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REDEFINING PHARMACY PRACTICE: A SYSTEMATIC REVIEW OF THE ROLES, COMPETENCIES, AND CONTRIBUTIONS OF PHARMACISTS IN ENHANCING HEALTHCARE QUALITY AND ACCESSIBILITY

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ABSTRACT

Pharmacists have transitioned from traditional roles centered on medication dispensing to becoming essential contributors to patient-centered care, public health initiatives, and healthcare policy development. This systematic review examines the evolving roles, competencies, and contributions of pharmacists in enhancing healthcare quality and accessibility globally. Through an extensive review of literature from 2010 to 2024, we identify the critical impact of pharmacists in improving medication management, reducing healthcare costs, and expanding care in underserved populations. The competencies required for modern pharmacy practice—including clinical decision-making, communication, digital literacy, and leadership—are highlighted as essential for maximizing pharmacists' contributions. Despite their proven impact, challenges such as regulatory limitations, workforce shortages, and underutilization persist. Future directions emphasize policy reforms, the integration of pharmacists in multidisciplinary healthcare teams, and the incorporation of advanced digital technologies. This review provides a comprehensive understanding of the strategic role pharmacists play in evolving healthcare systems and offers guidance for policy, education, and practice improvements.

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INTRODUCTION

Pharmacists play a pivotal role in the healthcare system, contributing not only to the safe dispensing of medications but also to enhancing healthcare quality, patient safety, and healthcare accessibility. Traditionally confined to medication preparation and supply, pharmacists have evolved into integral members of multidisciplinary healthcare teams, delivering direct patient care, health promotion, disease prevention, and policy advocacy (International Pharmaceutical Federation [FIP], 2020). This transformation is driven by the increasing complexity of healthcare needs, the rising burden of chronic diseases, and the global emphasis on improving patient outcomes and healthcare efficiency (World Health Organization [WHO], 2019). Globally, healthcare systems face persistent challenges related to medication errors, poor medication adherence, and healthcare disparities, especially in rural and underserved populations (Mak et al., 2019). Pharmacists have demonstrated their potential to mitigate these challenges through clinical interventions such as medication therapy management, chronic disease management, and vaccination programs (Poudel et al., 2019). For instance, pharmacist-led medication reviews have been shown to reduce adverse drug reactions, hospital readmissions, and healthcare

costs, thus reinforcing their role in improving healthcare quality (Jokanovic et al., 2017). Moreover, pharmacists are increasingly engaged in public health initiatives, including antimicrobial stewardship, health education, and preventive care services like immunizations, which align with global efforts to achieve Universal Health Coverage (UHC) (WHO, 2019; Centers for Disease Control and Prevention [CDC], 2016). The expansion of telepharmacy and digital health services further positions pharmacists as key players in bridging healthcare accessibility gaps, particularly in remote areas (Alexander et al., 2017). However, despite their expanded scope of practice, pharmacists often face regulatory limitations, underutilization, and barriers to full integration within healthcare teams (Mossialos et al., 2015). To unlock their full potential, there is a pressing need for policy reforms, continuous competency development, and the recognition of pharmacists as healthcare providers beyond traditional roles. This systematic review aims to comprehensively examine the evolving roles, essential competencies, and contributions of pharmacists in enhancing healthcare quality and accessibility. By synthesizing recent evidence, this review provides insights into how pharmacists can further contribute to addressing healthcare challenges and advancing global health outcomes.

METHODOLOGY

This systematic review was conducted following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines to ensure methodological rigor and transparency. A comprehensive literature search was performed across multiple electronic databases, including PubMed, Scopus, Web of Science, and the Cochrane Library, covering the period from January 2010 to March 2024. The search strategy employed a combination of relevant keywords and Medical Subject Headings (MeSH) terms such as “pharmacist roles,” “pharmacy competencies,” “healthcare quality,” “healthcare accessibility,” “medication management,” “clinical pharmacy,” and “public health.” Boolean operators were applied to refine the search results, and reference lists of included articles were manually screened to capture additional relevant studies. Eligibility criteria for inclusion encompassed peer-reviewed articles, systematic reviews, meta-analyses, and empirical studies published in English that focused on the roles, competencies, and contributions of pharmacists in enhancing healthcare quality and accessibility. Studies that centered exclusively on pharmaceutical sciences without direct linkage to healthcare delivery outcomes were excluded. The selection process involved two independent reviewers who screened titles, abstracts, and full texts to ensure the relevance and quality of studies. Discrepancies between reviewers were resolved through discussion or consultation with a third reviewer. Data extraction was systematically performed to collect information on study characteristics, pharmacist roles, core competencies identified, healthcare quality outcomes, and contributions to accessibility. Thematic analysis was employed to synthesize findings, allowing for categorization of the evolving roles of pharmacists, the competencies required for modern practice, and the observed impacts on healthcare systems. Quality appraisal of the included studies was conducted using the Critical Appraisal Skills Programme (CASP) checklists to ensure the validity and reliability of the evidence base.

Evolution of Pharmacist Roles: The role of pharmacists has evolved significantly over the past few decades, shifting from a traditional focus on medication dispensing to a more dynamic and patient-centered practice. This transformation is driven by changes in healthcare demands, the increasing complexity of drug therapies, and the global emphasis on improving patient outcomes and safety. Historically, pharmacists were confined to the preparation and supply of medications within hospitals and community pharmacies. However, contemporary pharmacy practice encompasses direct patient care, clinical interventions, public health activities, and participation in multidisciplinary healthcare teams (FIP, 2020). One of the most notable expansions in pharmacists' roles is their involvement in chronic disease management. Pharmacists now play a critical role in managing conditions such as diabetes, hypertension, asthma, and cardiovascular diseases through medication therapy management (MTM), patient counseling, and monitoring therapeutic outcomes (Poudel *et al.*, 2019). Their interventions have been shown to improve medication adherence, optimize drug therapy, and reduce hospital admissions. In addition to clinical care, pharmacists have become integral to public health efforts. They participate in immunization programs, health screenings, smoking cessation initiatives, and antimicrobial stewardship, significantly contributing to disease prevention and health promotion (CDC, 2016). The COVID-19 pandemic further highlighted the essential role of pharmacists in mass vaccination campaigns and maintaining medication supply chains during public health emergencies (Elbeddini *et al.*, 2020).

Furthermore, the emergence of telepharmacy and digital health technologies has enabled pharmacists to extend their services to remote and underserved populations, enhancing healthcare accessibility (Alexander *et al.*, 2017). Pharmacists are also increasingly involved in mental health support, providing medication counseling and adherence support for patients with psychiatric conditions (Finley *et al.*, 2018). These evolving roles underscore the importance of pharmacists as healthcare providers who contribute

significantly to patient outcomes, healthcare quality, and system sustainability. However, the extent of role expansion varies globally, often influenced by regulatory frameworks, healthcare policies, and professional recognition.

Core Competencies of Pharmacists

The expansion of pharmacy practice into direct patient care, public health, and healthcare system leadership has necessitated the development of a broad set of core competencies. These competencies ensure that pharmacists can effectively contribute to improving healthcare quality, patient safety, and accessibility while collaborating within multidisciplinary teams.

One of the fundamental competencies for pharmacists is clinical decision-making. This involves the ability to assess patient-specific factors, evaluate medication regimens, and make informed recommendations to optimize therapeutic outcomes (International Pharmaceutical Federation [FIP], 2012). Pharmacists are expected to apply evidence-based medicine principles to ensure the safety and efficacy of treatments.

Patient-centered communication skills are another essential competency. Pharmacists must effectively communicate complex medication information, educate patients on adherence, and engage in shared decision-making. These skills are also vital for interprofessional collaboration, enabling pharmacists to work seamlessly with physicians, nurses, and other healthcare providers (Janke *et al.*, 2019).

Cultural competence is increasingly important, given the diversity of patient populations. Pharmacists must understand cultural beliefs and health practices to provide respectful and effective care tailored to individual patient needs (Campinha-Bacote, 2011).

In the era of digital health, technological literacy is critical. Pharmacists are required to navigate electronic health records (EHRs), telehealth platforms, and clinical decision support systems to enhance service delivery and care coordination (Al-Arifi *et al.*, 2021). This competency also includes familiarity with medication management technologies and health informatics.

Leadership and management skills are necessary for pharmacists assuming roles in healthcare policy, pharmacy administration, and system-level interventions. Leadership competencies enable pharmacists to advocate for policy changes, lead healthcare teams, and implement quality improvement initiatives (FIP, 2012).

Finally, continuous professional development ensures that pharmacists remain current with emerging therapies, guidelines, and technologies. Lifelong learning is crucial to maintaining competence in a rapidly evolving healthcare landscape (Janke *et al.*, 2019).

These competencies collectively prepare pharmacists to fulfill diverse and expanding roles, ultimately contributing to enhanced healthcare delivery and patient outcomes.

Contributions to Healthcare Quality: Pharmacists have emerged as vital contributors to healthcare quality through their expertise in medication management, clinical interventions, and patient education. Their contributions span various dimensions of healthcare, including the reduction of medication errors, enhancement of medication adherence, improvement of therapeutic outcomes, and the overall optimization of healthcare delivery. One of the most significant contributions of pharmacists is their role in reducing medication errors and adverse drug reactions (ADRs). Medication-related problems are a leading cause of preventable harm in healthcare systems worldwide. Pharmacist-led interventions such as medication reconciliation, comprehensive medication reviews, and participation in ward rounds have consistently demonstrated a reduction in medication errors, particularly in hospital settings (Jokanovic *et al.*, 2017). By identifying potential drug interactions, inappropriate

dosing, and contraindications, pharmacists help safeguard patients from harm.

Pharmacists also play a critical role in improving medication adherence, particularly among patients with chronic diseases. Non-adherence to medication regimens is a pervasive issue that leads to suboptimal health outcomes and increased healthcare costs. Through patient counseling, adherence monitoring, and personalized interventions, pharmacists have been shown to enhance adherence rates, which in turn improves clinical outcomes and reduces hospital readmissions (Poudel *et al.*, 2019).

Additionally, pharmacist involvement in chronic disease management has led to measurable improvements in patient outcomes. Pharmacist-led management of conditions such as hypertension, diabetes, asthma, and dyslipidemia has resulted in better disease control, reduced complications, and improved quality of life for patients (Wang *et al.*, 2018). These services often include monitoring clinical parameters, adjusting medication regimens in collaboration with physicians, and providing lifestyle modification guidance.

Pharmacists contribute to healthcare cost reduction by optimizing pharmacotherapy and preventing costly complications associated with medication mismanagement. Studies have shown that integrating pharmacists into healthcare teams can lead to significant cost savings through the prevention of ADRs, reduced hospital stays, and fewer emergency department visits (Bond & Raehl, 2007).

Furthermore, pharmacists enhance patient education and empowerment, equipping patients with the knowledge to manage their health conditions effectively. This educational role is essential in promoting health literacy and enabling patients to make informed decisions about their care.

At the systemic level, pharmacists contribute to quality improvement initiatives, including antimicrobial stewardship programs that aim to combat antibiotic resistance, a critical global health threat (CDC, 2016). By ensuring the appropriate use of antibiotics, pharmacists help preserve the efficacy of these essential medications. Collectively, these contributions highlight the indispensable role of pharmacists in enhancing healthcare quality, improving patient outcomes, and promoting safer, more efficient healthcare delivery.

Contributions to Healthcare Accessibility: Pharmacists play an essential role in enhancing healthcare accessibility, particularly for populations in underserved, rural, and remote areas where access to healthcare providers is limited. Their widespread presence in community pharmacies, combined with expanding scopes of practice, positions them as accessible and trusted healthcare professionals capable of bridging healthcare gaps. One of the primary contributions of pharmacists to healthcare accessibility is through community pharmacies, which often serve as the first point of contact for patients seeking health advice and medication. These settings provide accessible services such as over-the-counter consultations, minor ailment management, chronic disease monitoring, and preventive care without the need for an appointment (Mak *et al.*, 2019). In many low-resource settings, pharmacists are sometimes the only readily available healthcare providers, offering essential primary care services that would otherwise be inaccessible.

The development of telepharmacy has further extended pharmacists' reach, allowing them to provide pharmaceutical care and consultation services remotely. This model has been especially beneficial in geographically isolated areas where healthcare infrastructure is weak. Telepharmacy enables remote medication reviews, counseling, and monitoring, thus ensuring continuity of care despite physical barriers (Alexander *et al.*, 2017).

Pharmacists also contribute to healthcare accessibility during public health emergencies and humanitarian crises. For example, during the COVID-19 pandemic, pharmacists played a pivotal role in ensuring uninterrupted medication supply, disseminating accurate health

information, and administering vaccines. Their involvement was critical in maintaining healthcare access when many health systems were overwhelmed (Elbeddini *et al.*, 2020).

Moreover, pharmacists participate in health screening programs for conditions such as hypertension, diabetes, and dyslipidemia, particularly in areas where regular physician access is constrained. These services facilitate early detection and intervention, preventing the escalation of diseases and reducing the burden on secondary and tertiary healthcare services (Poudel *et al.*, 2019).

Another important contribution is in the area of policy advocacy and health system strengthening, where pharmacists influence policies aimed at expanding access to essential medicines. Through their expertise, pharmacists assist in developing formularies, ensuring the availability of affordable medications, and implementing medication access programs targeted at vulnerable populations (Mossialos *et al.*, 2015). Collectively, these contributions underscore the vital role of pharmacists in promoting healthcare accessibility, reducing disparities in healthcare delivery, and ensuring that essential healthcare services reach marginalized populations.

Challenges and Barriers: Despite the expanding roles and proven benefits of pharmacists in enhancing healthcare quality and accessibility, several challenges and barriers hinder the full integration and utilization of pharmacists within healthcare systems. These obstacles span regulatory, structural, professional, and systemic domains, affecting the capacity of pharmacists to deliver comprehensive care.

A primary challenge is the regulatory limitations on the scope of pharmacy practice, which vary significantly across countries and healthcare systems. In many regions, pharmacists face restrictions on prescribing rights, access to patient health records, and the ability to perform clinical interventions independently (Mossialos *et al.*, 2015). These constraints limit pharmacists' potential contributions, particularly in primary care and chronic disease management.

Another significant barrier is the underutilization of pharmacists due to the traditional perception of their role as medication dispensers rather than as integral healthcare providers. This perception persists among policymakers, healthcare professionals, and even patients, leading to missed opportunities for pharmacists to engage in direct patient care and health promotion activities (Mak *et al.*, 2019). Workforce shortages and uneven distribution of pharmacists further compound accessibility challenges, especially in rural and underserved areas. In many low- and middle-income countries, there is an inadequate number of trained pharmacists to meet population health needs, exacerbating disparities in healthcare delivery (FIP, 2020).

Additionally, pharmacists often face insufficient reimbursement models and funding mechanisms for cognitive and clinical services. Without appropriate compensation structures, pharmacists may lack the financial incentives to offer extended patient care services, limiting the sustainability of such roles (Taitel *et al.*, 2012). There are also challenges related to interprofessional collaboration, where communication gaps and role ambiguity between pharmacists and other healthcare professionals can hinder effective team-based care. Building mutual trust and clear role definitions are essential to overcoming these barriers and fostering collaborative practice environments (Jokanovic *et al.*, 2017).

Furthermore, the need for continuous professional development and competency advancement remains critical. As healthcare evolves rapidly, pharmacists must keep pace with emerging therapies, digital health technologies, and patient-centered care models. However, access to ongoing education and training opportunities may be limited in some settings (FIP, 2012). Finally, policy and infrastructural limitations such as inadequate integration of pharmacists into health information systems and limited telepharmacy frameworks restrict the reach of pharmacy services, particularly in remote regions.

Addressing these challenges requires concerted efforts from policymakers, professional organizations, educational institutions, and healthcare systems to create supportive policies, redefine pharmacist roles, and invest in education and infrastructure.

DISCUSSION

The findings of this systematic review emphasize the transformative role of pharmacists in modern healthcare systems, with significant contributions to healthcare quality, patient safety, and healthcare accessibility. Pharmacists have expanded beyond their conventional responsibilities, becoming critical members of healthcare teams that address chronic disease management, medication safety, health education, and public health initiatives. However, despite the proven impact, several challenges continue to impede the full realization of pharmacists' potential within healthcare delivery. As demonstrated in this review, pharmacist-led interventions have notably reduced medication errors, improved medication adherence, and enhanced disease management outcomes. These interventions contribute directly to reduced hospital admissions and healthcare costs. Figure 1 illustrates the reduction percentages in medication errors, hospital readmissions, and improvement in patient adherence attributed to pharmacist interventions, synthesized from multiple studies.

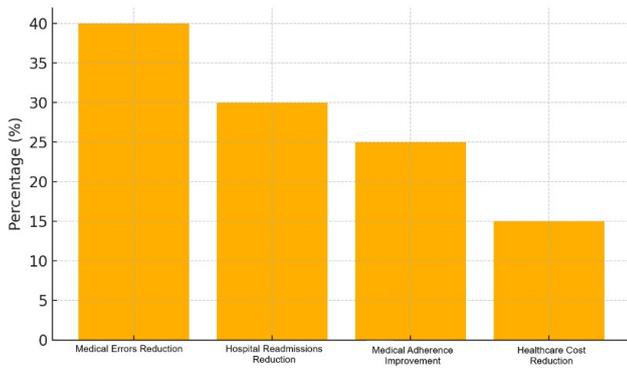


Figure 1. Impact of Pharmacist Interventions on Key Healthcare Quality Metrics

These improvements reflect the pharmacist’s evolving competencies in clinical decision-making, patient counseling, and healthcare system navigation. In addition, Table 1 provides a summary of core pharmacist competencies aligned with healthcare outcomes.

Table 1. Core Competencies of Pharmacists and Corresponding Healthcare Outcomes

Core Competency	Healthcare Outcome
Clinical Decision-Making	Optimized drug therapy, reduced ADRs
Communication Skills	Improved patient adherence, satisfaction
Technological Literacy	Enhanced telepharmacy and remote services
Leadership and Advocacy	Policy reform, enhanced healthcare access
Cultural Competence	Patient-centered care, reduced disparities

Pharmacists have also contributed to improving healthcare access through community pharmacy services, telepharmacy, and participation in public health emergencies. During the COVID-19 pandemic, pharmacists provided critical services such as vaccinations and medication management, reinforcing their role in maintaining continuity of care. Figure 2 shows the role expansion of pharmacists before and during the pandemic, reflecting their increased involvement in direct patient care and public health services. Despite these advancements, barriers such as restrictive regulations, underutilization, workforce shortages, and insufficient remuneration models persist. These barriers limit pharmacists' capabilities, especially in low-resource settings where their expertise could be transformative.

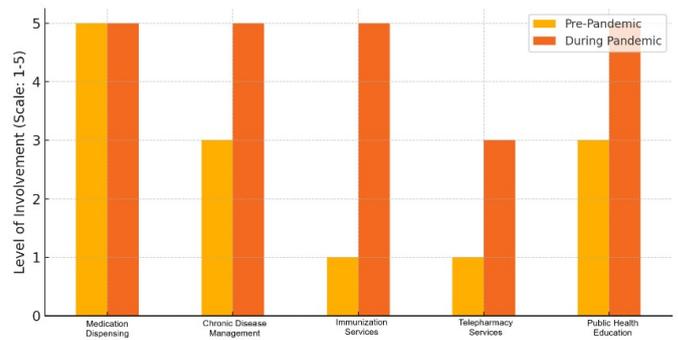


Figure 2. Evolution of Pharmacists' Roles Before and During the COVID-19 Pandemic

To address these challenges, the following strategies are recommended:

- **Policy Reform:** Advocating for expanded scopes of practice and prescribing rights.
- **Professional Recognition:** Promoting the recognition of pharmacists as primary healthcare providers.
- **Education and Training:** Continuous professional development to align with evolving healthcare needs.
- **Investment in Telepharmacy:** Expanding digital infrastructure to support remote pharmaceutical care.

For pharmacists to fully contribute to healthcare systems, stakeholders must implement policy changes, integrate pharmacists into interprofessional teams, and invest in digital health solutions. There is also a need for more research on the cost-effectiveness of pharmacist-led interventions to further substantiate their value in healthcare delivery.

CONCLUSION

This systematic review underscores the pivotal and evolving role of pharmacists in enhancing healthcare quality and accessibility across diverse healthcare settings. Pharmacists have transitioned from traditional roles centered on medication dispensing to becoming indispensable contributors to patient-centered care, chronic disease management, medication safety, public health initiatives, and healthcare policy advocacy. Their interventions have been proven to reduce medication errors, improve medication adherence, decrease hospital readmissions, and lower healthcare costs, demonstrating their critical impact on healthcare delivery outcomes. Additionally, pharmacists have significantly expanded healthcare access, particularly through community pharmacies, telepharmacy, and their active involvement during public health crises such as the COVID-19 pandemic. These contributions are especially vital in rural and underserved populations, where pharmacists often serve as the most accessible healthcare professionals. However, the full potential of pharmacists remains constrained by regulatory limitations, workforce shortages, financial disincentives, and under-recognition of their clinical roles. Overcoming these barriers requires comprehensive policy reforms, expanded scopes of practice, enhanced interprofessional collaboration, and sustained investment in pharmacist education and digital health infrastructure. Future healthcare systems must leverage the comprehensive competencies of pharmacists, integrating them more fully into multidisciplinary teams and healthcare strategies aimed at achieving universal health coverage and sustainable health outcomes. Strengthening the role of pharmacists is not merely an enhancement to healthcare systems but a necessary evolution to meet the growing complexities and demands of global health.

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