Medication Errors in Community Pharmacy as a Form of Mismedicine

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Introduction

According to the World Health Organization (2022), medication errors remain one of the most significant and preventable threats to patient safety in modern healthcare systems worldwide, with an estimated annual global cost of approximately $42 billion. These errors can occur at various stages of the medication-use process, including prescribing, dispensing, administration, and patient use (Lee et al., 2025). While diagnostic accuracy is often emphasized in discussions of patient harm, treatment-related failures can be equally consequential. Community pharmacies, which include outpatient retail pharmacies such as local or chain pharmacies where pharmacists dispense prescriptions and provide healthcare services such as vaccinations and medication counseling, represent a critical point within this process, as pharmacists serve as the final checkpoint before medications reach patients. This positioning places pharmacists at the forefront of medication safety and makes community pharmacy a key setting for preventing avoidable harm.

Medication errors in community pharmacy can be interpreted through the broader concept of mismedicine. The term, introduced by Dr. Pooya Beigi, founder of the Misdiagnosis Association and Research Institute (MARI), describes preventable failures that arise at different stages of healthcare delivery, including delayed diagnosis, prescribing, documentation, dispensing, and patient use (Blissy, 2024). Under this framework, medication errors in community pharmacy represent a clear form of mismedicine. Even when the initial diagnosis is correct, preventable breakdowns in the treatment process can still occur, ultimately resulting in poor patient outcomes. Examining community pharmacy errors through this framework highlights the systemic, communicative, and human factors that contribute to preventable harm and underscores the crucial role pharmacists play in preventing adverse outcomes.

Medication Errors in Community Pharmacy: Definitions and Types

A medication error refers to a preventable event that can result in inappropriate medication use or patient harm at any stage of the medication-use process, whether the medication is under the responsibility of a healthcare professional or a patient (Aronson, 2009). Within community pharmacy practice, dispensing errors represent one of the most significant and frequently reported forms of mismedicine. A recent systematic review of 22 studies found that dispensing error rates in outpatient and community pharmacy settings ranged from 0.001% to 11.53%, with community pharmacies demonstrating a higher average rate than outpatient hospital pharmacies (Eshraghi et al., 2025). These findings highlight the vulnerability of community pharmacy environments, where high prescription volumes, time pressure, and demanding workflow conditions are common.

Incorrect Dose or Strength Errors

Incorrect dose or strength errors represent the most commonly reported category of dispensing error, accounting for approximately 58.6% of documented cases (Eshraghi et al., 2025). These errors are particularly concerning when high-risk medications such as anticoagulants, insulin, opioids, and antihypertensives are involved, as even small deviations in dose can result in significant patient harm. Research demonstrates that dosage errors contribute substantially to adverse drug events, especially among older adults managing polypharmacy, where multiple chronic medications increase regimen complexity and the potential for error (Ngcobo, 2025). As medication regimens become more complex, the risk of preventable harm increases, emphasizing the importance of strong verification processes and system-level safeguards within community pharmacy settings.

Look-Alike and Sound-Alike Medications

Beyond incorrect dosing, look-alike and sound-alike medications represent another major source of dispensing errors, accounting for approximately 47.9% of cases in a community setting (Eshraghi et al., 2025). These errors occur when drugs have similar names, packaging, or labeling, leading to selection mistakes that are amplified in busy and high-pressure pharmacy environments (Emmerton & Rizk, 2011). According to the Institute for Safe Medication Practices (2016), documented examples include confusion between hydralazine and hydroxyzine, as well as cyclosporine and cycloserine. These incidents illustrate that such errors are not merely individual lapses in attention but often reflect systemic vulnerabilities within pharmacy practice, including product storage practices, workflow interruptions, and technology limitations. Even when prescribing decisions are clinically appropriate, weaknesses in verification and dispensing processes can still compromise patient safety, reinforcing the broader understanding that mismedicine arises from failures across the medication-use system (Blissy, 2024).

Medication Errors Beyond the Pharmacy Counter

Medication errors do not end at the pharmacy counter but may extend to the patient level once medications are taken home. For example, patients may misunderstand instructions such as taking a capsule once daily versus every eight hours, or they may accidentally take a family member's medication, demonstrating how gaps in communication and comprehension can undermine therapeutic effectiveness. Studies have shown that a significant proportion of patients, approximately 46.3%, are unable to correctly read and interpret prescription labels, leading to underdosing, overdosing, and overall therapeutic failure (Davis et al., 2006). These findings further highlight the critical role of health literacy, as patients with limited literacy skills are more likely to misinterpret dosing directions and experience medication-related complications (Persell et al., 2007).

The Role of Communication and Counseling

From a mismedicine perspective, inadequate counseling by a healthcare provider or unclear labeling represents a preventable system failure rather than solely a patient error. This signifies that effective communication strategies are essential. One evidence-based approach is the teach-back method, in which patients are asked to repeat instructions in their own words, allowing healthcare providers to assess understanding and address any misconceptions immediately (Yen & Leasure, 2019). The teach-back method has been shown to improve patient comprehension and may serve as an important safeguard against medication-related harm. In community pharmacy settings, incorporating communication strategies such as teach-back can help pharmacists ensure that patients clearly understand medication instructions before leaving the pharmacy.

Conclusion

Medication errors in community pharmacy represent a significant and preventable form of mismedicine. Even when diagnoses and prescribing decisions are clinically appropriate, breakdowns in dispensing, verification, labeling, or counseling can undermine therapeutic outcomes and place patients at risk. Through the lens of mismedicine, these errors shift attention from individual blame to the identification of systemic weaknesses within the medication-use process (Blissy, 2024).

As the final checkpoint before medications reach patients, community pharmacists hold a critical responsibility in preventing avoidable harm. By strengthening verification procedures, addressing workflow pressures, implementing technological safeguards, and prioritizing clear patient communication, pharmacists can reduce the risk of mismedicine at both the professional and patient levels. Ultimately, recognizing medication errors as forms of mismedicine reinforces the essential role of community pharmacy in safeguarding patient safety and promoting effective, responsible medication use.

Q&A

Why are community pharmacies considered a critical checkpoint for medication saf

Community pharmacies represent the final checkpoint of the medication-use process before medications reach patients. Pharmacists verify prescriptions, check dosing accuracy, and provide counseling to help ensure medications are used safely and effectively.

What are common causes of medication errors in community pharmacy settings?

Common causes include incorrect dose or strength selection, look-alike and sound-alike medications, high prescription volumes, workflow interruptions, and time pressure in pharmacy environments.

How can patients reduce the risk of medication errors at home?

Patients can reduce medication errors by carefully following dosing instructions, asking pharmacists questions about their medications, keeping an updated list of medications, and avoiding taking medications prescribed to others.

What role does communication play in preventing medication errors?

Clear communication between healthcare providers and patients is essential. Strategies such as the teach-back method help confirm that patients understand medication instructions and reduce the risk of misuse.

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