

# The Impact of Pharmacy Services on Healthcare Quality and Efficiency

**Ahmed Oudah Alghamdi<sup>1</sup> Mohammed Ahmed Saeed Almirabi<sup>1</sup> Shoog Matook Tayeb<sup>1</sup> Maher Abdullah Turki Alhazmi<sup>2</sup> Hanan Mohammed Taifallah AIOsaimi<sup>2</sup> Sara Abdullah Al Shareef<sup>2</sup> Basem hameed Alharbi<sup>2</sup> Walaa Abdullatef Bokhari<sup>3</sup>**

*1 Pharmacist Assistant, King Abdulaziz Hospital in Mecca*

*2 Pharmacist, King Abdulaziz Hospital in Mecca*

*3 Pharmacy Technician, King Abdulaziz Hospital in Mecca*

## ABSTRACT

**Introduction:** Today, pharmacy services play a crucial role beyond dispensing medicines as part of modern healthcare. As healthcare systems internationally strive toward achieving patient outcomes and efficiencies, pharmacy services increasingly become the lifeblood to the continuum of care. These services involve medication management, patient counseling, clinical intervention, and multidisciplinary care teams engagement. Integrating advanced pharmaceutical care into healthcare system facilitates pharmacies to enhance the quality and optimize resource utilization.

**Aim of work:** To examine the multifaceted impact of pharmacy services on healthcare quality and efficiency. It seeks to highlight the critical roles pharmacists play in enhancing clinical outcomes, improving patient satisfaction, optimizing costs, and advancing public health initiatives.

**Methods:** We conducted a comprehensive search in the MEDLINE database's electronic literature using the following search terms: Impact, Pharmacy, Services, Healthcare, Quality and Efficiency. The search was restricted to publications from 2016 to 2024 in order to locate relevant content. We performed a search on Google Scholar to locate and examine academic papers that pertain to my subject matter. The selection of articles was impacted by certain criteria for inclusion.

**Results:** The publications analyzed in this study encompassed from 2016 to 2024. The study was structured into various sections with specific headings in the discussion section.

**Conclusion:** Pharmacy services are an important part of modern healthcare systems. They increase quality and efficiency. Pharmacists have improved the quality of many clinical outcomes, patient satisfaction, and assurance of cost-effective care. This is possible through their knowledge in medication management, patient education, and public health. Certain systemic challenges need to be overcome and technology embraced in order to realize the full potential of pharmacy services. With all these transformations, pharmacists will still be at the forefront of ensuring safe, effective, and equitable care for patients.

**Keywords:** *Impact, Pharmacy, Services, Healthcare, Quality and Efficiency*

## INTRODUCTION

Actually, pharmacy services now have a pivotal role in modern healthcare and, beyond medication dispensing (Riad, 2024), encompass much more than that. Pharmacy services have become such an integral aspect of the continuum of care that practically every healthcare system worldwide has begun to engage in its incorporation into patient outcomes and efficiency improvements. These services include medication management, patient counseling, direct clinical interventions, and contributions to multidisciplinary teams in patient care. But while filling the gap in advancing pharmaceutical care services with service integration, pharmacies remain an important stakeholder against improved quality of care and optimized resource productivity (Desai, R).

Pharmacy services are, in fact, focused on drug safety and efficiency, and these characteristics help to improve quality in health care. Medication errors are a major cause of adverse incidents in health care, and pharmacists work to reduce them. "They perform comprehensive reviews of medications, double-check prescriptions, and provide evidence-based recommendations so that patients can always receive the best therapies according to their individual needs," Gupta et al. said, adding that this will lower the risk of drug reactions that could harm patients and improve treatment outcomes. Because pharmacists are accessible in both community and clinical settings, that would allow patients to receive up-to-minute access to these medicines that can prevent poor compliance and enhance health outcome (Alqarni et al., 2023).

Enhanced operational efficiency is also proven by pharmacy services while minimizing unnecessary hospital admissions and readmissions. For instance, hospital pharmacists engage themselves with discharge planning, ensuring patients understand their medication regimens and possible adverse effects. This lowers the chance for complications that might provoke readmissions. Similarly, pharmacists spend time in chronic illness management programs running diabetes and hypertension clinics, teaching patients how to maintain conditions to decrease dependence on emergency departments and inpatient services (Bach et al., 2019).

Economic impacts of pharmacy services must therefore never be ignored or seen as secondary. Cost-effective medical management often results in cost savings for patients and also for healthcare systems since it waives any dearest complications or optimizing the healthcare resources using fewer resources. Pharmacists' interventions like therapeutic substitution, deprescribing non-essential medications, and drug shortage management would have ensured the freedoms that develop treatment regimens into both cost-effective and clinically appropriate. Further, the advent of pharmacogenomics, wherein a patient's genetic profile is analyzed by pharmacists to tailor a particular medication for the individual involved, would appear to go towards reducing the need for trial-and-error prescribing as well as improving the overall efficiency of care (Vaismoradi et al., 2024).

The pace of evolution that pharmacy practice has been undergoing purely further enlarges the spheres of its impact on the quality and efficiency of healthcare. Pharmacy practitioners have consolidated their use of health information technology in the streamlining of processes like e-prescribing, medication reconciliation, and data analytics. Telepharmacy, a new mode of innovation, is designed for patients residing in rural or underserved areas to receive their pharmaceutical care. It has given wings to accessibility and equity in health and services among groups that quality services would otherwise reject (Almukalfi et al., 2023). Pharmacy services fundamentally transformed and increased the pace at which they transformed health care quality and efficiency. Its roles in medication safety, chronic disease management, cost containment, and to advanced technology contribution made its place more prominent within the health sector. As the dynamics of health care change, strategic involvement of pharmacy services will remain key in answering the increasing demand for high-quality and efficient care, which is patient-centred. To lead with the others, embracing innovation, developing teamwork among caregivers, and working with partners in their mission makes pharmacy professionals well-placed to have impact in global health outcomes.

### **AIM OF WORK**

To assess the multifaceted effect of pharmacy services on quality and efficiency in health care, this review seeks to underscore the importance of pharmacists in contributing to clinical outcomes, patient satisfaction and cost benefits as well as advancing healthcare for public health initiatives. Moreover, the review involves discussions over the integration of pharmacy services within interdisciplinary healthcare teams, current challenges, and possible ways of maximizing their contribution to the healthcare system.

## **METHODS**

A thorough search was carried out on well-known scientific platforms like Google Scholar and Pubmed, utilizing targeted keywords such as Impact, Pharmacy, Services, Healthcare, Quality and Efficiency. The goal was to collect all pertinent research papers. Articles were chosen according to certain criteria. Upon conducting a comprehensive analysis of the abstracts and notable titles of each publication, we eliminated case reports, duplicate articles, and publications without full information. The reviews included in this research were published from 2016 to 2024.

## **RESULTS**

The current investigation concentrated on the multifaceted impact of pharmacy services on healthcare quality and efficiency between 2016 and 2024. As a result, the review was published under many headlines in the discussion area, including: Enhancing Clinical Outcomes Through Pharmacist Interventions, Improving Patient Satisfaction and Engagement, Cost Management and Resource Optimization, Advancing Public Health Initiatives, Integration into Interdisciplinary Healthcare Teams, Challenges and Future Directions

## **DISCUSSION**

What has evolved is the drug-and-pharmacy services over the past years. It has changed from a drug dispensing service to a patient-centered professional pharmacy service. This is due to the more complicated health systems, increased burden due to chronic diseases, and the need for improved quality and efficiency in health care services. Pharmacists are today integrated members of health teams with roles that take on patient care, medication optimization, and cost-effective care delivery (Alghamdi et al. 2023). The review is on the multifaceted impact of pharmacy services on health systems quality and efficiency concerning clinical outcomes, consumer satisfaction, and cost management, plus future issues.

### **Enhancing Clinical Outcomes Through Pharmacist Interventions**

The roles of pharmacists in improving clinical outcomes are multidimensional, but among them, the most critical is ensuring correct medication administration. Medication errors, adverse drug effects (ADRs), and non-adherence are obvious issues within the healthcare setting that cause frequent readmission, increased length of treatment, and even increased mortality. This is dampened through clinical medication review, the detection of possible drug interactions, and patient education about proper medication usage by a pharmacist (Hakami et al., 2023).

Medication therapy management (MTM) is one intervention designed to maximize medication benefits for patients with chronic problems such as diabetes, hypertension, and asthma (Marupuru et al., 2022). A pharmacist-led MTM program significantly reduces HbA1c levels in diabetic patients, lowers blood pressure in hypertensive patients, and improves the control of asthma in individuals. Clinical pharmacists also join the rounds of physicians, wherein they would provide real-time recommendations to alter the medicine taken by the patient for an increase in the safety of the patient and the efficacy of treatment (Mubaraki et al., 2024).

Pharmacists also play a large role in the management of antimicrobial stewardship programs for appropriate antibiotic use to counter the ever-growing threat of antimicrobial resistance. Their training in pharmacokinetics and -dynamics permits them to optimize individually tailored antibiotic regimens, thus decreasing the number of resistant infections and improving patient health outcomes altogether (Alanazi et al., 2024).

### **Improving Patient Satisfaction and Engagement**

Improve patient satisfaction since it does invest in the treatment aspect affecting more measures of medical therapy general success. Then improvement of pharmacy services such as easily being accessed, individual care, building at high levels by the motifs of trust between patients and healthcare providers will add to patient satisfaction (Batbaatar et al., 2017). The community

pharmacist acts as the first port-of-call professional who is usually consulted first. They provide very good advice on minor ailments, over-the-counter medications, and health promotion activities. This will improve the patient's experience and patient compliance through understandable instructions, which is another way of reducing their access to emergency departments and primary care physicians (Ilardo & Speciale, 2020).

Role plays educate by giving patients information about their medicines regarding the need for taking them, dosages, and any potential side effects. Education puts the patient on an active role in treatment leading to better compliance and outcomes of therapy. Telepharmacy services reached a remote patient and thus ensure equality in health access and further promote health equity (Alemede et al., 2024).

### **Cost Management and Resource Optimization**

Medications Pharmacy services can save vital cost in the ever-increasing burden of health care due to growing costs brought about by chronic illness and aging populations. Pharmacists take a role in the management of costs by preventing medication errors, hospital re-admissions, and optimizing drug therapies (Dalton & Byrne, 2017).

Apart from that, one other biggest cost-saver is prevention from adverse drug events (ADE), which is one of the most important reasons for hospitalization and thus the cost of health care. By doing important medication reconciliations post-transitions of care, the drug addict can test that the patient is receiving his proper drugs without duplicated and omitted drugs or without drugs that can interact leading to such an event. (Rudden, 2020).

Pharmacists also encourage patients to use generic medicines or biosimilars or economically effective therapeutic alternatives without sacrificing treatment efficacy. They are skilled in pharmacoeconomics, balancing the clinical benefits with an individual's financial considerations in value-based care (Okoro, 2021).

Pharmacists also aid health care systems in inventory control and thus prevent wastage of medications. These efforts include facilitating both the economical procurement of medicines and their ideal storage standards-mostly result in offloading-the health care system as well making available the pertinent drugs (Afanasjeva & Gruenberg, 2019).

### **Advancing Public Health Initiatives**

Pharmacy services are beyond patient-based and go to public health initiatives. Pharmacists play a vital role in disease prevention, health promotion, and emergency preparedness thus improving the overall quality and efficiency of the healthcare systems (Atkin et al., 2021).

Immunization services by pharmacists had a significant impact on improved vaccination rates especially with respect to influenza, COVID-19, and pneumococcus diseases. Pharmacists' trusted healthcare provider status makes it easy to access and educate them against vaccination for the uptake of immunization. Their participation in vaccination campaigns was very effective in the underserved, where barriers are present to healthcare settings in general (Le et al., 2022).

Other programs including smoking cessation programs, weight-management counseling, and managing opioid use disorders include pharmacists. With their overall care, patients are equipped with the right attitude and life choices against chronic diseases, thus improving the health outcome of populations (da Cunha et al., 2023).

### **Integration into Interdisciplinary Healthcare Teams**

The integration of pharmacists as vital components has been a great contributor to the improved quality and efficiency of healthcare. Collaborative practice agreements would serve as the foundation for pharmacists to enter into collaborative arrangements with physicians as well as other healthcare professionals like nurses in the pooling of service in the sharing of responsibilities to optimized patient care (Ruiz-Ramos et al. 2021).

Pharmacists supply a vital aspect to the healthcare team regarding medication management and patient education. Their contribution is improved by reducing hospital readmission rates, chronic disease management, and perhaps the overall delivery of services. An example is where, in a primary care setting, a pharmacist collaborates with a physician to make possible the safe and effective treatment of a patient with multiple comorbidities requiring complex medication regimens (Ruiz-Ramos et al. 2021).

While performing clinical work, pharmacists investigate healthcare policies, develop policies, and implement evidence-based practices. They drive quality improvement efforts and stimulate innovation in health systems to be adaptive to the new emerging challenges (Ruiz-Ramos et al. 2021).

### **Challenges and Future Directions**

Pharmacy services significantly impact health care systems' full integration and utilization. One such barrier is a standardized model of reimbursement for pharmacy services, which is critical to the community setting. Addressing this major issue takes a lot of advocacy for possible policy change and recognition of pharmacists' provider status under healthcare legislation (Hatton et al. 2021).

Workforce shortages and increased workload requirements further complicate matters and threaten the quality of the care pharmacists provide. Investments in education, training, and technology will help to take pressure off, which will increase their involvement in clinical areas instead of being relegated to administrative duties (Hatton et al. 2021).

The future of pharmacy services is going to leverage efficiency with better access through technology. Innovations like artificial intelligence (AI), electronic health records (EHRs), and telehealth interfaces will make medication management simpler and improve the communication of health professionals with their patients, thereby improving patient outcomes. Personalized medicine-the exciting new path for the pharmacist to customize therapy to each individual patient based on the advances in pharmacogenomics-may have a lot to offer in practice (Hatton et al. 2021).

### **CONCLUSION**

Pharmacy services form the backbone of modern health systems, supporting health systems in optimizing medication use, improving patient care, and enhancing public health. In fact, the transition of pharmacists from conventional dispensary roles to active participants in preventive and clinical healthcare has brought tremendous improvements in both quality and efficiency of healthcare. Pharmacists have also been instrumental in medication therapy management, patient education, and antimicrobial stewardship, resulting in fewer medication errors, decreased adverse drug events, and better clinical outcomes.

In addition, the direct accessibility of pharmacists to patients has improved patient satisfaction and compliance with treatment plans. On the other hand, services such as offering immunizations, chronic conditions management, and telepharmacy complement the availability of pharmacists in ensuring equitable access to care, particularly underserved and more remote communities. Their contributions to cost-management through prevention of waste, promotion of generic medications, and mitigation of hospital readmissions are great assets in times with rising healthcare costs.

These accomplishments notwithstanding, barriers such as poor reimbursement systems, shortage in the workforce, and ever-changing health demands constitute barriers to full utilization of pharmacy services. Policy revision, technology advancement and workforce development are some of the essential avenues for tackling these challenges which will unlock pharmacy practice to its full potential in health delivery.

Changes in lifestyle and advances in healthcare will impact the relationship of pharmacists in the near future. Innovations such as personalized medicine and telemedicine will encourage interprofessional collaborations and bring ever-more responsibilities for the pharmacist. By embracing these issues, pharmacy services will play integral roles in achieving safety, efficacy, and access in healthcare for all.

## REFERENCES

- Aburas, W., & Alshammari, T. M. (2020). Pharmacists' roles in emergency and disasters: COVID-19 as an example. *Saudi Pharmaceutical Journal*, 28(12), 1797-1816.
- Afanasjeva, J., & Gruenberg, K. (2019). Pharmacists as environmental stewards: Strategies for minimizing and managing drug waste. *Sustainable chemistry and pharmacy*, 13, 100164.
- Alanazi, M. D., Alanazi, M. S. A., Alenezi, M. D. L., Alanazi, L. S. A., Alanzi, N. S., & Alenezi, N. G. K. (2024). The Role of Pharmacists in Combating Antimicrobial Resistance in Saudi Arabia. *Journal of International Crisis and Risk Communication Research*, 1518-1537.
- Alemede, V., Nwankwo, E. I., Igwama, G. T., Olaboye, J. A., & Anyanwu, E. C. (2024). Pharmacists as educators: Enhancing patient understanding and access to specialty medications through community workshops. *Magna Scientia Advanced Biology and Pharmacy*, 13(1), 1-9.
- Alghamdi, T. A., Zahrani, H. Y., Aljalis, M. I., Nawab, N. A., Alghamdi, T. A., Al-Suraie, R. A., ... & Al Masoud, N. A. A. F. (2024). The Evolving Role of Pharmacists in Patient care: Trends and Innovations. *Journal of International Crisis and Risk Communication Research*, 1408-1419.
- Almukalfi, M. R. D., Alsuhaymi, S. S. S., Alharbi, F. H. S., Aljohani, S. A. S., Aloufi, A. R. M., Aloufi, Z. M. Q., & Alharbi, M. M. A. (2023). THE IMPACT OF TELEPHARMACY ON RURAL AND UNDERSERVED COMMUNITIES. *ACTA SCIENTIAE*, 6(2), 169-180.
- Alqarni, M. A., Alshammari, N. A., Aljohani, A. A., Alenezi, B. H., Alsubhi, I. M., Al-Harbi, H. R., ... & Aljabry, S. (2023). The Role Of Community Pharmacists In Educating Patients About Drug Interactions And Medication Safety. *Journal of Survey in Fisheries Sciences*, 10(5), 276-281.
- Atkin, K., Madden, M., Morris, S., Gough, B., & McCambridge, J. (2021). Community pharmacy and public health: preserving professionalism by extending the pharmacy gaze?. *Sociology of Health & Illness*, 43(2), 336-352.
- Bach, Q. N., Peasah, S. K., & Barber, E. (2019). Review of the role of the pharmacist in reducing hospital readmissions. *Journal of Pharmacy Practice*, 32(6), 617-624.
- Batbaatar, E., Dorjdagva, J., Luvsannyam, A., Savino, M. M., & Amenta, P. (2017). Determinants of patient satisfaction: a systematic review. *Perspectives in public health*, 137(2), 89-101.
- da Cunha, I. N., Ming, L. C., Patel, M., Camarillo, L. R., & Appalasamy, J. R. (2023). Supporting Tobacco Cessation and The Treatment of Tobacco Dependence: A Handbook for Pharmacists.
- Dalton, K., & Byrne, S. (2017). Role of the pharmacist in reducing healthcare costs: current insights. *Integrated Pharmacy Research and Practice*, 37-46.
- Desai, R. *Optimizing Pharmacy Operations: Strategies for Efficiency and Quality Care.*
- Gupta, Y., Kumar, N., Shukla, A., & Rai, V. (2023). Assessment of the Role of Pharmacists in Preventing Medication Errors in Hospital Settings. *Journal for Research in Applied Sciences and Biotechnology*, 2(2), 212-218.
- Hakami, A. M., Arishi, G. I., Numan, A. I., & Bushyah, M. F. (2023). Optimizing Patient Outcomes: A Comprehensive Review Of Integrating Clinical Pharmacists Into Healthcare Teams. *Journal of Survey in Fisheries Sciences*, 1295-1299.
- Hatton, K., Bhattacharya, D., Scott, S., & Wright, D. (2021). Barriers and facilitators to pharmacists integrating into the ward-based multidisciplinary team: a systematic review and meta-synthesis. *Research in Social and Administrative Pharmacy*, 17(11), 1923-1936.

- Ilardo, M. L., & Speciale, A. (2020). The community pharmacist: perceived barriers and patient-centered care communication. *International journal of environmental research and public health*, 17(2), 536.
- Le, L. M., Veettil, S. K., Donaldson, D., Kategeaw, W., Hutubessy, R., Lambach, P., & Chaiyakunapruk, N. (2022). The impact of pharmacist involvement on immunization uptake and other outcomes: An updated systematic review and meta-analysis. *Journal of the American Pharmacists Association*, 62(5), 1499-1513.
- Marupuru, S., Roether, A., Guimond, A. J., Stanley, C., Pesqueira, T., & Axon, D. R. (2022, June). A systematic review of clinical outcomes from pharmacist provided medication therapy management (MTM) among patients with diabetes, hypertension, or dyslipidemia. In *Healthcare* (Vol. 10, No. 7, p. 1207). MDPI.
- Mubaraki, F. M. A., Alghamdi, T. H. M., Alqasimi, A. Q. A., Alaklobi, A. S. S., Khurshan, N. A. Y., Ageeli, T. M. R., ... & Albishi, R. S. S. (2024). The Pharmacist-Nurse Partnership Improving Patient Safety and Medication Management. *Journal of International Crisis and Risk Communication Research*, 1805-1822.
- Okoro, R. N. (2021). Biosimilar medicines uptake: The role of the clinical pharmacist. *Exploratory research in clinical and social pharmacy*, 1, 100008.
- Riad, M. (2024). Study of the modern role of pharmacists in the rational use of medicines.
- Rudden, F. (2020). Pharmacy Manager Strategies for Reducing Financial Losses From Adverse Drug Events by Polypharmacy Patients (Doctoral dissertation, Walden University).
- Ruiz-Ramos, J., Hernández, M. H., Juanes-Borrego, A. M., Milà, R., Manges-Bafalluy, M. A., & Mestres, C. (2021). The impact of pharmaceutical care in multidisciplinary teams on health outcomes: systematic review and meta-analysis. *Journal of the American Medical Directors Association*, 22(12), 2518-2526.
- Vaismoradi, M., Mardani, A., Crespo, M. L., Logan, P. A., & Sak-Dankosky, N. (2024). An integrative systematic review of nurses' involvement in medication deprescription in long-term healthcare settings for older people. *Therapeutic Advances in Drug Safety*, 15, 20420986241289205.