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RESEARCH ARTICLE

Analysis of Administrative Prescription Completeness to Improve Patient Safety in Primary Health Centers

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Abstract

A prescription is a legal document in the form of a written request from a doctor, dentist, or veterinarian to a pharmacist to provide and dispense medication to a patient in accordance with applicable laws and regulations. Prescriptions can be made in printed (paper-based) or electronic form. The completeness of prescription writing, especially from an administrative perspective, is crucial in preventing medication errors, ensuring clear communication between healthcare professionals, and supporting rational medication practices. However, in various primary healthcare facilities, such as community health centers, prescriptions that do not meet the established administrative standards are still found. This has the potential to increase the risk of errors in the process of preparing and administering medication to patients. This study aims to evaluate the completeness of prescription writing from an administrative perspective at the Bambu Community Health Center during August 2024. This study is descriptive quantitative in nature, using purposive sampling based on 1,674 prescriptions received during that period. The research sample was determined using the Slovin formula, resulting in 323 prescriptions. The results showed that 232 prescriptions (72%) were administratively complete, while 91 prescriptions (28%) were incomplete. The elements most often omitted were the doctor's name (only included in 258 prescriptions) and the doctor's initials (304 prescriptions). Other elements showed a fairly high level of completeness, such as the prescription date (309), R/ mark (323), signa or instructions for use (305), drug name (323), and patient data (310). These findings indicate that there are still weaknesses in meeting administrative prescription standards at Puskesmas, which can have an impact on patient safety and treatment effectiveness. Therefore, efforts need to be made to improve the prescription documentation system and increase medical personnel compliance with Indonesian Minister of Health Regulation No. 73 of 2016 concerning Pharmaceutical Service Standards at Puskesmas. Further research is recommended to explore the relationship between incomplete prescriptions and medication errors at the primary care level.

Keywords: Medicine, Pharmaceutical, Prescription, Service.

Abstrak. Resep merupakan dokumen legal berupa permintaan tertulis dari dokter, dokter gigi, atau dokter hewan kepada apoteker untuk menyediakan dan menyerahkan obat kepada pasien sesuai peraturan perundang-undangan yang berlaku. Resep dapat dibuat dalam bentuk cetak (paper-based) maupun elektronik. Kelengkapan penulisan resep, khususnya dari aspek administratif, sangat krusial dalam mencegah kesalahan pemberian obat, memastikan kejelasan komunikasi antar tenaga kesehatan, dan mendukung praktik penggunaan obat yang rasional. Namun, di berbagai fasilitas pelayanan kesehatan tingkat pertama, seperti puskesmas, masih ditemukan resep yang tidak memenuhi standar administratif yang ditetapkan. Hal ini berpotensi meningkatkan risiko kesalahan dalam proses penyiapan dan pemberian obat kepada pasien. Penelitian ini bertujuan untuk mengevaluasi tingkat kelengkapan penulisan resep dari aspek administratif di Puskesmas Bambu selama bulan Agustus 2024. Penelitian ini bersifat kuantitatif deskriptif dengan metode purposive sampling, berdasarkan 1.674 resep yang masuk pada periode tersebut. Sampel penelitian ditentukan menggunakan rumus Slovin, sehingga diperoleh 323 resep. Hasil penelitian menunjukkan bahwa 232 resep (72%) dinyatakan lengkap secara administratif, sedangkan 91 resep (28%) tidak lengkap. Rincian elemen yang paling sering tidak tercantum adalah nama dokter (hanya tercantum pada 258 resep) dan paraf dokter (304 resep). Elemen lainnya menunjukkan tingkat kelengkapan cukup tinggi, seperti tanggal resep (309), tanda R/ (323), signa atau aturan pakai (305), nama obat (323), dan data pasien (310). Temuan ini mengindikasikan bahwa masih terdapat kelemahan dalam pemenuhan standar administratif resep di Puskesmas, yang dapat berdampak pada keselamatan pasien dan efektivitas terapi. Oleh karena itu, perlu dilakukan upaya perbaikan sistem dokumentasi resep dan peningkatan kepatuhan tenaga medis terhadap Permenkes RI No. 73 Tahun 2016 tentang Standar Pelayanan Kefarmasian di Puskesmas. Penelitian selanjutnya disarankan untuk menggali lebih dalam hubungan antara ketidaklengkapan resep dengan kejadian medication error di tingkat pelayanan primer

Kata kunci: Kefarmasian, Pelayanan, Obat, Resep

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INTRODUCTION

According to Regulation of the Minister of Health of the Republic of Indonesia Number 74 of 2016, a Community Health Center is a technical implementation unit of the district or city health office that is responsible for organizing health development in a given area (Sentosa et al., 2023). One of the services that Puskesmas must organize is pharmaceutical services. These services directly and responsibly provide patients with drugs and medical consumables to improve their quality of life. Pharmaceutical service standards are benchmarks used as guidelines for pharmaceutical personnel to organize pharmaceutical services. Puskesmas pharmaceutical service standards include managing pharmaceutical preparations and BMHP, as well as clinical pharmacy services. One of these services is prescription assessment (Maulani & Susanto, 2024) .

A prescription is the most important document for a patient to receive medication. In the prescription service flow, pharmacists and pharmacy personnel are required to perform administrative, pharmaceutical, and clinical screenings of prescriptions to ensure their legality and minimize medication errors. A prescription is a written order from a doctor, dentist, or veterinarian to a pharmacist to dispense medication to a patient according to applicable laws and regulations. Prescriptions must be written clearly and completely and comply with applicable laws, regulations, and rules so that they can be easily read by a pharmacist (Dotto & Mwita, 2025). The 2016 Permenkes contains prescription screening regulations, which state that screening starts with the selection of administrative, pharmaceutical, and clinical requirements. Administrative requirements include the patient's name, age, gender, and weight; the doctor's name and signature; the date of the prescription; and the room/unit of origin of the prescription (Nurmuizia et al., 2022).

The completeness of prescriptions is crucial for reducing errors in drug administration and maximizing the rational use of drugs. In health centers, it is common to find prescriptions that are incomplete, which results in inappropriate drug administration and irrational drug use by patients (Ouédraogo et al., 2025). Prescription completeness is an important aspect of prescribing because it helps reduce medication errors. According to Permenkes RI No. 73 of 2016, which concerns pharmaceutical services at Puskesmas, pharmacists must carry out prescription assessment activities, including administrative, pharmaceutical, and clinical considerations. Written prescriptions must be complete, clear, legible, and in accordance with applicable legislation. A prescription is considered complete if it includes inscription, prescription, signatura, pro, and subscriptio. The desired therapeutic effect must also be considered when providing prescriptions (Elista, 2025).

Prescriptions are an important component of the healthcare system, serving as both a legal document and a means of communication between doctors and pharmacists to ensure that patients receive the correct medication (Gikunda et al., 2021). As a medical document with legal implications, prescriptions must fulfill administrative, pharmaceutical, and clinical requirements in accordance with applicable laws and regulations. The administrative completeness of prescriptions, such as the doctor's identity, patient identity, date of writing, and doctor's signature or initials, plays an important role in ensuring the validity and accuracy of medication preparation by pharmacists (Nakayama et al., 2024).

Various international studies show that incomplete prescriptions remain a global problem in pharmaceutical practice (Zhao et al., 2021). Studies by Alghamdi et al. (2021) in Saudi Arabia and Rahman et al. (2020) in Bangladesh found that more than 20% of prescriptions analyzed did not meet administrative standards, which could potentially increase the risk of medication errors and reduce the quality of health services (Tobaiqy & MacLure, 2024). In Indonesia, similar challenges were also found in primary health facilities, especially community health centers, which face high workloads, limited personnel, and a lack of integrated electronic recording systems (Olakotan et al., 2025).

A good prescription must contain clear information. However, several hospitals and community health service centers still encounter many problems with prescribing, such as incomplete patient information, unclear or illegible prescriptions, dosage errors, and omitting the rules for using drugs or the doctor's signature. These are called medication errors (Nurkalis & Nur Solikah, 2024). Administrative completeness includes problems in prescribing, such as medication errors, duplication of treatment, dosage errors, and the absence of the name of the doctor who wrote the prescription. Medication errors that occur during the prescribing phase include errors that occur during the process of prescribing drugs or writing prescriptions. These errors can have a wide range of impacts, from no risk at all to disability or even death (Lisni et al., 2021).

This condition creates an urgency to evaluate the completeness of prescription writing at the community health center level as a basis for improving quality and patient safety. In addition to contributing academically to the literature on prescription completeness in the context of developing countries (Zumah et al., 2022), this study also provides practical contributions in strengthening the implementation of Good Pharmacy Practice and compliance with national regulations, such as Indonesian Minister of Health Regulation No. 73 of 2016 concerning Standards of Pharmaceutical Services in Community Health Centers. Thus, this study aims to evaluate the level of prescription completeness from an administrative perspective at the Bambu Community Health Center during August 2024.

METHODS

This study is a descriptive quantitative study that aims to evaluate the completeness of prescription writing from an administrative perspective at the Bambu Community Health Center during August 2024. A descriptive approach was used to provide a comprehensive overview of the extent to which the prescriptions received met the administrative requirements in accordance with applicable regulations.

The population in this study was all prescriptions submitted to the Bambu Community Health Center during August 2024, totaling 1,674 prescriptions. The research sample was taken using purposive sampling, a non-probabilistic sampling technique carried out based on certain considerations or criteria predetermined by the researcher. Thus, the sample was not taken randomly but based on its relevance to the research objectives. Purposive sampling was chosen because the researcher only wanted to assess prescriptions that met certain criteria (for example, prescriptions that were complete in terms of patient and doctor information, not copies or automatic

electronic prescriptions). The aim was to ensure that the data obtained truly represented the quality of prescription writing by medical personnel at the Bambu Community Health Center.

The prescriptions used as research samples must meet the following criteria: 1. Prescriptions received by the Bambu Community Health Center pharmacy during the period August 1–31, 2024. 2. Prescriptions written by doctors or dentists working at the Bambu Community Health Center. 3. Prescriptions that are clearly legible and complete, allowing for administrative assessment. 4. Prescriptions intended for outpatients, not for inpatients or emergency services. Prescriptions are excluded from analysis if they meet one of the following conditions (Diop et al., 2021): a. Prescriptions that are illegible, damaged, or partially missing so that administrative data cannot be identified. b. Copies of previous prescriptions or repeat prescriptions. c. Prescriptions that do not include the signature of the prescribing doctor or are not recorded in the official Puskesmas register. d. Collective prescriptions or mass preparations that do not include the individual identity of the patient.

The data used in this study is secondary data, namely data obtained from prescription documents issued by doctors at the Bambu Community Health Center during the study period. The data source came from the Bambu Community Health Center pharmacy prescription archives, which were stored manually and electronically (where available). The instrument used in this study was an observation sheet or checklist compiled based on Indonesian Minister of Health Regulation No. 73 of 2016 concerning Pharmaceutical Service Standards in Pharmacies and Community Health Centers.

Data were collected through observation of prescription documents stored in the pharmacy section of the Bambu Community Health Center. The data obtained were analyzed descriptively and quantitatively. This analysis was carried out by calculating the number and percentage of prescriptions that met or did not meet each administrative component. The results of the analysis were presented in the form of frequency distribution tables and bar charts to illustrate: 1. The percentage of administratively complete and incomplete prescriptions. 2. The administrative components that were most often omitted by the prescribing doctors. 3. The interpretation of the results will refer to the standards for administrative completeness of prescriptions as stipulated in Permenkes No. 73 of 2016, so that the level of compliance of doctors with these regulations can be determined.

This study was conducted after obtaining written permission from the Head of the Bambu Community Health Center. All prescription data used was kept confidential and did not include patients' personal identities. The data was only used for academic purposes and to evaluate the quality of pharmaceutical services.

RESULTS OF STUDY

A study on prescription completeness was conducted at the Bambu Health Center in the Mamuju District of the Mamuju Regency in the West Sulawesi Province. The study sample size was 323. The prescriptions were served in August 2024. Data were collected by randomly observing the completeness of prescriptions in relation to the administrative description of prescription writing.

Table 1. The distribution of prescriptions based on gender and age category in prescription writing

Category	Criteria	Number of recipes	Percentage
Gender	Man	102	31%
	Woman	221	69%
Total		323	100%
Age	Children 7-10	131	41%
	Teenagers 10-18	32	10%
	Adults 19-59	160	49%
Total		323	100%

Source: Primary Data 2024.

Based on Table 1, the number of prescriptions received at the Bambu Community Health Center during August 2024 was 323 prescriptions. Most prescriptions were from female patients (69%), while male patients accounted for only 31%. When viewed by age group, the highest number of prescriptions came from adult patients (49%), followed by children (41%), and the lowest number came from adolescents (10%).

From the results of the evaluation of prescription completeness (using a checklist based on Minister of Health Regulation No. 73 of 2016), it was found that some administrative items were not always filled in completely by the prescribing doctor. The doctor's SIP number was the item most often omitted. This was likely because some doctors used a general prescription form without including their personal SIP, or due to administrative habits that were not given much attention. The patient's address is often incomplete, especially on prescriptions for children written in the pediatric clinic, possibly because doctors only record the patient's name and age without providing their residential address. The patient's date of birth or age is often omitted, especially for adult patients, as it is considered to have little effect on therapy, even though it is still required to be included administratively.

Incomplete administrative items have several consequences (Kenfack, 2021), including: 1. Prescriptions may be considered legally invalid, especially in the event of drug side effects and the need to trace professional responsibility. 2. It can make it difficult to trace patient data in the event of medication errors or side effects. 3. It can lead to dosage inaccuracies, especially in children or elderly patients. 4. Prescriptions are considered administratively invalid because there is no legalization of responsibility. Therefore, administrative completeness is not merely a formality, but has direct implications for the safety, legality, and accuracy of patient therapy.

Additional analysis shows a tendency for a relationship between patient age groups and prescription completeness. Children's prescriptions are more often incomplete because doctors focus more on writing medications and dosages rather than administrative completeness (Wen, 2025). In adult patients, prescription completeness is higher because most patients come independently and their identities are more complete in the health center system (Yimer et al., 2022). However, no statistical tests (e.g., chi-square) have been performed to determine the significance of the relationship between age and prescription completeness; this analysis is descriptive and exploratory.

Table 2. The distribution of prescription completeness is based on prescription writing format

Completeness of the recipe	Listed	Not listed
Doctor's name	258	65
R/ sign	323	0
Sign/rules of use	305	18
Doctor's initials	304	19
Drug name	323	0
Patient data	310	13

Source: Primary Data 2024.

Based on the table 2, the assessment of the completeness of the prescription, according to the complete prescription writing format, is as follows: the name of the doctor (258 prescriptions); R/signs (323 prescriptions); signa/rules of use (305 prescriptions); drug names (322 prescriptions); and patient data (323 prescriptions). The incomplete prescription writing format includes the date of writing the prescription (14 prescriptions), the doctor's name (65 prescriptions), the usage rules (18 prescriptions), the doctor's initials (19 prescriptions), the drug name (0 prescriptions), and the patient data (13 prescriptions).

Based on the table, the component that is most often missing is the "doctor's name" (20.1%). This shows that out of 323 prescriptions, there are 65 prescriptions without the name of the doctor who wrote them. The doctor's identity is not listed on 20.1% of prescriptions. This indicates a lack of thoroughness or negligence in filling out the administrative section. Some prescriptions also did not include a signature as a sign of approval. Prescriptions without a signature cannot be used as valid documents for dispensing medication, potentially leading to rejection by pharmacists (Khromchenko & Baum, 2022).

The most frequently missing administrative component was the doctor's name (20.1%), followed by the doctor's signature (5.9%) and instructions for use (5.6%). Overall, the level of administrative completeness is quite good because the majority of components are >90% complete. However, deficiencies in the doctor's name and signature have direct implications for the legality of prescriptions, so this needs to be a major concern in the training of medical personnel at Puskesmas (Diop et al., 2021).

Table 3. Data on the completeness of prescription writing for patients

Results Recipe completeness	Number of recipes	Recipe completeness
Complete	232	72 %
Incomplete	91	28 %
Total	323	100 %

Source: Primary Data 2024.

Based on table 3, the completeness of prescription writing at the Bambu Health Center in August was 72%, obtained from a total of 232 complete prescriptions out of 323 prescription sheets. Meanwhile, incomplete prescriptions accounted for 28% of the total sample, or 91 prescriptions. Based on Table 3, of the total 323 prescriptions analyzed, 232 prescriptions (72%) were classified as administratively complete, while 91 prescriptions (28%) were declared incomplete. This percentage of incompleteness indicates that although most prescriptions already meet administrative requirements, there are still deficiencies that need to be corrected in order to comply with the prescription writing standards stipulated in Indonesian Minister of Health Regulation No. 73 of 2016 concerning Pharmaceutical Service Standards in Community Health Centers.

The level of completeness of prescription writing at the Bambu Community Health Center still needs to be improved because 28% of prescriptions do not fully meet the administrative requirements. The doctor's name is the component that is most often omitted, so it needs to be a primary focus in the routine guidance and evaluation of prescribing doctors. Deficiencies in the doctor's name and signature components directly impact the legal validity of prescriptions, while deficiencies in the signa and patient data can compromise patient safety (Abdullah et al., 2024).

DISCUSSION

Complete and accurate prescription writing is essential to pharmaceutical services because it directly impacts patient safety, drug administration accuracy, and the legality of medical actions (Hari Santosa et al., 2021). This study evaluated the completeness of prescriptions at the Bambu Health Center as an indicator of health service quality. Research results: In August 2024, the Bambu Health Center had a total of 232 complete prescriptions, accounting for 72% of all prescriptions, and 91 incomplete prescriptions, accounting for 28%. Of the prescriptions analyzed at Puskesmas Bambu in August 2024, 72% were written completely, while 28% were administratively incomplete. This indicates that noncompliance with prescription writing guidelines still occurs and requires special attention (Agustina et al., 2025). Common missing administrative components include the patient's age or address, the date the prescription was written, usage instructions, the doctor's identity or signature, and the dosage or dosage form of the drug. The results of the study show that of the 323 prescriptions analyzed at the Bambu Community Health Center during August 2024, 232 prescriptions (72%) were declared administratively complete, while 91 prescriptions (28%) were incomplete. Although the prescription completeness rate was relatively high, the 28% incompleteness rate indicates that there is still inconsistency in the application of prescription writing standards by medical personnel. Complete prescription writing is an important indicator of the quality of pharmaceutical services. This is in line with the statement of the Indonesian Ministry of Health (Permenkes No. 73 of 2016) that prescription completeness is one of the parameters of patient safety, accuracy of drug administration, and assurance of the legality of medical practice. Research by Utami et al. (2020) and Handayani (2019) also shows that the administrative completeness of prescriptions greatly affects the effectiveness of medication services and prevents medication errors (Lumbantobing et al., 2025).

There are several factors that can cause incomplete prescriptions. One factor is personal, meaning it is related to individual doctors. These doctors may lack knowledge of the rules and official standards for writing prescriptions

according to regulations, such as Permenkes or Pharmaceutical Service Guidelines. Another factor is that doctors may be accustomed to writing prescriptions quickly without rechecking their completeness, especially during busy hours. Psychological factors, such as mental fatigue due to many patients or long working hours, can also reduce the level of accuracy. These results are similar to the findings of Rahmawati and Hidayat (2021) at another health center in East Java, which reported that doctor's signatures and usage instructions were the components with the lowest level of completeness. This means that this pattern of incompleteness is common in primary health care facilities, especially those with high patient volumes and limited medical personnel. Deficiencies in these administrative elements have serious implications for: Patient safety, as unclear dosage or signa information can lead to medication errors; Prescription legality, as prescriptions without a doctor's identity and initials are not legally valid; Pharmacy staff performance, who must reconfirm with the doctor, thereby slowing down medication service (Brata et al., 2024). According to Notoatmodjo (2018), a person's professional behavior is influenced by their knowledge, attitude, and work habits. Some doctors may not fully understand the standards for writing prescriptions in accordance with regulations or may be accustomed to working quickly without a verification process. Mental fatigue due to long working hours and a large number of patients can also reduce concentration and accuracy. These findings are consistent with the research by Nurhayati et al. (2022), which found that fatigue is significantly related to the rate of prescription administration errors (Chandra E. Puspitasari, 2025).

Other factors include organizational factors, such as a limited number of doctors. When the number of medical personnel on duty is not proportional to the number of patients, there is a rush to provide services, including writing prescriptions (Tahir, 2023). High patient load: On certain days, the patient load can be very high, impacting the quality of administrative services. Additionally, work environment factors, such as interference from patients' families who ask for explanations while the doctor is writing prescriptions, patients who do not provide clear information, or patients who are in a hurry, can cause doctors to be negligent when writing prescriptions. An unsupportive physical environment, such as a narrow work desk, poor lighting, or a noisy atmosphere, can also affect a doctor's concentration. The limited number of doctors and high patient load are major factors in the organizational context (Muhlis, 2024). The Ministry of Health (2021) states that the ratio of medical personnel in community health centers is still not ideal, especially in areas with high patient visits. This situation forces doctors to write prescriptions in a short time, so that administrative aspects are often neglected. In addition, the lack of supervision and routine evaluation of prescription quality also contributes to administrative negligence (Widowati & Zamroni, 2023).

Incomplete or unclear prescriptions written by doctors can lead to medication errors. These errors can occur at any stage of the medication process: prescribing, transcribing, dispensing, and administration. This study focuses on the prescribing stage, when medical personnel (doctors) write prescriptions (Nurmuizia et al., 2022). Incomplete prescriptions can impact the flow of drug services and affect pharmacy workers. If important information is missing or unclear (e.g., dosage, rules of use, or drug name), pharmacy staff must either guess or contact the doctor, which causes delays in service. Inaccuracies in reading or interpreting prescriptions can result in the dispensing of the wrong medication, dosage, or rules of use, and pharmacy staff need additional time for confirmation, which increases patient waiting time (Suharwinda et al., 2023).

It also impacts the patient. Medication errors caused by incomplete prescriptions can lead to serious side effects, dangerous drug interactions, and an absence of therapeutic effects, as well as decreased trust in health services. Patients who receive ineffective or inappropriate drugs may lose trust in health centers and health workers (Nurjanah & Gozali, 2021). This can also impact the health center and health workers. Incomplete prescriptions may indicate malpractice or administrative negligence, which has legal implications. Errors in medication administration due to incomplete prescriptions can tarnish the image of Puskesmas services in the community's eyes. Ineffective workflow can make medical and pharmacy personnel work under high pressure, which can trigger burnout and reduce service quality. In addition, an unfavorable work environment–such as cramped desks, poor lighting, noisy surroundings, or patient interactions that interrupt prescription writing–can reduce doctors' focus. This is in line with the theory of Occupational Health Ergonomics (Suma'mur, 2014), which states that physical environmental factors have an influence on the work performance of healthcare workers (Aryanti, 2025).

Incomplete prescription administration has multiple impacts, namely causing uncertainty in prescription interpretation, slowing down the service process due to the need for confirmation from the doctor, and increasing the risk of incorrect medication, incorrect dosage, or incorrect usage, which can lead to suboptimal therapeutic effects, adverse drug reactions, and loss of trust in the quality of healthcare services. It also has the potential to cause legal problems or allegations of administrative malpractice, damage the image of the service, and worsen the workload and stress of healthcare workers. These results reinforce Reason's Human Error Framework (2000) theory, which explains that medical errors are often caused by a combination of individual, systemic, and work environment factors, rather than solely personal negligence (Reason, 2000).

Recommendations for medical personnel include regular training on correct prescription writing standards and using simple checklists on prescription blanks to ensure data completeness (Riski, 2021). For Puskesmas management, work schedules should be distributed evenly so that the workload does not accumulate at certain times or on certain days. You should also conduct routine evaluations of prescription quality every month to control service quality. Using an electronic prescription system (e-prescription) can help reduce administrative errors and speed up validation of prescription completeness. Although most prescriptions written at Puskesmas Bambu meet administrative standards, incomplete prescriptions still occur due to a combination of internal (e.g., doctors) and external (e.g., work environment and service system) factors. Continuous efforts are needed to improve the quality of prescription documentation to ensure patient safety and efficient service. This study focuses on the administrative aspects of prescriptions at one community health center during a specific period (August 2024), so the results cannot be generalized to a wider area or time frame. For future research, it is recommended to: Extend the scope of the research in terms of time and location so that the results are more representative; Examine the relationship between individual physician factors (age, work experience, workload) and the level of prescription completeness statistically; and Develop a digital

prescription quality evaluation model (e-prescription audit) for continuous monitoring (Tamblyn et al., 2006).

CONCLUSION

The results of research on the completeness of prescription writing at the Bambu Community Health Center in August 2024 show that the quality of prescription documentation is not yet optimal. Although most prescriptions meet administrative standards, there is still a significant proportion of incomplete prescriptions. These findings confirm that prescription writing is not merely an administrative aspect, but a crucial component in ensuring patient safety, therapeutic effectiveness, and the legality of medical practice.

Incompleteness in elements such as patient identity, signature, date, and doctor's initials indicates a gap between knowledge, work systems, and the clinical practice environment. Personal factors (doctor's accuracy and fatigue), organizational factors (high workload and lack of supervision), and work environment factors (physical conditions and disturbances during service) have been shown to contribute to decreased administrative compliance.

Conceptually, the results of this study reinforce the theory that administrative errors in prescriptions are a reflection of a service quality system that is not yet fully integrated. Therefore, improving the quality of prescription writing should be part of the strategy to improve the overall quality of Puskesmas services. The main recommendation from this study is the need to integrate prescription audits into Puskesmas quality indicators. Regular prescription audits will serve not only as an administrative control mechanism, but also as a learning tool for medical personnel to improve accuracy, accountability, and patient safety. In addition, the implementation of e-prescriptions and digital monitoring systems can accelerate the validation process and strengthen the transparency and efficiency of services. Therefor, this study confirms that the completeness of prescription writing is a direct indicator of the quality of the health service system. Improving doctors' compliance with prescription writing standards not only has an impact on the smooth running of the drug service process but also reflects the health institution's commitment to professionalism and patient safety as a top priority.

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DECLARATIONS

Ethics Approval and Consent to Participate

This study has been approved by the Diploma Three Pharmacy Program at Wallacea University. All participants received a full explanation of the study's purpose, procedures, potential risks, and benefits, and provided written consent to participate.

Consent for publication

The participants gave written consent for anonymized data relating to them to be published in this scientific report and journal article.

Availability of data and materials

Data supporting the findings in this study are available from the corresponding author upon reasonable request. Additional materials used in the study can also be obtained through formal requests.

Conflicts of interest Statement

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Artificial Intelligence-Assisted Technology

During the preparation of this article, the authors used AI-assisted technologies for language editing and reference formatting, specifically Grammarly and ChatGPT. The authors are solely responsible for all scientific content, including the research design, data analysis, and interpretation of results. The authors confirm that their use of AI-assisted technology aligns with publication ethics guidelines and does not substitute for intellectual contributions.

Author Contributions

Wita Oileri Tikirik (Author 1): Conception and design of the study, Data collection, Data analysis, Writing the initial draft of the manuscript, Data analysis, Critical revision

Final editing Riska Yayyu (Author 2) did literature review, data validation, and contributed to the discussion of results. All authors have read and approved the final version of the manuscript.

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