



The Role of Pharmacists in Managing Chronic Diseases: Integrating Medication Therapy Management, Collaborative Care, and Technological Innovations

¹Joseph Obiezu Chukwujekwu Ezeonwumelu, ²Uhama Kingsley Chukwuka, ³Ugwu Okechukwu Paul-Chima, ⁴Alum Esther Ugo, ⁵Ugwuanyi Anthony Chukwudi and ⁵Tambwe Patrick Rodrigue

¹Department of Clinical Pharmacy and Pharmacy Practice, Kampala International University Western Campus, Uganda.

²Department of Biochemistry, Faculty of Applied Natural Sciences, Enugu State University of Science and Technology, Nigeria.

³Department of Publication and Extension Kampala International University Uganda.

⁴Department of Microbiology Ebonyi State University Abakaliki, Nigeria.

⁵Department of Public Health Kampala International University Uganda.

Email: kingsley.uhama@esut.edu.ng

ABSTRACT

Pharmacists play a crucial role in managing chronic diseases by leveraging their expertise in medication therapy management (MTM), collaborative care models, and the integration of technological innovations. This paper explores the diverse contexts in which pharmacists operate, including primary care, community pharmacies, hospital settings, and pharmacy-based clinics, emphasizing their potential to act as gatekeepers of safety and efficacy. The challenges pharmacists face, especially in developing countries, include improving patient adherence and persistence with long-term, multi-drug therapies, and addressing clinical inertia. Strategies such as providing comprehensive pharmaceutical care, integrating new models of care, and fostering interprofessional collaboration are discussed. The paper also highlights the impact of technological advancements on pharmacy practice and patient outcomes. Despite perceptions of limited knowledge and communication skills, pharmacists are well-positioned to enhance chronic disease management and improve health outcomes through their accessibility and medication expertise.

Keywords: Chronic Disease Management, Pharmacists, Medication Therapy Management, Collaborative Care and Technological Innovations

INTRODUCTION

Chronic diseases are the leading causes of mortality and disability worldwide, accounting for a significant portion of healthcare spending. Conditions such as cardiovascular diseases, diabetes, cancer, chronic lung diseases, and mental health disorders collectively contribute to over 60% of all deaths globally [1-5]. The World Health Organization (WHO) defines chronic diseases as those of long duration and generally slow progression, including heart disease, stroke, cancer, diabetes, and chronic lung disease [6-8]. Modifiable health risk factors such as unhealthy diet, physical inactivity, tobacco use, and obesity are major contributors to these diseases [9-11]. Pharmacists, with their extensive knowledge of medications and accessibility to patients, are uniquely positioned to manage chronic diseases effectively. They play a vital role in optimizing complex drug regimens, coordinating care, and providing patient monitoring to achieve therapeutic objectives [12-15]. Pharmacists operate in various contexts, including primary care, community pharmacies, hospital settings, and pharmacy-based clinics. Their roles encompass medication

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therapy management (MTM), promoting patient adherence, and engaging in collaborative care teams to improve health outcomes [16-17]. Despite these opportunities, pharmacists face numerous challenges, particularly in developing countries. These include increasing patient adherence to long-term therapies, reducing clinical inertia, and integrating new models of care [18]. Pharmacists employ various strategies to address these challenges, such as providing comprehensive pharmaceutical care, fostering interprofessional collaboration, and utilizing technological innovations [1-5]. This paper aims to explore the evolving role of pharmacists in chronic disease management, highlighting the strategies they employ, the challenges they face, and the impact of their contributions on patient outcomes [6-8].

Overview of Chronic Diseases

Chronic diseases are the leading causes of mortality in developed countries, and the chronic disease mortality rate is rising in developing countries as people live longer and adopt unhealthy lifestyles [11-14]. The main modifiable health risk factor, however, comes from people's daily behaviors such as eating habits (unhealthy diet), physical inactivity, and consumption of tobacco and excessive alcohol, which have been recognized as major structural or wellness factors associated with a broad range of medical conditions and diseases that manifest over time [15-18]. Moreover, chronic diseases are the leading causes of disability and account for the overwhelming majority of healthcare spending. In 2006, heart disease, stroke, and diabetes alone cost over 295 billion USD and killed over 800,000 people in the United States, accounting for more than 7 in 10 deaths. Faced with the terrible cost in terms of human suffering and money, governments at all levels, non-profit organizations, and industry are all looking for ways to reduce the burden of chronic diseases [18]. Chronic diseases are the leading causes of death and disability worldwide. Cardiovascular diseases (mainly heart disease and stroke), diabetes, cancer, chronic lung diseases, and mental health disorders collectively account for 60 percent of all deaths. These diseases have a long duration and generally slow progression. The World Health Organization (WHO) defines chronic diseases as those diseases that are of long duration and generally slow progression, including heart disease, stroke, cancer, diabetes, and chronic lung disease. Approximately 80 percent of heart disease, stroke, and type 2 diabetes, and 40 percent of cancers could be prevented if the heart disease risk factors - unhealthy diet, physical inactivity, tobacco use, and obesity - were eliminated [8-11].

Pharmacist's Role in Chronic Disease Management

Examples of medications pharmacists are involved in managing chronic diseases. They play an essential role in managing chronic diseases to reach therapeutic objectives through medication therapy management services, including treatment initiation, optimizing therapy, promoting patient adherence, and increasing understanding and knowledge of recommended changes in a treatment plan [1-5]. The expanding roles of pharmacists in chronic disease management services are influenced by multiple factors, including the need for chronic disease management [5-8]. In the context of chronic disease management, pharmacists are uniquely positioned to optimize complex drug regimens, coordinate care, and provide patient monitoring. Chronic disease management is complex and requires lifelong care, and pharmacists can contribute to controlling chronic diseases and minimizing medication errors throughout the patients' lifetime. Also, pharmacists could gain an understanding of the patterns that affect chronic conditions and medication usage and offer the much-needed early assistance [9-11]. The pharmacist's accessibility and medication expertise provide the support to manage chronic diseases cost-effectively. Community pharmacists have been sharing the health system and offering pharmaceutical care and advice towards improving patients' health. Pharmacists provide patients with various opportunities to discuss their medication needs, from managing acute and chronic diseases to reaching optimal medication outcomes with patients or other healthcare professionals [1-4].

Medication Therapy Management

Pharmacists frequently rely on the medication therapy management (MTM) process to engage patients and ensure effectiveness, safety, and adherence to long-term drug therapy. Several successful chronic disease management programs have utilized MTM to improve outcomes [8-9]. Given the pharmacist's accessibility and knowledge, many patients find pharmacists the most accessible healthcare professional and rely on them to help make decisions that optimize the effective use of medications. Pharmacists deliver a wide range of patient care services, including but not limited to provision of vaccines, health and wellness screenings and education, medication review and management, management of chronic disease states, and systems of medication delivery. Although pharmacists are well positioned to provide a host of services, MTM is paramount to chronic disease management [8-11].

Collaborative Care Teams

In type 2 Diabetes Mellitus, in the collaborative care team model, pharmacists have been shown to reduce clinical inertia, improve adherence, and lower glycated hemoglobin levels in patients with diabetes. The results of TEAMM, the first national study to examine the impact of the inclusion of community

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pharmacists in an integrated care program for the management of type 2 Diabetes Mellitus, have shown significant clinical and economic benefits associated with the program. Participants in the intervention group experienced significant declines in systolic and diastolic blood pressure levels and most biochemical parameters, which highlights the clinical benefits of the program [8-11]. Pharmacy practice settings continue to evolve and include a wide variety of practice styles. The role of the pharmacist in managing chronic diseases is best optimized through interprofessional collaboration within the collaborative care team. Collaborative care teams may be based within pharmacies (community- or chain-level practices), at ambulatory health care clinics at health care systems, or within accountable care organizations. Within these care team settings, the pharmacist functions as a member of a holistic team managing patients' barriers to optimal health. In contrast, traditional retail pharmacists tend to focus on specific medications and associated patient counseling responsibilities. Pharmacists and pharmacy practice settings may be organized in several ways to serve patients with various chronic diseases [11-16].

Interdisciplinary Approach

Pharmacy has the potential to improve patient outcomes in chronic disease management. Exploratory studies and pilot programs depict the improved outcomes when disease-state management of chronic diseases through medication adjustment, review and reconciliation, self-care behavior education, and chronic disease assessment models are used [7]. The outcomes were primarily cost reduction, reducing hospital admissions, and improved patient self-care. Large-scale, replicate studies of chronic disease pharmacy interventions are needed before conclusions about the impact of these activities on patient outcomes in general can be made. For persons and families, the experience of having difficulty in which pharmacotherapy can have a positive impact is characterized by multiple physician visits, multiple prescription drugs, and the need to grasp a great deal of information [8]. The administrative method to management in all chronic conditions should, imposingly, be shared among providers. The resources open to pharmacy, particularly in America, are good. There are a sufficient number of professionals to support the administration of the programs. The field of pharmaceutical research is developing and managing disease processes. Furthermore, many pharmacists are ready and eager to minister to persons with chronic disease because they have the opportunity to have direct patient contact and to make a difference. For programs in which charges are paid as a per member per month agreement, please note that pharmacy benefits are often included in the total agreement. Care must be taken to avoid overcharging or affording dual services in such situations [5].

Pharmacy Services for Chronic Disease Patients

Pharmacists can also help the patient monitor their compliance with the medication by using such measures as pillbox misses and secondary symptoms associated with the problem. Patients who rely heavily on their physician for medication information may fail to seek the same information from their pharmacists. Patients trust and rely on their pharmacists for their medication needs and the general feedback that pharmacists provide [4-6]. The pharmacist's drug information knowledge can play a critical and valuable role because they have established a trust level with their clientele in no other health care practitioner, and they see patients entering the pharmacy more frequently than patients returning to other health care settings. The pharmacy can provide several types of services to the chronic disease patient. Patients who are on long-term therapy, which often requires ongoing counseling, may benefit from pharmaceutical care. This type of care involves helping the patient understand how to administer medications, manage their symptoms, avoid drug-drug and drug-disease interactions, and better tolerate their medication [4-9]. Managing chronic disease patients is important because one-half of all patients see a physician only once every three months - leaving the pharmacist to assist patients with maintenance and support almost on an ongoing basis [1-5].

Medication Adherence Programs

But there are remedies. Over the past few years, community pharmacy has introduced an array of programs designed to engage patients in their medication management. So far, Medication Therapy Management (MTM) services added smoking cessation to an impressive list of activities and increased patient participation rates [8-10]. Drug therapy management of chronic diseases by pharmacists, comprehensive medication management, and collaborative prescribing practices have improved the health status of patients, diverted healthcare dollars to better purposes, and increased patient satisfaction with available healthcare resources [11-15]. Charles and Michael's medication-taking behavior is the national pastime. No doubt, non-adherence is the current "reigning king of health problems" and the burden it imposes on society and the healthcare system, as well as the reason for its existence, is growing. While many medications have the ability to help patients manage their chronic diseases, too many patients mistakenly believe that no immediate symptoms signal that no medications are needed... which leads to less than optimal adherence rates. Medication management for chronic diseases such as diabetes, asthma,

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hypertension, and high cholesterol in the community pharmacy setting is often the only form of healthcare management with a universal reach and presence that is easy for almost everyone to access [11-13].

Technological Innovations in Pharmacy Practice

There are numerous other facilities at the intersection of computing and pharmacy. Various forms of information systems are used to help the pharmacist check drug interactions and suggest dosages and to identify the best price for a drug the physician wishes to order [1-4]. There are systems for patient recall, patient medication compliance, and inventory control. An interesting innovation that is still in its infancy is the development of an expert system, a kind of "SuperDoc" [5-8], that can be consulted by the physician who is not certain of the diagnosis and/or prescription and needs the advice of an expert. Technical performance of the best systems would appear at least competitive with the diagnostic and drug-prescribing skills of some medical practitioners [9-10]. There have been many technological innovations in pharmacy. Automation in the pharmacy has been prominent [11-12]. The combination of robotics and information systems for dispensing can bring about tremendous changes in the way a pharmacy operates. There has also been considerable progress made in linking pharmacy computers so professionals in the medical team can access a patient's current medication history and can, in many systems, review the recent processing of medication by that patient [12-16]. This kind of facility, generally now referred to as an electronic patient record system (EPR), can save time, improve patient care, and give health professionals better access to needed information, be it medication or laboratory tests [11-15].

CONCLUSION

Pharmacists are integral to the management of chronic diseases, offering a range of services that extend beyond traditional medication dispensing. Through medication therapy management, collaborative care, and the integration of technological innovations, pharmacists can significantly improve patient outcomes. The challenges they face, especially in developing countries, require a multifaceted approach involving patient education, interprofessional collaboration, and the adoption of new care models. By enhancing their roles as pharmaceutical care providers and embracing technological advancements, pharmacists can address the growing burden of chronic diseases and contribute to a more effective and sustainable healthcare system. As the healthcare landscape continues to evolve, the role of pharmacists in chronic disease management will undoubtedly become increasingly important, underscoring the need for continued support and development of pharmacy practice.

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