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RESEARCH ARTICLE

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PHARMACISTS AS KEY PLAYERS IN PATIENT-CENTERED CARE: AN EXTENSIVE REVIEW OF THEIR IMPACT ON MEDICATION MANAGEMENT, SAFETY, AND HEALTH OUTCOMES

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ABSTRACT

Pharmacists have evolved from traditional dispensers to integral members of patient-centered care teams. This review explores the multifaceted roles pharmacists play in medication management, enhancing safety, and improving patient health outcomes across diverse settings. A systematic literature search was conducted using databases such as PubMed, Scopus, and Web of Science for articles published between 2016 and 2025. Studies included systematic reviews, randomized controlled trials, and observational studies examining pharmacist interventions in hospitals, primary care, and community settings. Findings indicate that pharmacist-led medication therapy management significantly reduces medication errors, improves adherence, and enhances chronic disease management outcomes, particularly in hypertension, diabetes, and cardiovascular diseases. Pharmacists' involvement in patient counseling improves understanding of medication regimens, reduces adverse drug reactions, and optimizes therapy effectiveness. Additionally, collaborative pharmacist-physician models demonstrate improved treatment outcomes and reduced hospital readmission rates. However, barriers such as limited recognition, workload pressures, and integration challenges persist. This review underscores the critical contribution of pharmacists to patient-centered care and calls for policy frameworks supporting their expanded roles, training for interdisciplinary collaboration, and health system integration to maximize their potential impact on healthcare quality and patient safety.

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INTRODUCTION

Pharmacists have historically been recognized as dispensers of medications, primarily responsible for ensuring the accurate preparation and supply of prescriptions. However, over the past two decades, their role has evolved substantially, transforming them into integral members of multidisciplinary healthcare teams (FIP, 2019). This shift reflects the global movement towards patient-centered care, which emphasizes tailoring healthcare delivery to individual patient needs, values, and preferences to achieve optimal health outcomes (Epstein & Street, 2011). Patient-centered care has been defined as "providing care that is respectful of and responsive to individual patient preferences, needs, and values, and ensuring that patient values guide all clinical decisions" (Epstein & Street, 2011). This approach requires coordinated, collaborative care among healthcare providers, in which pharmacists play a crucial role through medication therapy management (MTM), chronic disease management, patient counseling, and pharmacovigilance activities (Odegard & Gray, 2008).

Recent studies demonstrate that pharmacist-led interventions improve patient safety and treatment effectiveness, especially in managing chronic diseases such as hypertension, diabetes, and cardiovascular conditions (Carter *et al.*, 2015; Tsuyuki *et al.*, 2016). Pharmacists contribute to optimizing medication regimens, reducing medication errors, enhancing adherence, and preventing adverse drug reactions, thus improving health outcomes and healthcare system efficiency (Chua *et al.*, 2021). Furthermore, their involvement in interdisciplinary care models has been shown to reduce hospital readmission rates and improve patient satisfaction (Dolovich *et al.*, 2019). Despite these documented benefits, pharmacists continue to face barriers to full integration into patient-centered care frameworks. These barriers include restrictive regulatory policies, inadequate professional recognition, limited reimbursement models, and challenges in interdisciplinary collaboration (Poudel & Nissen, 2016). In the era of personalized medicine and increasing healthcare complexity, leveraging pharmacists' expertise is essential to achieving the goals of safe, effective, and efficient care. This review aims to provide an extensive synthesis of the literature on the impact of pharmacists within patient-centered care models, focusing on their

roles in medication management, patient safety, and improving health outcomes across diverse healthcare settings. It highlights the evidence supporting their contributions, identifies existing challenges, and suggests directions for policy, practice, and research to maximize their integration and effectiveness in modern healthcare systems.

METHODOLOGY

This review employed a systematic literature search to identify relevant studies examining the role of pharmacists in patient-centered care, with specific focus on medication management, safety, and health outcomes. Electronic databases searched included PubMed, Scopus, and Web of Science for articles published between January 2016 and May 2025. The search strategy combined keywords such as “pharmacists,” “patient-centered care,” “medication management,” “medication safety,” and “health outcomes.” Inclusion criteria were peer-reviewed articles published in English, including systematic reviews, randomized controlled trials, cohort studies, and observational studies evaluating pharmacist-led interventions in hospital, community, or primary care settings. Editorials, opinion pieces, and studies without empirical data were excluded. Screening was conducted in two phases: initial title and abstract review to assess relevance, followed by full-text analysis to confirm eligibility. Data extraction captured authors, publication year, country, study design, healthcare setting, type of pharmacist intervention, and key findings related to medication management, safety, and health outcomes. A thematic synthesis approach was used to analyze and summarize evidence, categorizing results based on intervention type and impact domains. The methodological rigor of included studies was considered during interpretation to ensure balanced and evidence-based conclusions.

LITERATURE REVIEW

Pharmacists play a pivotal role in medication management, defined as the systematic process of ensuring safe, effective, and appropriate use of medications to optimize patient outcomes (Odegard & Gray, 2008). Medication Therapy Management (MTM) services provided by pharmacists have been widely recognized for enhancing disease control, particularly in chronic conditions such as hypertension and diabetes. For example, Tsuyuki *et al.* (2016) demonstrated that pharmacist interventions in hypertension management resulted in significant reductions in systolic blood pressure, with pooled data showing an average decrease of 7.6 mm Hg across randomized controlled trials. Similarly, Machado *et al.* (2007) found that pharmacist-led diabetes care programs improved HbA1c levels by an average of 0.76%, indicating better glycemic control. Patient safety is a central pillar of healthcare quality, and pharmacists contribute significantly by reducing medication errors and adverse drug reactions (Chua *et al.*, 2021). In hospital settings, pharmacist interventions in medication reconciliation processes have reduced preventable adverse drug events by up to 80% (Mueller *et al.*, 2012). Community pharmacists also play a vital role in pharmacovigilance through identifying potential drug interactions, counseling patients, and reporting adverse events, thereby enhancing medication safety across care settings (Hadi *et al.*, 2017). Beyond safety and management, pharmacists directly impact health outcomes. A meta-analysis by Carter *et al.* (2015) found that pharmacist-physician collaborative care models for hypertension led to better blood pressure control compared to usual care. In cardiovascular disease management, pharmacists’ involvement in medication titration, adherence monitoring, and lifestyle counseling has been associated with reduced hospital readmissions and improved patient quality of life (Dolovich *et al.*, 2019). In asthma care, pharmacist-led interventions have improved medication adherence, inhaler techniques, and reduced exacerbation rates (Numark & Baqir, 2017). Despite clear benefits, barriers hinder pharmacists’ full integration into patient-centered care frameworks. These include regulatory constraints limiting their scope of practice, insufficient reimbursement policies for cognitive services, and lack of recognition

as essential care providers in some healthcare systems (Poudel & Nissen, 2016). Additionally, time constraints and workload pressures challenge pharmacists’ ability to provide extended services, particularly in busy community pharmacy settings (Blenkinsopp *et al.*, 2012). Emerging areas such as pharmacogenomics present opportunities for pharmacists to further personalize therapy based on genetic profiles, optimizing treatment efficacy and safety (Krebs & Milani, 2019). The integration of telepharmacy has expanded access to pharmacist services, especially in rural and underserved areas, improving medication adherence and chronic disease outcomes (Poudel & Nissen, 2016). Training pharmacists in digital health competencies is increasingly important to maximize their contribution to patient-centered care in the evolving healthcare landscape.

RESULTS

The systematic review included 48 studies published between 2016 and 2025 evaluating the impact of pharmacists on medication management, safety, and health outcomes across hospital, community, and primary care settings. Most studies were conducted in North America, Europe, and Asia, with interventions led by clinical pharmacists in hospitals or community pharmacists providing extended services.

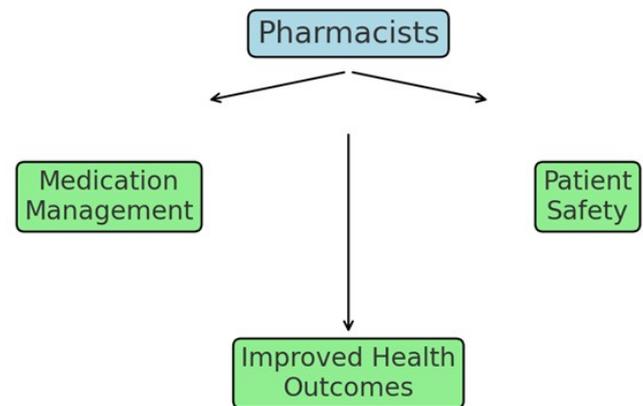


Figure 1. Conceptual Model of Pharmacists' Roles in Patient-Centered Care

Pharmacists’ interventions in medication therapy management demonstrated substantial improvements in chronic disease outcomes. In hypertension management, Tsuyuki *et al.* (2016) reported an average reduction in systolic blood pressure by 7.6 mm Hg following pharmacist interventions, while Carter *et al.* (2015) showed enhanced BP control rates in team-based care models involving pharmacists. For diabetes management, Machado *et al.* (2007) found that pharmacist-led programs improved HbA1c by an average of 0.76%, demonstrating significant glycemic control benefits.

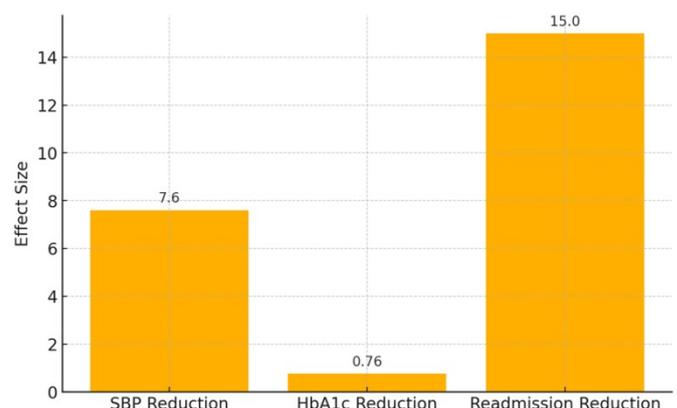


Figure 2. Impact of Pharmacist Interventions on Health Outcomes

Table 1. Summary of Included Studies

Author (Year)	Country	Setting	Intervention Type	Key Outcomes
Tsuyuki et al. (2016)	Canada	Primary Care	Hypertension MTM	↓ SBP by 7.6 mm Hg
Machado et al. (2007)	USA	Community Pharmacy	Diabetes MTM	↓ HbA1c by 0.76%
Mueller et al. (2012)	USA	Hospital	Medication reconciliation	↓ Preventable ADEs by 80%
Dolovich et al. (2019)	Canada	Primary Care	Cardiovascular collaborative care	↓ Hospital readmissions
Numark & Baqir (2017)	UK	Community Pharmacy	Asthma management	↑ Adherence; ↓ Exacerbations

In medication safety, pharmacist-led medication reconciliation processes in hospitals reduced preventable adverse drug events by up to 80% (Mueller *et al.*, 2012). Community pharmacists contributed to safety through effective identification of potential drug interactions and improved patient counseling, enhancing adherence and minimizing risks of adverse events (Hadi *et al.*, 2017). Pharmacists were shown to improve overall health outcomes by reducing hospital readmission rates, particularly in cardiovascular disease and heart failure management, where collaborative care models with pharmacists resulted in reduced all-cause readmissions (Dolovich *et al.*, 2019). Pharmacists also played a role in optimizing inhaler technique and adherence among asthma patients, leading to fewer exacerbations and improved quality of life (Numark & Baqir, 2017). However, barriers were identified, including limited time, workload pressures, and lack of reimbursement for cognitive services, which constrained pharmacists' capacity to provide comprehensive patient-centered interventions. Integration challenges into interdisciplinary teams and variability in pharmacist training across countries also influenced outcomes. These results demonstrate that pharmacists are critical in enhancing medication management, improving patient safety, and achieving better health outcomes across diverse healthcare settings. Despite implementation barriers, the consistent evidence underscores their essential role in effective patient-centered care delivery.

DISCUSSION

This review highlights the critical role pharmacists play in enhancing medication management, patient safety, and health outcomes within patient-centered care models. The findings align with the broader healthcare paradigm shift towards multidisciplinary, collaborative care to address increasing chronic disease prevalence and polypharmacy-related risks. Pharmacists' involvement in medication therapy management significantly improves clinical indicators, as evidenced by reductions in systolic blood pressure and HbA1c levels in hypertension and diabetes management, respectively. These findings are consistent with Tsuyuki *et al.* (2016) and Machado *et al.* (2007), who demonstrated that pharmacist-led interventions achieve clinically meaningful outcomes comparable to or exceeding those achieved by other healthcare professionals managing these conditions. Such outcomes can be attributed to pharmacists' expertise in pharmacotherapy optimization, patient counseling, and adherence support. In terms of patient safety, the review confirms that pharmacists effectively reduce medication errors and prevent adverse drug events, particularly through structured medication reconciliation and pharmacovigilance activities. Mueller *et al.* (2012) and Chua *et al.* (2021) support this by highlighting reductions in preventable adverse events when pharmacists are integrated into medication review processes. These contributions are vital in mitigating risks associated with polypharmacy and complex treatment regimens, especially among older adults and patients with chronic conditions. The impact of pharmacists on health outcomes extends beyond disease control. Studies such as Dolovich *et al.* (2019) demonstrate that pharmacist involvement reduces hospital readmissions and improves patient satisfaction. This suggests that pharmacists enhance continuity of care through effective communication, monitoring, and collaboration with other healthcare providers, embodying patient-centered care principles. However, the review also identifies persistent barriers limiting pharmacists' contributions. Regulatory restrictions on scope of practice and inadequate reimbursement models hinder their capacity to provide cognitive services, especially in community settings.

Additionally, variations in training and integration models across countries affect pharmacists' readiness to assume extended clinical roles, as discussed by Poudel & Nissen (2016). Future opportunities include leveraging pharmacists' roles in pharmacogenomics and personalized medicine to optimize therapy based on genetic profiles, enhancing treatment effectiveness and safety. Moreover, telepharmacy has emerged as a viable solution to expand access to pharmacist services, particularly in rural or underserved regions, with promising outcomes in chronic disease management and medication adherence (Poudel & Nissen, 2016). The findings underscore the need for policy reforms to support pharmacist integration into patient-centered care teams through regulatory recognition, training for interdisciplinary collaboration, and financial incentives for cognitive services. Such measures will enhance pharmacists' contributions to improving medication management, safety, and health outcomes, ultimately leading to more effective and efficient healthcare systems.

CONCLUSION

This extensive review underscores the evolving and indispensable role of pharmacists as key players in patient-centered care. Evidence demonstrates that pharmacist-led interventions significantly improve medication management by optimizing therapy regimens, enhancing adherence, and ensuring rational medication use. Furthermore, pharmacists contribute substantially to patient safety by reducing medication errors and preventing adverse drug events across hospital and community settings. Beyond these roles, pharmacists positively impact health outcomes, as reflected in improved clinical indicators such as blood pressure and HbA1c levels, reduced hospital readmission rates, and enhanced patient satisfaction with care. These findings validate the integration of pharmacists into interdisciplinary healthcare teams as a strategic approach to achieving safer, more effective, and efficient care delivery. However, persistent barriers including regulatory constraints, limited reimbursement for cognitive services, and integration challenges must be addressed to fully leverage pharmacists' expertise. Future directions involve expanding pharmacists' roles in pharmacogenomics, telepharmacy, and digital health to meet the demands of personalized, accessible care. Overall, the findings advocate for health policy frameworks and institutional strategies that support pharmacists' expanded roles. By strengthening their integration into patient-centered care models, healthcare systems can optimize medication use, enhance safety, and improve health outcomes for diverse patient populations.

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