptions can lead to medication errors because if they are not specified, it can affect the prescription translation process. The dosage of the medication is necessary to avoid errors in administering the medication to patients, which can lead to ineffective therapy(Usman, et al, 2023).

The absence of dosage and instructions for use can endanger patients because it affects their therapeutic needs. Under-dosing can lead to ineffective treatment, increase the risk of treatment failure, and prolong recovery time or uncontrolled disease. Overdosing carries the risk of serious side effects, poisoning, or even death if toxic drugs are administered in excessive amounts (Nagata, et al., 2021) . Errors in this regard can result in the failure to achieve treatment goals due to incorrect dosages and administration methods (Mahendra, et al., 2024) . In this study, no treatment errors were found in the clinical aspect.

Table 2. Relationship Between Age and Precribing Errors

Age	Prescribing error				*p-value*
	Occured		Not occured		
	(n)	%	(n)	%	
Infant and toddlers	23	24	7	7,3	0,554
Children	8	9,1	3	3,21	
Teenagers	8	8,3	2	2,1	
Adults	29	30,2	4	4,2	
Elderly	11	11,5	1	1	

Table 2 shows the relationship between age and the incidence of prescribing errors, with the result that there is no relationship between age and the incidence of prescribing errors. Medication errors can occur in all age groups. Individual factors play a greater role in medication errors, such as the number of medications prescribed (polypharmacy) and the type of medications used. Other factors that can influence medication errors include the absence of an electronic prescribing system, which can lead to errors in translating prescriptions, and incomplete patient information (Fitria & Dhamanti, 2024).

Table 3. relationship Between Therapies and Prescribing Erros

Number of Drugs	Prescribing errors				*p-value*
	Occured		Not occured		
	(n)	%	(n)	%	
Therapy ≤ 4	69	71,9	6	6,3	0,034*
Therapyi ≥ 5	11	11,5	10	10,4	

The relationship between the number of therapies and prescribing errors in Table 3. The simultaneous administration of different drugs increases the risk of medication errors. Polypharmacy can cause medication errors because of the large number of drugs that must be monitored simultaneously, thereby increasing the complexity of drug administration. Polypharmacy increases the likelihood of medication errors because it increases the possibility of errors in writing, distribution or use of drugs. The large number of drugs administered can lead to dosage errors or unwanted drug interactions (Rosli & Teo, 2020).

In patients with acute respiratory infections, polypharmacy occurs in the use of antibiotics with symptomatic medications such as decongestants, antipyretics, antihistamines, and corticosteroids, which can increase the potential for medication errors such as incorrect dosages, unclear prescriptions, and the use of medications without clear indications(Regar, et al., 2023).

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CONCLUSIONS

The incidence of medication errors in outpatient prescriptions for ARI at the X Community Health Centre was 82.3%, with errors occurring in the absence of the patient's address (6.3%), the doctor's SIP (42.8%), the dosage and number of drugs (76%), and unclear instructions on how to use the medication (4.2%). Age was not associated with medication errors in outpatient ISPA prescriptions, with a p-value of 0.554 (0.554 > 0.05). The number of therapies was associated with medication errors in ISPA prescriptions, with a p-value of 0.034 (0.034 < 0.05).

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