

Analysis Of Medication Errors In The Prescribing Phase For Outpatients At Clinic X Yuliana Dini Purwanti¹ | Purwaningsih^{2*} | Annora Rizky Amalia³

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ABSTRACT

Introduction: Prescribing errors are a form of medication error that is still frequently found in various healthcare facilities and has the potential to impact patient safety. Errors in the prescribing phase can include incomplete administrative, legal, or pharmaceutical information in the prescription.

Objectives: This study aims to analyze the occurrence of prescribing errors in outpatient prescriptions at Clinic X.

Method: This study used a quantitative descriptive method with a retrospective observational study approach. The sample consisted of 353 outpatient prescriptions from November–December 2025, selected using purposive sampling. Data were analyzed descriptively and presented as frequencies and percentages.

Results: The results showed that 351 prescriptions (99.43%) had prescribing errors. The highest discrepancies were found in patient gender (88%), physician's SIP (72%), physician's initials (63%), patient's age or date of birth (41%), dosage form (38%), dosage or strength (38%), and prescription legibility (37%). Based on physician category, prescribing errors were found in all dentist prescriptions (100%) and almost all general practitioner prescriptions (99.26%).

Conclusion: Prescribing errors in outpatient prescriptions at Clinic X remain very high and are dominated by incomplete administrative, clinical, and pharmaceutical components. Routine evaluation of prescription writing quality, increased adherence to prescribing standards, and strengthening the prescription screening process are needed to improve patient safety and the quality of pharmaceutical services.

Keyword: Medication Error, Prescribing, Prescription, Outpatient

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Introduction

A clinic is a healthcare facility that provides individual health care services by providing basic and/or specialist medical services. Clinic services are aimed at meeting the comprehensive health needs of patients. Clinics play a role in providing easily accessible healthcare services to the public. Clinics provide services in accordance with established standards, supported by competent healthcare personnel and adequate facilities and infrastructure. Clinics are expected to improve the health status of the community. (Ahmad Junaidi *et al.*, 2025).

Technological advancements are driving changes in various aspects of life, including the pharmaceutical sector. This provides a variety of conveniences for patients, from accessing medication consultations, searching for information, to ordering medications online. In healthcare facilities, such as clinics, these technological advancements are transforming prescription services for the better. These technological changes are expected to reduce the incidence of medication errors. (Pratiwi *et al.*, 2025).

Medication errors are preventable mistakes in medication use that still pose a risk in healthcare settings. These errors can result in the administration of medications that are inappropriate for the patient's needs or condition. This impact not only impacts the effectiveness of therapy but can also cause adverse side effects. Prescribing errors remain a common problem in various healthcare facilities. The consequences can range from minor patient inconvenience to more severe outcomes, such as death. (Usman, 2023).

Based on a study identifying prescribing errors in BPJS doctor's prescription practices at Afina Pharmacy, prescribing errors were still found. The study used a quantitative descriptive method with a retrospective approach to 243 prescription sheets selected from 620 prescriptions using simple random sampling. The results showed that the potential for prescribing errors reached 93%, with the highest incidence found in the pro section, followed by subscriptio, praescriptio, inscriptio, and signature. While no potential medication errors were found in the invocatio section. This study concluded that the potential for prescribing errors remains high and

is dominated by incomplete patient information and doctor identity in prescriptions, so it is necessary to improve compliance with prescription writing standards to support the quality of pharmaceutical services. (Ana et al., 2023)

Various studies have reported on the incidence of prescribing errors, but most have focused on the incidence and types of errors that occur in general. Information on the prescription components that most frequently contribute to prescribing errors, particularly in primary healthcare, remains limited. Identifying prescription components that are prone to errors is crucial to support more targeted and effective prevention efforts.

Based on this background, it is necessary to conduct research on " Analysis Of Medication Errors In The Prescribing Phase For Outpatients At Clinic X ". Prescribing errors remain a problem in pharmaceutical services because they have the potential to cause clinical and economic impacts, as well as risks to patient safety. The prescribing phase is a stage that is prone to errors because it is directly related to the prescription writing process and therapy determination. Errors at this stage can include incomplete prescription administration, inaccurate drug information, or inappropriate dosages that have the potential to affect the accuracy of therapy. Therefore, this study aims to analyze the occurrence of prescribing errors as a basis for evaluation in efforts to improve the quality of pharmaceutical services and patient safety at the Clinic.

Method

Data collection was conducted using a retrospective observational study, meaning data were collected over a specific period of time without further observation of the research subjects. The population in this study was all outpatient prescriptions at Clinic X during the period November–December 2025. The research sample was taken using a purposive sampling technique, which is the selection of samples based on inclusion and exclusion criteria set by the researcher (Amin, 2023).

The inclusion criteria used in this study were all outpatient prescriptions from November to December 2025, including original or official prescriptions written by doctors at the clinic, and manual prescriptions. Exclusion criteria were prescriptions outside the months of November to December 2025 and prescriptions written by doctors outside the clinic (Aprilia et al., 2022).

The data collection process began with selecting recipes that met the inclusion criteria. Next, each recipe was observed and evaluated based on components that could potentially cause prescribing errors. The observations were then systematically recorded on a prepared observation sheet. Throughout the study, documentation of activities was carried out through daily attendance sheets signed by staff as evidence of the study's implementation. The data obtained were then analyzed descriptively and quantitatively to illustrate the distribution and characteristics of the prescribing errors found. All observation data was entered into Microsoft Excel, then processed and presented in the form of frequency distribution tables and percentages using the formula:

$$p = \frac{f}{n} \times 100\%$$

Description:

f = number of frequencies

n = total number of results

P = percentage number (Usman, 2023)

Results

A total of 3000 prescription sheets in the pharmacy installation in the period November–December 2025 were calculated using the Slovin formula, to find out the number of existing prescriptions, a sample of 353 prescription sheets was obtained using inclusion criteria and exclusion criteria, then a descriptive analysis was carried out to determine the percentage of prescribing errors.

Table 1. Conformity and Non-Conformity of Prescription Completeness at the Prescribing Stage

No	Assessment Type	Number of Compliances	% Compliances	Number of Non-Compliances	% Non-Compliances
1	Patient's Name	353	100	0	0
2	Age/Date of Birth	209	59	144	41
3	Gender	43	12	310	88
4	Prescription Date	246	70	107	30
5	Drug Name	353	100	0	0
6	Dosage Form	220	62	133	38
7	Dosage/Strength of Preparation	220	62	133	38
8	Directions for Use	353	100	0	0
9	Number of Medications	353	100	0	0
10	Doctor's SIP	100	28	253	72
11	Doctor's Name	307	87	46	13
12	Practice Address	353	100	0	0
13	Legible Prescription	222	63	131	37
14	Doctor's initials	132	37	221	63

Table 2. Distribution of Medication Error Categories at the Prescribing Stage

Prescription Type	Number	Persentage
Prescribing error	351	99,43
No Prescribing error	2	0,57

Table 3. Distribution of Medication Errors by Doctor Category at the Prescribing Stage at Clinic X

Doctor Category	Prescribing Error	Total Prescriptions	% Error
Dentists	81	81	100
General Practitioners	270	272	99,26

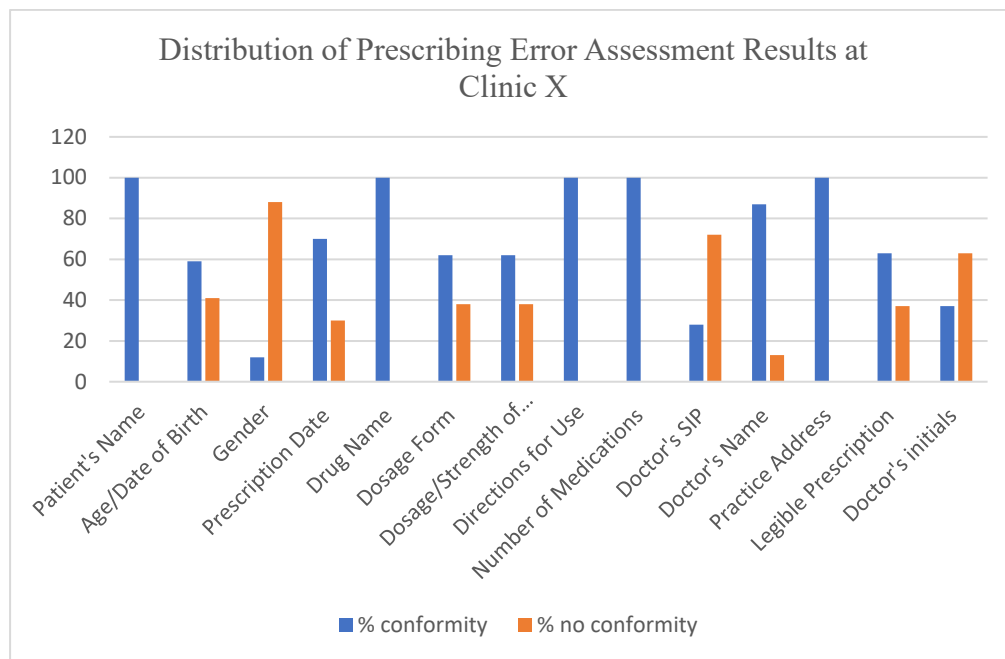


Figure 1. Distribution of Prescribing Error Assessment Results at Clinic X

Discussion

Based on Table 1, discrepancies in patient identity, especially gender (88%) and age or date of birth (41%), indicate that patient information has not been documented optimally. This condition likely occurs because prescribers focus more on including drug information than patient identity data. In fact, age and gender are important information in determining the appropriateness of therapy because they can influence the choice of drug and the dose given. Simegn *et al.*, (2022) explained that incomplete patient identification is a common prescribing error and can hinder the pharmacist's prescription verification process. The results of this study are higher than those of research conducted by Ana *et al.*, (2023) which reported that incomplete patient identification remains a major cause of prescribing errors. Therefore, the high level of discrepancies in patient identification components in this study has the potential to impact the quality of the prescription screening process before medication is administered to patients. This situation indicates that the administrative aspects of prescribing have not received as much attention as the therapeutic aspects, even though both components support each other in ensuring patient safety. Research results Meiliana *et al.*, (2025) shows that complete prescription administration is a factor that plays a role in reducing the incidence of medication errors at the prescribing and transcribing stages because it supports a more effective prescription screening process. Therefore, increasing medical personnel's compliance with patient identification standards requires attention as a preventative measure to improve the quality of pharmaceutical services while minimizing the risk of medication errors.

In addition to patient identity, prescription legality was also found to be inconsistent with the doctor's SIP (72%), doctor's initials (63%), and doctor's name (13%). The high level of SIP inconsistency is likely due to prescribing habits that focus more on therapeutic aspects than on administrative completeness. Furthermore, the use of practice stamps or internal clinic recording systems may prevent doctors from always including a complete SIP with prescriptions. This high rate indicates that the administrative and legal aspects of prescription writing still do not fully meet pharmaceutical service standards. The SIP and doctor's initials serve an important function as proof of the prescription's legality and the identity of the medical personnel responsible for the patient's therapy. Research by Vika *et al.*, (2024), Completeness of the doctor's identity plays a crucial role in preventing prescribing errors because it facilitates the clarification process if discrepancies are found in the prescription. In addition, Feather *et al.*, (2023) states that complete documentation contributes to improving the quality of care and patient safety. Thus, the high

level of non-compliance in the prescription legality component indicates the need for increased compliance with applicable prescription writing standards.

This study also found 38% of pharmaceutical discrepancies in dosage form and dosage or strength. This incomplete information has the potential to lead to misinterpretation during the dispensing process, especially when a drug is available in more than one dosage form or strength. Naseralallah *et al.*, (2023) explaining that incomplete drug information is a contributing factor to prescribing errors in outpatient care, it is important to ensure the completeness of pharmaceutical information to support appropriate therapy and patient safety. This finding aligns with Damayanti *et al.*, (2025) who stated that incomplete pharmaceutical aspects in the prescription screening process can increase the risk of medication errors, so each prescription needs to be evaluated for compliance based on pharmaceutical service standards before the medication is prepared and dispensed to the patient. Therefore, optimizing prescription screening and compliance with including complete pharmaceutical information needs to be continuously improved to minimize the risk of medication errors.

Not only is prescription information incomplete, but prescription legibility remains a problem, with a 37% discrepancy rate. This is thought to be due to the predominant use of handwritten prescriptions, potentially resulting in difficult-to-read writing. Unclear prescription writing can increase the risk of misinterpretation of drug names, dosages, and directions during the dispensing process. The results of this study align with those of Osmani *et al.*, (2022), who stated that illegible prescriptions are a major cause of prescribing errors in healthcare. This indicates that prescription legibility is a crucial component of prescription writing quality that cannot be ignored. Even when therapeutic information is included, illegible writing can still lead to misinterpretation during the screening and dispensing stages, increasing the risk of prescribing errors.

Research by Ganiyu *et al.*, (2023) reported that the majority of prescriptions evaluated had low legibility and were accompanied by various prescription errors, potentially hindering the verification process and increasing the risk of errors in subsequent service stages. Therefore, clear and legible prescription writing needs to be a priority for every prescriber to ensure optimal prescription screening by pharmacists and support patient safety.

However, this study also showed that several prescription components had a 100% compliance rate, namely the patient's name, drug name, instructions for use, quantity of medication, and the doctor's practice address. The completeness of these components indicates that information directly related to the drug administration process has been written in full by the prescriber, thus supporting the accuracy of pharmaceutical services. Anwar *et al.*, (2022) explained that completeness of drug information and instructions for use is a crucial aspect in the prescription screening process to prevent prescribing errors. These findings indicate that prescribing errors in the study were more often caused by incomplete administrative, legal, and pharmaceutical components than errors in the primary information related to drug therapy. Therefore, efforts to improve the quality of prescription writing should focus on fulfilling the administrative and legal components without neglecting the completeness of pharmaceutical information as part of improving the quality of pharmaceutical services.

Table 2 shows that 351 prescriptions (99.43%) had prescribing errors, while only 2 prescriptions (0.57%) did not. This high number indicates that almost all prescriptions reviewed had at least one component that did not meet prescription writing standards. Ana *et al.*, (2023) reported that prescribing errors were still dominated by incomplete prescription components, particularly patient and physician identification. These similar results indicate that prescription completeness remains a challenge in pharmaceutical services in various healthcare facilities. This finding is also supported by research by Bina *et al.*, (2024), which showed that incomplete prescriptions were still found in administrative and pharmaceutical aspects, making the prescription review process a crucial step in minimizing the risk of medication errors. Incomplete information on prescriptions can hinder the verification process by pharmacists and potentially lead to errors in dispensing and medication use by patients. Therefore, it is necessary to increase

prescriber compliance with prescription writing standards and optimize prescription screening by pharmacists to ensure patient safety and improve the quality of pharmaceutical services.

The high number of prescribing errors also indicates that the prescribing process still requires ongoing monitoring and evaluation. Completeness of prescriptions plays a crucial role in supporting the prescription screening process by pharmacists before medications are prepared and dispensed to patients. Research by Mayningsih, (2023) shows that prescribing errors during the prescribing phase are still frequently found in components that should be included in the prescription, such as the dosage form, patient gender, and drug dosage information. This condition indicates that compliance with prescription writing standards is one factor that needs to be considered to minimize the incidence of prescribing errors. This finding aligns with research by Kumorowani *et al.*, (2024) which shows that prescribing errors are still dominated by incomplete prescription components, such as the omission of the medical record number, patient age, patient weight, doctor's SIP, doctor's initials, and drug dosage units. This incomplete information has the potential to hinder the prescription review process by pharmacists, increasing the risk of medication errors if not identified before the dispensing process. Therefore, prescriber compliance with prescription writing standards and optimization of the prescription screening process need to be continuously improved to support patient safety and the quality of pharmaceutical services.

Overall, the research results indicate that prescribing errors at Clinic X are still dominated by incomplete administrative, legal, and pharmaceutical information in prescriptions. Research by Novi Handoko1 *et al.*, (2023) explains that complete drug service documentation is a crucial factor in supporting patient safety and preventing prescribing errors. This condition indicates that preventing prescribing errors requires prescriber compliance in fulfilling all components of prescription writing. Therefore, regular evaluation of prescription writing quality is necessary to support the quality of pharmaceutical services and patient safety.

Administrative incompleteness of prescriptions indicates that compliance with prescribing standards still needs to be improved and requires strengthening the quality control system in the prescribing process. Efforts to prevent prescribing errors cannot rely solely on prescriber accuracy but require a screening mechanism capable of identifying potential errors before prescriptions are processed further. Tan *et al.*, (2022) reported that an electronic pre-prescription system combined with systematic prescription review can detect prescribing errors early. Therefore, strengthening prescription screening is a crucial aspect in reducing the risk of medication errors and supporting the quality of pharmaceutical services.

These findings are reinforced by research by Pranata *et al.*, (2022), which shows that incomplete administrative components, such as the doctor's SIP number, telephone number, patient address, and anthropometric data, are still frequently found in prescribing practices and constitute prescribing errors. This condition is thought to be related to the still low compliance of prescribers in meeting all prescribing standards, especially in administrative components that are often considered not to directly impact patient therapy. Furthermore, the high service burden and routine prescribing habits can also cause some administrative information to be missed even though the therapeutic information has been fully stated. As a result, the prescription verification process by pharmacists is less than optimal and has the potential to increase the risk of prescribing errors.

Based on Table 3, prescribing errors were found in all prescriptions written by dentists (100%) and almost all prescriptions written by general practitioners (99.26%). These results indicate that prescribing errors occurred evenly across all categories of physicians at Clinic X. The high proportion of errors in both groups of physicians indicates that the quality of prescribing at Clinic X is not entirely determined by the clinical competence of the prescriber, but is also influenced by the consistency of the application of prescription documentation standards and quality control of the prescribing process. According to Teoh *et al.*, (2023) Safe prescribing practices require prescribers to gather accurate patient information, make appropriate therapeutic decisions, and clearly communicate medication instructions to patients and other healthcare professionals. Therefore, the high rate of prescribing errors found in this study

indicates that there are still aspects of the prescribing process that require improvement to ensure safe medication use.

These findings indicate that the high incidence of prescribing errors among dentists and general practitioners is likely more influenced by system factors than individual prescriber characteristics. Research by Raban *et al.*, (2024) explains that prescribing errors often occur due to weaknesses in the prescribing system, such as suboptimal prescription documentation and verification processes. Therefore, the high prevalence of prescribing errors among both categories of physicians in this study demonstrates the need to strengthen the prescribing system through the implementation of consistent prescription writing standards, regular prescription audits, and optimization of the prescription review process by pharmacists to minimize the risk of medication errors.

Although general practitioners had a slightly lower percentage of prescribing errors than dentists, the difference of 0.74% indicates that the error rates in both groups were relatively equal. This finding indicates that the very small difference between the two groups of physicians indicates that the occurrence of prescribing errors was found consistently across all categories of prescribers observed that differentiated the occurrence of prescribing errors at Clinic X. Instead, the results suggest the existence of factors that affect all prescribers simultaneously, such as prescribing habits, the documentation system used, or a lack of evaluation of the quality of the resulting prescriptions. Research by Alghamdi *et al.*, (2023) explains that prescribing errors are often influenced by system factors, including incomplete documentation and the lack of prescription verification mechanisms before the drug is prepared, which can cause errors to be repeated in daily service practice. Thus, the high percentage of errors in both categories of physicians in this study indicates the need for evaluation of the prescribing process in place in health care facilities. These findings are supported by Abdel-razaq *et al.*, (2024) who reported that prescribing errors are still frequently found in outpatient services across various prescriber groups, indicating that prescribing errors are a systemic problem and not limited to a specific profession. The study also emphasized the need to strengthen the prescription review process and implement ongoing prevention strategies to reduce the incidence of prescribing errors and improve patient safety. Therefore, the high percentage of errors among both physician categories in this study indicates the need to evaluate the prescribing process in healthcare facilities by strengthening the prescribing system, implementing consistent prescription writing standards, and optimizing prescription screening by pharmacists.

In line with these conditions, almost all prescriptions analyzed contained at least one form of prescribing error, indicating that prescribing errors remain a challenge in ensuring the safety of drug use at Clinic X. Naseralallah *et al.*, (2023) stated that prescribing errors in outpatient services are influenced by various factors that require systematic intervention to reduce the risk of errors in drug use. In line with that, Borycki, (2024) explained that prescribing errors can still occur even though electronic prescribing has been implemented, mainly due to incomplete prescription information and the need for clarification by pharmacists. This indicates that the quality of the prescribing process is not only determined by the prescription writing method, but also by the prescriber's compliance in meeting all administrative, legal, and pharmaceutical requirements. This condition emphasizes that comprehensive prescription screening and effective collaboration between prescribers and pharmacists are important components in identifying potential errors before drugs are dispensed to patients.

Conclusion and Suggestion

Based on the research results, medication errors were still found in the prescribing phase at Clinic X with an incidence rate of 99.43% (351 prescriptions) of the total 353 prescriptions studied. The most frequently found discrepancies were in patient gender (88%), doctor's SIP (72%), doctor's initials (63%), patient's age or date of birth (41%), dosage form (38%), dosage or strength of the preparation (38%), and prescription legibility (37%). Meanwhile, the components of patient name, drug name, instructions for use, drug quantity, and doctor's practice address met the standards with a compliance rate of 100%.

The results of this study indicate that medication errors in the prescribing phase are still dominated by incomplete administrative, legal, and pharmaceutical information in the prescription. This incompleteness has the potential to hinder the prescription screening process, increase the risk of errors in subsequent service stages, and affect the quality of pharmaceutical services. In addition, prescribing errors were consistently found in prescriptions written by general practitioners and dentists, indicating that incomplete prescription components remain a problem that occurs across all prescriber categories observed at Clinic X. This condition indicates that prescribing errors in this study are more influenced by administrative aspects than drug therapy aspects. Thus, interventions to reduce prescribing errors should not only focus on improving prescribers' clinical competence, but also on adherence to overall prescription writing standards.

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