Letters in High Energy Physics
ISSN: 2632-2714
Volume 2024

Evaluating the Impact of Clinical Pharmacist-Developed Protocols in Chronic Disease Management: A Systematic Review of Patient Health Outcomes

1. **Ahmed Mohammed Alzahrani**, applemk966@gmail.com, Pharmacy technician, Pharmaceutical Services Administration, King Abdullah Medical City, Makkah, kingdom of Saudi Arabia.
2. **Abdulrahman Mohammed Saeed**, Pharmacy technician, Pharmaceutical Services Administration, King Abdullah Medical City, Makkah, kingdom of Saudi Arabia.
3. **Hala Abdullah Hanafiyah**, Pharmacy technician, Pharmaceutical Services Administration, King Abdullah Medical City, Makkah, kingdom of Saudi Arabia.
4. **Abdul Mohsen Talal Basudan**, Pharmacist, Pharmaceutical Services Administration, King Abdullah Medical City, Makkah, kingdom of Saudi Arabia.
5. **Tayyib Saeed Almtrafi**, Pharmacist, Pharmaceutical Services Administration, King Abdullah Medical City, Makkah, kingdom of Saudi Arabia.
6. **Reham Mohammed Khayat**, Pharmacist, Pharmaceutical Services Administration, King Abdullah Medical City, Makkah, kingdom of Saudi Arabia.
7. **Taghreed Abdul Jaleel Zamzami**, Pharmacist, Pharmaceutical Services Administration, King Abdullah Medical City, Makkah, kingdom of Saudi Arabia.
8. **Yasser mesfer alzahrani**, Pharmacy technician, Pharmaceutical Services Administration, King Abdullah Medical City, Makkah, kingdom of Saudi Arabia.
9. **Saeed Gomman Alzahrani**, pharmacy technician, Supply chains department, King Faisal Hospital, Makkah, kingdom of Saudi Arabia.
10. **Ebrahim Mohammed Alzahrani**, pharmacy technician, Supply chains department, King Faisal Hospital, Makkah, kingdom of Saudi Arabia.
11. **Turki Ali Khubrana**, pharmacy technician, pharmaceutical care department, King Faisal Hospital, Makkah, kingdom of Saudi Arabia.
12. **Basim Menwer Alotaibi**, pharmacist, pharmaceutical care department, King Faisal Hospital, Makkah, kingdom of Saudi Arabia.

Abstract

Purpose: The purpose of this study is to explain the impact of clinical pharmacist-developed protocols on improving disease control markers in chronic disease patients and the effectiveness of these protocols in increasing patient adherence to treatment plans and reducing healthcare.

Methods: Search for studies in databases like PubMed, Cochrane Library, Embase, and CINAHL using terms such as “pharmacist-developed protocols,” “clinical pharmacist chronic disease protocols,” “protocols in diabetes/hypertension management,” and “protocol outcomes in chronic disease.”

Conclusion: Improved CDM for a range of illnesses resulted from pharmacists' ability to influence clinical and humanistic outcomes in the FQHC when given prescription authority and collaborating with an interdisciplinary primary care team. To confirm these findings in different contexts, more research ought to be done.

Background

In managing chronic diseases, standardized treatment protocols help ensure consistent, evidence-based care that optimizes patient outcomes. Clinical pharmacists often play a critical role in developing, implementing, and monitoring these protocols, particularly for chronic conditions like diabetes, hypertension, asthma, and heart disease. This systematic review will evaluate the impact of pharmacist-developed protocols on patient health outcomes in chronic disease management settings.

Objectives

The primary objective of this review is to assess the effectiveness of protocols developed and implemented by clinical pharmacists on health outcomes in patients with chronic diseases. A secondary objective is to identify specific protocol elements and strategies that lead to improved health outcomes.

Research Questions

1. How do pharmacist-developed protocols influence clinical outcomes in chronic disease management (e.g., blood pressure control, blood glucose levels)?
2. What effect do these protocols have on patient adherence to treatment plans and medication regimens?
3. How do protocol-based pharmacist interventions impact healthcare utilization outcomes, such as emergency department visits and hospitalizations?
4. What specific elements within pharmacist-led protocols contribute most significantly to improved patient health outcomes?

Methodology

1. Literature Search: Search for studies in databases like PubMed, Cochrane Library, Embase, and CINAHL using terms such as “pharmacist-developed protocols,” “clinical pharmacist chronic disease protocols,” “protocols in diabetes/hypertension management,” and “protocol outcomes in chronic disease.”
2. Inclusion Criteria:
    a. Studies focusing on pharmacist-developed and implemented protocols for chronic disease management.
    b. Interventions across various healthcare settings, including hospitals, outpatient clinics, and community pharmacies.
    c. Studies reporting measurable patient outcomes related to chronic disease management, including clinical markers, adherence rates, and healthcare utilization.
3. Exclusion Criteria:
    a) Studies that do not involve clinical pharmacists in the protocol development or implementation process.
    b) Protocols unrelated to chronic diseases or without reported patient health outcomes.
4. Data Extraction:
    a) Study characteristics: design, sample size, setting, chronic disease focus (e.g., diabetes, cardiovascular disease).
    b) Protocol details: components (e.g., dosage adjustments, lab monitoring), frequency of interventions, patient education.
    c) Outcomes: clinical markers (e.g., HbA1c, cholesterol levels), medication adherence rates, healthcare utilization (e.g., hospitalizations, ER visits).
5. Quality Assessment: Assess study quality using the Cochrane Risk of Bias tool for RCTs or the Newcastle-Ottawa Scale for observational studies to ensure data reliability.
6. Data Synthesis: Where feasible, conduct a meta-analysis on protocol-related outcomes like adherence rates and clinical markers. For heterogeneous data, use narrative synthesis to summarize key findings and variations across protocols.

Expected Outcomes

This systematic review aims to provide insights into:

1. The impact of clinical pharmacist-developed protocols on improving disease control markers in chronic disease patients.
2. The effectiveness of these protocols in increasing patient adherence to treatment plans and reducing healthcare.

Literature Review

Patients and their families bear the brunt of daily care duties in chronic disease. Patients and families can do self-care chores more effectively if they have productive working relationships with healthcare practitioners. Collaborative management cares ensure that successful medical, preventive, and health maintenance measures occur while bolstering and promoting self-care in chronic illness. (Von Korff, 1997).

Among the most common and expensive health issues in the world are chronic conditions like diabetes, cancer, heart disease, and arthritis. Seven out of ten deaths in the United States are caused by chronic illnesses, making them the major cause of mortality and disability. For more than 90 million Americans, the protracted course of sickness and disability leads to pain, suffering, and a diminished quality of life. More than 70% of the country's medical care expenses are related to chronic illnesses. (Whittemore & Dixon, 2008).

Because chronic morbidity is a long-term condition, general practice is well-suited to provide care for chronic patients. Regular follow-up contacts can be used for patient education, surveillance of disease activity and treatment, and preventive measures. The challenges for medical care of chronic morbidity include preventing premature death, but also trying to prevent and manage complications, "the quality of life during the patients' remaining years," and the burden on the social network of the patients' disease and treatment. (Van Weel, 1996).

chronic disease management

The evidence clearly points to the need to restructure our ambulatory care systems in order to enhance care for the majority of patients with chronic illnesses. With a focus on triage and patient flow, short appointments, diagnosis and treatment of symptoms and signs, reliance on laboratory tests and prescriptions, brief, didactic patient education, and patient-initiated follow-up, primary care practice was primarily created to offer patients with acute, varied problems easy access and care. An acute care organization and culture are unlikely to meet the unique demands of patients and families dealing with chronic illness. They need scheduled, frequent interactions with their caretakers that emphasize function and the avoidance of problems and exacerbations. Systematic evaluations, adherence to treatment protocols, and behaviorally complex support for the patient's self-management role are all part of this interaction. Clinically relevant information systems and ongoing follow-up started by the medical practice must eventually connect these interactions. (Wagner E H, 2016).

Alderman lists the adjustments necessary to deliver efficient blood pressure therapy, while Friedman, McCulloch, and their associates highlight two significant system improvement initiatives to enhance diabetes care. Despite various differences, these articles have several things in common. We created a strategy for enhancing the care of chronic illnesses that integrates these and other effective interventions based on our work at Group Health Cooperative and literature reviews. (Figure 2). According to the model, health systems with well-developed procedures and incentives for altering the care delivery system and that guarantee behaviorally sophisticated self-management support that prioritizes boosting patients' self-esteem and abilities so they can be the ultimate managers of their illness are likely to have patient-provider interactions that result in care that improves outcomes.

• Restructure team operations and procedures (such as follow-up and appointments) to accommodate patients with chronic illnesses.

• create, execute, and promote evidence-based guidelines through provider education, reminders, and enhanced communication between experts and generalists.

• improve information systems to make it easier to create tracking systems, disease registries, reminders, and performance evaluations. (Wagner E H, 2016).

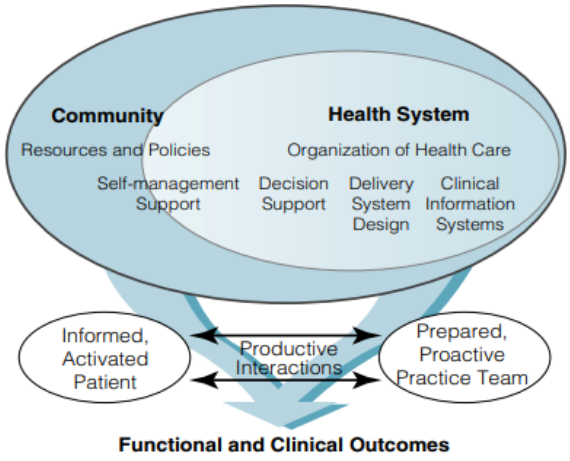

Figure 2. A model for enhancing the treatment of chronic illnesses. (Wagner E H, 2016).

Clinical pharmacists' function in the medical field

Clinical pharmacists offer patients and providers (including doctors and other members of the care team) comprehensive medication management and have specialized training in therapeutics. Economic factors, health-related quality of life, patient satisfaction, medication appropriateness, adverse drug events (ADEs), and adverse drug reactions (ADRs) are all consequences of pharmacist interventions. "An injury resulting from medical intervention related to a drug" is the definition of an adverse drug reaction (ADE), while "an effect that is noxious and unintended and which occurs at doses used in man for prophylaxis, diagnosis, or therapy" is the definition of an adverse drug reaction (ADR). (Kaboli PJ, et al., 2006).

This area of pharmacy practice prioritizes patient-centered care above medication product-focused care. Dissatisfaction with outdated practice standards and the growing demand for a qualified healthcare practitioner with extensive understanding of pharmacotherapy gave rise to the specialty. When it comes to the safe, appropriate, and economical use of pharmaceuticals, clinical pharmacists are the main source of knowledge and guidance that is supported by science. Pharmacists who work in hospital settings have a comparatively lengthy history of performing clinical tasks internationally. The doctor-pharmacist professional partnership is becoming more and more ideal in the industrialized world. In these countries, there is a high degree of interaction between doctors and pharmacists, which leads to safer, more effective, and less expensive drug therapy. However, the pharmacy profession still faces a number of obstacles in developing countries, including a severe lack of qualified pharmacists, a lack of standard practice guidelines, and the perception that doctors and pharmacists are enemies rather than teammates. (Sabry & Farid, 2014).

Using pharmacist services, which have been a crucial tactic for maximizing drug use and enhancing health outcomes, is one way to lessen pharmaceutical-related damage. According to earlier research, primary care clinics have incorporated pharmacists to enhance the caliber of their offerings. In primary care clinics, pharmacists and medical experts work together to provide medicine management services. Numerous studies have examined the efficacy and satisfaction of adding pharmacist services to primary care clinics, with positive outcomes in terms of chronic illness management and medication quality. Previous research has demonstrated that the comprehensive intervention of pharmacist-led medication consultations and reviews in general practice clinics resulted in a considerable decrease in the number of patient risk factors for medication-related issues. (Li, H. et al., 2033).

Integrating pharmacists into primary care clinics can assist close service gaps and guarantee that quality measure requirements are met. The cooperation between pharmacists and other medical specialists in primary care is subsequently facilitated by these clinical and financial effects. However, in many places, primary care facilities lack the necessary financing, staff, and infrastructure. The mechanism for the long-term growth of pharmacist services in primary care clinics is still in its infancy, which restricts its widespread adoption. Some of the obstacles and enablers to pharmacists' inclusion into general practice clinics have been noted in earlier qualitative research. According to their findings, colocation and the interdisciplinary atmosphere in primary care settings were found to be facilitators, while poor access to patient health records, insufficient

time, and weak interprofessional communication were found to be barriers. (Li, H. et al., 2033).

Because many diseases have no primary prevention or treatment and because people are living longer because to chronic problems, controlling chronic disease continues to be a top priority for health care systems. Applying what we know regarding secondary prevention or avoiding and controlling the consequences of illness—is just as challenging as applying what is known about primary prevention, such as altering dietary, physical activity, smoking, and other behavioral behaviors. Because many diseases have no primary prevention or treatment and because people are living longer because to chronic problems, controlling chronic disease continues to be a top priority for health care systems. For the sake of this debate, optimal disease management by the patient is defined as the strategies used to achieve the best possible functioning and the least amount of symptoms given the severity of a condition. (Clark, 2003).

Problems managing chronic illnesses without a pharmacist's help

One of the biggest issues facing healthcare systems around the world is managing chronic disorders. Significant inertia persists in the management of chronic disease by policymakers problem, despite the fact that more effective management and treatment of the increasing number of individuals with different chronic illnesses is required through interventions, strategies, and policies. Involving community pharmacists—pharmacists who do not work in hospitals—is one innovation that has a lot of promise. Interest in expanding community pharmacists' patient-oriented responsibilities has been stoked by worries about the sustainability of healthcare spending. Community pharmacists make up a sizable share of the medical workforce. Approximately 250,000 primary care physicians and 110,000 community pharmacists are currently in practice in the United States (US). Policymakers in several nations have begun to recognize the potential of additional experts who can help ensure the appropriate and economical use of medications, considering the increasing requires on primary care doctors' and nurses' time. (Mossialos et al., 2015).

Pharmacists are qualified to take on a more expansive role in the medical field. In fact, assuming patient-centered obligations is in line Given the extensive instruction and experience required for the profession, even though they currently play the position of "retailers." The overall duration of formal instruction is normally five to six years, with two to three more years required for specialization or to obtain a higher degree, though educational requirements differ by nation. Furthermore, before being allowed to practice, a license is frequently obtained through a national or regional exam. Community pharmacists, who are primarily in charge of retailing and dispensing medications, have historically operated independently Unlike hospital pharmacists, who are becoming more and more integrated into clinical care teams, they are separate from the rest of the primary care personnel. Unlike hospital pharmacists, who are becoming more and more integrated into clinical care teams, they are separate from the rest of the primary care personnel. and compensated for providing patient care. The only medical practitioners that do not receive primary compensation for providing healthcare are pharmacists. (Mossialos et al., 2015).

Several nations have lately enacted legislation to increase the responsibilities of community pharmacists in order to support integrated care delivery, realizing this unrealized potential. The goal of these measures is to support pharmacists as primary healthcare providers, even though their scope and focus differ. To harmonize health professionals' duties, goals, and incentives and provide a broader role for community pharmacists, A policy agenda for the entire system A policy agenda for the entire system is required. These methods are beginning to appear, albeit slowly. We examine current reform initiatives in the US, Australia, Canada, England, the Netherlands, and Scotland in this paper. In order to provide When providing care for patients with a variety of chronic illnesses, community pharmacists have additional tasks and obligations. these nations have lately implemented a number of reforms. (Mossialos et al., 2015).

Clinical pharmacists' general duties and responsibilities

Medication management, including the prevention and treatment of chronic diseases, is impacted both directly and indirectly by the contributions made by clinical pharmacists to population health, public health, and global health. The growth of health informatics, which has developed into a significant, multifaceted health care tool, has made this possible. By creating, putting into practice, and sharing clinical pathways, clinical decision support systems, and system-wide procedures, clinical pharmacists employ health informatics to improve patient care at the population and health system levels. Opportunities to lower costs and enhance health care measurements and outcomes are made possible by health informatics data. To enhance population health, clinical pharmacists should be qualified to perform assessments linked to pharmacotherapy and critically analyze data. (Saseen et al., 2017).

Additionally, clinical pharmacists must to have a comprehensive awareness of the operations of various healthcare environments and systems. The progression of clinical care from the emergency room to admission, the transfer of care to a postcare facility or home, and care in an ambulatory setting should all be covered. Clinical pharmacists should be able to contribute to the creation of procedures that support safe and efficient medication use during these transitions, in addition to having an understanding of the possible issues that could occur when patients move between health care systems or settings. (Saseen et al., 2017).

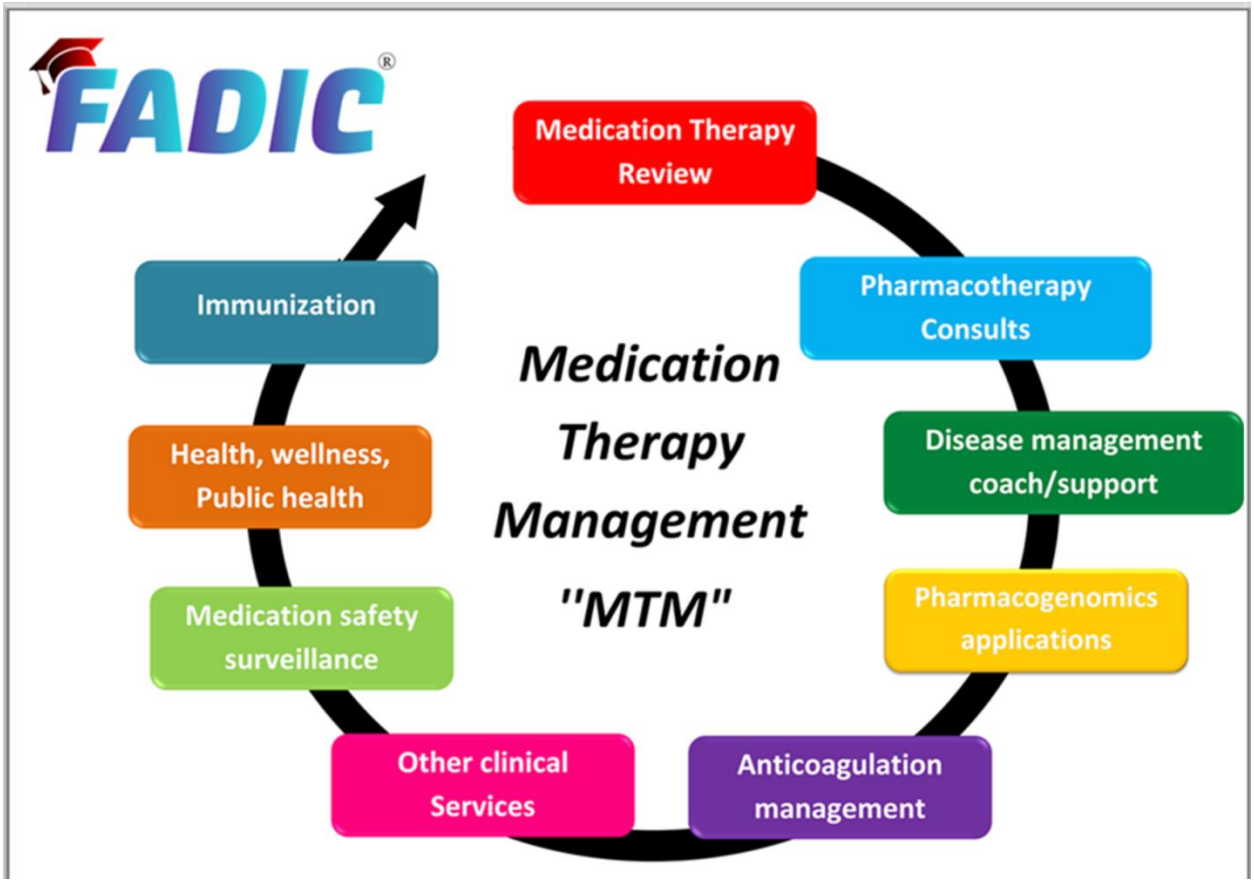

Figure 3. Pharmacists' role in the Chronic Disease Management (Toka_Editting, 2024).

Clinical pharmacists' function in managing chronic illnesses Clinical pharmacists' function in managing chronic illnesses

By offering specific chronic illness management services, community pharmacists are well-positioned to help enhance patient care. The importance of community-based pharmacists in the treatment of specific chronic illnesses has been documented by a number of significant trials conducted globally. The documented functions of community pharmacists in managing chronic diseases are depicted in Figure 4. There is proof that community pharmacy/community pharmacist interventions are successful in managing lipids, diabetes, and hypertension as well as in providing preventative services like weight control, osteoporosis prevention, and flu vaccinations. In Singapore, community pharmacists might be more involved in initiatives for health promotion, chronic illness management, and primary care. (George, P. P et al., 2010).

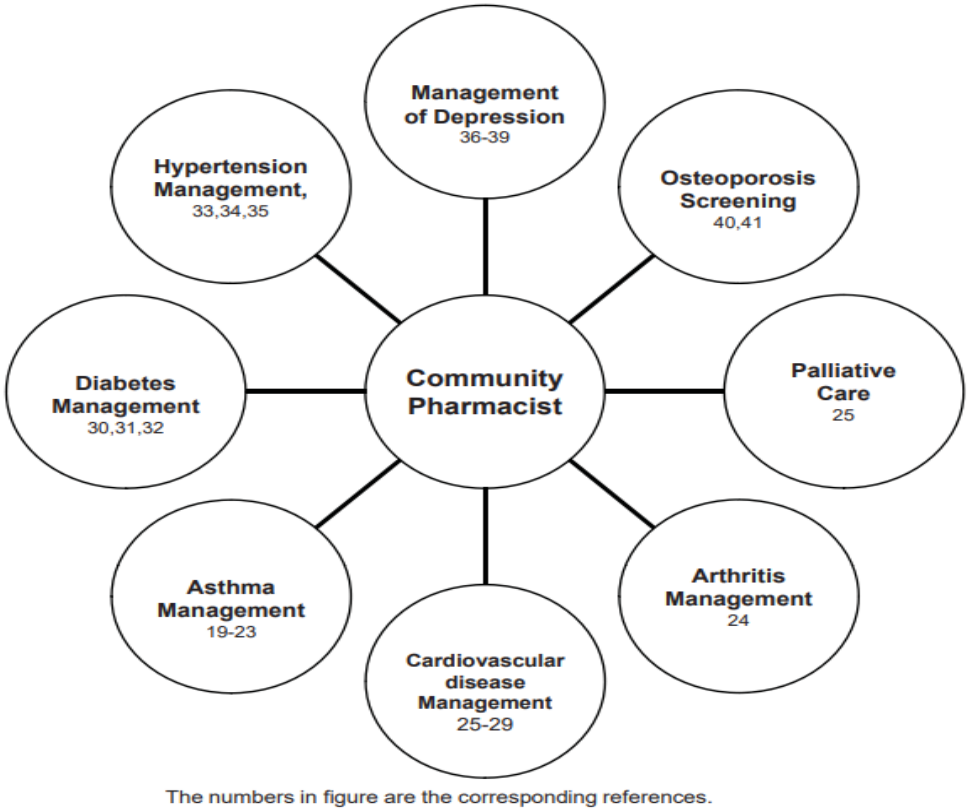

Figure 4. Community pharmacists' roles in disease management. (George, P. P et al., 2010).

Pharmacist-Developed Protocols

With 90% of the country's yearly healthcare spending going toward chronic disease, which affects 60% of adults, the United States has a substantial healthcare burden. The United States (US) faces significant challenges in addressing chronic illness; nevertheless, morbidity and mortality can be reduced with proper therapy. Long-term medication is a typical part of managing chronic diseases (CDM). Over 860 million medications were given or prescribed in the United States in 2018, with pharmacological therapy accounting for approximately 70% of outpatient doctor visits. Prescription drug sales at retail outlets were 456.3 billion US dollars, and nearly half of Americans stated that they were taking at least one prescription. stated that they were taking at least one prescription. medication in the previous 30 days.

Prescription drug use and costs rise Considering how many chronic illnesses are present at the same time a person has, and people with chronic illnesses use prescription drugs more frequently than people without chronic illnesses. (Buttorff C, et al., 2017).

In spite of their widespread use, prescription drugs can be difficult to understand from both the patient's and prescriber's point of view, and they can still be harmful. In the United States, there were 861 000 ED visits in 2018 linked to a main diagnosis of drug toxicity, drug incorrectly dosed, or drug-related reactions. According to data from 2013–2014, there were anticipated to be four emergency department visits per 1000 persons per year due to adverse medication effects. were anticipated to be four emergency department visits per 1000 persons per year due to adverse medication effects. Making sure prescription drugs are administered for the right indication, choosing most effective and safest alternative, and encouraging adherence to medication adherence to medication are some of the major difficulties that arise when using them. Because of these difficulties, pharmacists have taken the lead in these efforts and are frequently included in models of care for chronic diseases. Pharmacists are qualified to offer assistance for medication management to enhance CDM assistance for medication management to enhance CDM by encouraging safe and efficient drug usage in conjunction with other medical specialists to attain the best possible patient outcomes. Pharmacists' medication management services, when provided in outpatient settings, can lower hospitalizations, drug dose, and healthcare expenses while also improving medication appropriateness and adherence. (McCarthy & Bateman, 2022).

Community health centers, including Federally Qualified Health Centers (FQHCs), offer pharmacist services. are becoming more and more popular for CDM. Funded by the Health Resources and Services Administration Health Center Program, FQHCs are community-based healthcare organizations that offer primary care services in underprivileged regions. The treatment of cardiovascular disease with diabetic mellitus The treatment of cardiovascular disease with diabetic mellitus is the main focus of the literature that is currently available on pharmacist services in FQHCs. The findings show that clinical outcome measures like When pharmacists are part of the medical group, blood pressure, cholesterol, and glycated hemoglobin (A1C) all improve. These studies have a variety of drawbacks, including retrospective character, the absence of comparison groups, descriptive nature without statistical analysis, a narrow focus on a single illness state, and/or a limited patient population. In order to better characterize the manner in which pharmacists can influence care in the context of FQHC, more information describing their delivery of CDM services is therefore continuously needed. (McCarthy & Bateman, 2022).

The effects of protocols created by clinical pharmacists on health outcomes

The main goal of scholarly work has been to show the worth and efficacy of these clinical interventions, or patient care services, provided by community pharmacists. Although it is vital and necessary to generate evidence of a patient care service's usefulness and effectiveness, this does not guarantee that the service will be widely adopted in clinical settings. Instead, to support the successful implementation of a patient care service, proactive, methodical, and intentional techniques are needed. In the past, comprehensive evaluation of strategies for successfully establishing, maintaining, and expanding community pharmacist patient care services has received less attention from academics. Therefore, there hasn't been much broad and ongoing use of these services. The well-being of patients and communities is not enhanced when patient care services are not delivered and maintained effectively, and the intended clinical, humanistic, and financial results are not obtained. (Bacci et al., 2019).

Consequently, implementation science—the study and use of methods to encourage the methodical adoption of evidence-based clinical interventions and patient care services into regular use in real-world contexts—has gained traction in the pharmacy industry. An implementation science primer for pharmacists written by Livet and colleagues, as well as a 2017 implementation science-themed issue of Research in Social and Administrative Pharmacy, demonstrate the growing number and caliber of implementation

research and quality improvement initiatives. Service characteristics, adoption-related factors, implementation challenges and facilitators, pharmacy culture concerns, and stakeholder views of different services were the main topics of prior research. (Bacci et al., 2019).

Numerous meta-analyses and systematic reviews demonstrated that pharmacist treatment was linked to better health outcomes for patients with diabetes, heart failure, hypertension, or hyperlipidemia. Recent systematic evaluations, however, have cast doubt on the true effectiveness of these pharmacist interventions. Typically, systematic reviews are conducted to compile the relevant data and create professional practice standards. The quality of systematic reviews must be carefully assessed in order to guarantee solid evidence. The majority of reviews ranged from low to moderate in quality, which could lead to results being misinterpreted, according to previous authors' assessments of the methodological quality of systematic reviews and meta-analyses addressing pharmacist-led health interventions. (Rotta et al., 2015).

Furthermore, because the results reported in primary studies vary widely, there aren't many published systematic reviews including meta-analyses on this subject. Heterogeneity is a problem not only when the evaluation includes a variety of services, but even when the meta-analysis focuses on a single pharmacist service, such medication therapy management. (Rotta et al., 2015).

According to a number of studies, pharmacist involvement in primary care clinics improves clinical outcomes, boosts medication adherence, and induces constructive behavioral change. Patients' satisfaction with pharmacist care has also been demonstrated in earlier research, however these studies did not focus on chronic illness specifically. Collaborative care is more crucial than ever due to the present shortage of primary care providers and the rising demand for primary care services. The experience of patients in a pharmacist-led chronic disease state management clinic is not well understood, despite prior research showing that pharmacists enhance patient outcomes. (Buatois, E. M, et al., 2022).

Better patient outcomes and more access to healthcare may result from clinical pharmacists playing a bigger role in patient care. Pharmaceutical care, as defined by Hepler and Strand in 1989, is pharmacists working in tandem with members of the health team to identify, address, and prevent current and potential drug therapy issues in order to maximize therapeutic outcomes. Clinical Pharmacy Specialists (CPS) have been granted independent prescription rights and an enhanced scope of practice by the Department of Veterans Affairs since 1995. Along with offering simpler services like pharmaceutical counseling for patients or responding to questions about drugs, CPS has been assigned to carry out "pharmaceutical products care," or complete control of medication in conjunction with services for managing the status of chronic diseases. If a patient is sent to CPS or is proactively recognized as a high-risk patient by CPS, CPS is likely to be in charge of the therapy results for a variety of conditions in the VA primary care system. (Greer N, et al., 2015).

The advantages of having pharmacists help manage chronic illnesses

Pharmacists have the ability to significantly reduce healthcare expenses and take on a larger role in the management of chronic illnesses. Community pharmacists are frontline healthcare providers who regularly interact with this patient population. They have received specialized training in reducing the severity of diseases, monitoring medication therapy to achieve desired clinical effects, reducing adverse health events, and, when necessary, recommending pharmacotherapy to patients or prescribers. Numerous chronic illnesses, including diabetes, cardiovascular disease, and chronic obstructive pulmonary disease, can benefit clinically and financially from primary care pharmacists' ability to manage patients with long-term ailments, according to studies. Pharmacists' broader responsibilities in managing chronic illnesses are in line with their high level of education and expertise. (Dalton & Byrne, 2017).

In addition to helping with the diagnosis of new conditions (such type 2 diabetes), community pharmacists are in a prime position to conduct health screenings for disease prevention and progression. It

has been demonstrated that when at-risk individuals are actively screened, pharmacy-based health checkups are cost-effective. The provision of point-of-care testing at community pharmacies can be utilized for chronic disease management in addition to screening. The provision of these services in this context can decrease patient attendance at time-constrained general practitioner offices, even though they may come with upfront costs like training and equipment purchases. Additionally, patients can easily check clinical parameters like blood glucose, cholesterol, and HbA1c and receive their results promptly. Community pharmacists can use this data to track how well patients are managing their chronic conditions and enhance clinical results. (Goble & Rocafort, 2015).

When it comes to treating hypertension, pharmacists have been demonstrated to enhance patient outcomes and offer a more affordable option than doctors. It has been demonstrated that community pharmacy-managed anticoagulation services enhance chronic anticoagulation control by reducing thromboembolic and bleeding episodes. According to one study, pharmacist-run services saved $647,024 by reducing hospitalizations and ED visits when compared to standard medical care. Including community pharmacists in the treatment of long-term illnesses has been shown to have both clinical and financial benefits. In the future, it is anticipated that community pharmacists will be able to play larger roles in managing chronic illnesses and contribute to considerable cost reductions in healthcare. (Dalton & Byrne, 2017).

The healthcare industry has seen a paradigm shift in recent years, with a focus on individualized treatment regimens and comprehensive care that is more patient-centered. Clinical pharmacists play a crucial role in interdisciplinary healthcare teams within this framework, using their specific skills to improve pharmaceutical therapy and advance patient welfare. These specialists are in a unique position to close the gap between patients, prescribers, and pharmacotherapy, handling everything from medication reconciliation to pharmaceutical treatment management. Furthermore, new treatment modalities and technological breakthroughs are driving a constant evolution in the healthcare delivery landscape. In order to reduce medication errors, increase medication adherence rates, and streamline drug administration procedures, clinical pharmacists must adjust and adopt cutting-edge tools and techniques. (Salone, 2019).

Obstacles Community-Based Pharmacists Face

Integrating technology with community-based practices is another difficulty for pharmacy practitioners. The capacity to document patient care services is currently limited because most Community-centered drug stores, with or without this functionality, use a refilling system. Moreover, the electronic health care record (EHR) and generally speaking, pharmacy systems don't integrate. The benefits of EHR integration have been documented in a number of recent publications. Additionally, there is a push for the adoption of pharmacist e-care plans for medical services and paperwork. for medical services and paperwork. With a primary focus on uniform Methods and methods for electronic documentation for reliably coding and recording patient care, new systems that enable standards and technological systems should assist address these difficulties. (Goode et al., 2019).

Furthermore, The founded pharmacy's location operations may operate as a barrier to integration and team-based care. It will be simpler to provide team-based care, nevertheless, as community-based pharmacist practitioners spread outside the conventional community pharmacy's four walls. In addition, the profession lacks a referral procedure that is comparable to that of other medical professionals. Interprofessional referrals between pharmacists and other health care providers themselves must follow a certain procedure. Technology integration could facilitate the referral process and team-based care. (Goode et al., 2019).

Prospects and Developments in Pharmacist-Led Chronic Illness Care

No country has been able to completely turn community-oriented pharmacy practice as a sustainable medical center without the product driving the economic model. Nonetheless, other nations, such

as the US, have advanced significantly in a few breakthroughs. This gives community-based pharmacists the chance to gain knowledge from developments in other nations' practices. In 2016, the Worldwide Pharmaceutical Federation published an essay on the global impact of pharmacy-based immunization. In 2016, the Worldwide Pharmaceutical Federation published an essay on the global impact of pharmacy-based immunization. Pharmacists in Australia, Canada, England, the Netherlands, and Scotland have expanded the role of the community-based pharmacist. Pharmacists in Australia, Canada, England, the Netherlands, and Scotland have expanded the role of the community-based pharmacist. (Taylor & Joubert, 2016).

Emergency refills, prescription renewals or extensions, drug formulation or dosage changes, and therapeutic replacement are a few examples of services associated with medication optimization. Additionally, community-based pharmacists in the UK and Canada provide comprehensive minor illness care. With a new funding paradigm, New Zealand has a chance to increase pharmacy services in local areas. (Smith et al., 2018).

The growth of community-based pharmacy services will be made easier by changes to South African pharmacists' qualifications, which will include prescriptive authority. While the United Arab Emirates is taking steps to enable the community pharmacist's role to grow, other Middle Eastern nations are still having difficulty expanding their practices. In Asia, the position of the community-based pharmacist has grown sporadically, but it is now becoming more prevalent thanks to drug usage reviews, health promotion, and health assessment. (Sadek et al., 2015).

The European Union's Pharmaceutical Group (PGEU) unveiled its 2030 vision for community-based pharmacies in Europe. This vision entails recognizing public health hazards, lowering the burden of chronic disease via wellness, prevention, and education, integrating digital health solutions into practice; extending pharmacy services as a component of a cooperative primary care team to improve access and maximize medication utilization; demonstrating leadership in personalized medicine; and offering creative and effective services to relieve other services of some of their workload. The developments covered in this book for community-based pharmacy practice in the US are similar to these elements of practice expansion. The developments covered in this book for community-based pharmacy practice in the US are similar to these elements of practice expansion. (Goode et al., 2019).

Conclusion

Pharmacists were able to enhance clinical and humanistic results and CDM for a range of medical and mental diseases when given prescribing authority and collaborating with an interdisciplinary primary care team. Referrals were frequently made for the most common disease states, those linked to particular clinical outcome measures that were monitored and reported to external organizations to guarantee high clinical care standards, those for which the pharmacy team had previously proven their expertise and abilities, such as through targeted presentations and prior research, and those with inadequate baseline control.

References:

1. Von Korff, M. (1997). Collaborative Management of Chronic Illness. Annals of Internal Medicine, 127(12), 1097. https://doi.org/10.7326/0003-4819-127-12-199712150-00008
2. Whittemore, R., & Dixon, J. (2008). Chronic illness: the process of integration. *Journal of Clinical Nursing*, *17*(7b), 177–187. https://doi.org/10.1111/j.1365-2702.2007.02244.x
3. Van Weel, C. (1996). Chronic diseases in general practice: The longitudinal dimension. *European Journal of General Practice*, *2*(1), 17–21. https://doi.org/10.3109/13814789609161652
4. Buttorff C, Ruder T, & Bauman M. (2017). Multiple chronic conditions in the United States. Santa Monica, CA: Rand Corp., Retrieved November 10, 2024, from:https://www.rand.org/content/dam/rand

/pubs/tools/TL200/TL221/RAND_TL221.pdf
5. Wagner E H. (2016). Chronic disease management: what will it take to improve care for chronic illness. Effective Clinical Practice, 1, ISSN_10998128. https://access.portico.org/stable?au=phwwtrq3nv
6. Kaboli PJ, Hoth AB, McClimon BJ, Schnipper JL. Clinical Pharmacists and Inpatient Medical Care: A Systematic Review. Arch Intern Med. 2006;166(9):955–964. doi:10.1001/archinte.166.9.955
7. Sabry, N. A., & Farid, S. F. (2014). The role of clinical pharmacists as perceived by Egyptian physicians. International Journal of Pharmacy Practice, 22(5), 354–359. https://doi.org/10.1111/ijpp.12087
8. Li, H., Liang, X., Wang, Y., Lu, Y., Deng, Z., Ye, Y., Qian, Y., Guo, Y., & Xu, Z. (2022). Barriers to and facilitators of the implementation of pharmacist services in primary care clinics: a scoping review protocol. BMJ open, 12(1), e057191. https://doi.org/10.1136/bmjopen-2021-057191
9. Clark, N. M. (2003). Management of chronic disease by patients. Annual Review of Public Health, 24(1), 289–313. https://doi.org/10.1146/annurev.publhealth.24.100901.141021
10. Mossialos, E., Courtin, E., Naci, H., Benrimoj, S., Bouvy, M., Farris, K., Noyce, P., & Sketris, I. (2015). From “retailers” to health care providers: Transforming the role of community pharmacists in chronic disease management. Health Policy, 119(5), 628–639. https://doi.org/10.1016/j.healthpol.2015.02.007
11. Saseen, J. J., Ripley, T. L., Bondi, D., Burke, J. M., Cohen, L. J., McBane, S., McConnell, K. J., Sackey, B., Sanoski, C., Simonyan, A., Taylor, J., & Griend, J. P. V. (2017). ACCP Clinical Pharmacist competencies. Pharmacotherapy the Journal of Human Pharmacology and Drug Therapy, 37(5), 630–636. https://doi.org/10.1002/phar.1923
12. Toka_Editting. (2024, October 7). Understanding Chronic Conditions: A guide for patients. FADIC. https://fadic.net/chronic-diseases-definition-management-and-the-pharmacist-role/
13. George, P. P, Molina, J. A, Cheah, J., Chan, S. C., & Lim, B. P. (2010). The Evolving Role of the Community Pharmacist in Chronic Disease management-A Literature review. Ann Acad Med Singapore, 39(11), 861–867. https://www.annals.edu.sg/pdf/39VolNo11Nov2010/V39N11p861.pdf
14. McCarthy, C., & Bateman, M. T. (2022). Impact of pharmacist-led chronic disease management in a Federally Qualified Health Center. JACCP JOURNAL OF THE AMERICAN COLLEGE OF CLINICAL PHARMACY, 5(12), 1263–1277. https://doi.org/10.1002/jac5.1720
15. Bacci, J. L., Bigham, K. A., Dillon-Sumner, L., Ferreri, S., Frail, C. K., Hamada, C. Y., Lantaff, W., McGivney, M. S., Renner, H., Snyder, M. E., & Curran, G. M. (2019). Community pharmacist patient care services: A systematic review of approaches used for implementation and evaluation. JACCP JOURNAL OF THE AMERICAN COLLEGE OF CLINICAL PHARMACY, 2(4), 423–432. https://doi.org/10.1002/jac5.1136
16. Rotta, I., Salgado, T. M., Silva, M. L., Correr, C. J., & Fernandez-Llimos, F. (2015). Effectiveness of clinical pharmacy services: an overview of systematic reviews (2000–2010). International Journal of Clinical Pharmacy, 37(5), 687–697. https://doi.org/10.1007/s11096-015-0137-9
17. Buatois, E. M., Covington, L. P., Lopez, N. D., Young, R. B., & MacLaughlin, E. J. (2022). Impact of a Pharmacist-Led Chronic Disease State Management Clinic on Patient Assessment of Chronic Illness Care. Journal of patient experience, 9, 23743735221105682. https://doi.org/10.1177/23743735221105682

18. Greer N, Bolduc J, Geurkink E, et al. Pharmacist-Led Chronic Disease Management: A Systematic Review of Effectiveness and Harms Compared to Usual Care [Internet]. Washington (DC): Department of Veterans Affairs (US); 2015 Oct. INTRODUCTION. Available from: https://www.ncbi.nlm.nih.gov/books/NBK362935/
19. Goble, J. A., & Rocafort, P. T. (2015). Point-of-Care testing. Journal of Pharmacy Practice, 30(2), 229–237. https://doi.org/10.1177/0897190015587696
20. Dalton, K., & Byrne, S. (2017). Role of the pharmacist in reducing healthcare costs: current insights. Integrated Pharmacy Research and Practice, Volume 6, 37–46. https://doi.org/10.2147/iprp.s108047
21. Salone, S. (2019). Clinical pharmacy: Patient care and medication management. The Pharma Innovation, 8(1), 923–926. https://doi.org/10.22271/tpi.2019.v8.i1o.25499
22. Goode, J., Owen, J., Page, A., & Gatewood, S. (2019). Community-Based Pharmacy practice innovation and the role of the Community-Based Pharmacist Practitioner in the United States. Pharmacy, 7(3), 106. https://doi.org/10.3390/pharmacy7030106
23. Taylor, J., & Joubert, R. (2016). Pharmacist-led minor ailment programs: a Canadian perspective. International Journal of General Medicine, Volume 9, 291–302. https://doi.org/10.2147/ijgm.s99540
24. Smith, A. J., Scahill, S. L., Harrison, J., Carroll, T., & Medlicott, N. J. (2018). Service provision in the wake of a new funding model for community pharmacy. BMC Health Services Research, 18(1). https://doi.org/10.1186/s12913-018-3120-z
25. Sadek, M. M., Elnour, A. A., Kalbani, N. M. A., Bhagavathula, A. S., Baraka, M. A., Aziz, A. M. A., & Shehab, A. (2015). Community pharmacy and the extended community pharmacist practice roles: The UAE experiences. Saudi Pharmaceutical Journal, 24(5), 563–570. https://doi.org/10.1016/j.jsps.2015.03.023