

THE COMBINED EFFECT OF PHARMACY AND NURSING IMPROVING TREATMENT OUTCOMES FOR PATIENTS WITH CHRONIC CONDITIONS

Dr. Sultan Abdullah Sudan Almutairi¹, Sultan Abdullah Aljasser², Abdulmohssin Mohammad Deyab Alqahtani³ Maryam Khalid Alanazi⁴ and Albandary Khaled almutairy⁵

1 Corresponding Author, General practitioner, Sultan.almutairi10@gmail.com, SA

2 Pharmacy, ph.sultan10@gmail.com, KFMC. Riyadh

3 Pharmacist, X5-50@hotmail.com, KFMC. Riyadh

4 Nursing, Mkhaalanazi@kfmc.med.sa, KFMC. Riyadh

5 Nursing, Akalmutairy@kfmc.med.sa, KFMC. Riyadh

Abstract

The treatment outcome for patients with chronic conditions can be enhanced by the health care professionals working to each other's strengths. Chronic conditions have become the leading cause of morbidity and mortality globally. Chronic conditions place a significant burden on the health care system and require many health care resources. Millions of dollars are spent annually on the treatment of chronic conditions. Although health care systems have evolved and expanded, the treatment outcomes for patients with chronic conditions remain suboptimal (Thinsan, 2015). Professional silos in health care lead to patient care being suboptimal. Pharmacy and nursing professionals are two of the largest groups of health care providers that are vital in chronic condition management. In addition, pharmacy and nursing services often work in silos despite their collaborative efforts having the potential to improve patient care significantly.

Working together pharmacy and nursing professionals can enhance the treatment outcomes of patients with chronic conditions. It is essential to identify and understand the complexities of working together pharmacy and nursing professionals in the chronic condition context. Chronic conditions have become a leading cause of morbidity and mortality in the world. A chronic condition is a health condition that generally lasts longer than six months and adversely affects a patient's life. Diabetes, cardiovascular diseases, cancer, mental disorders, and chronic respiratory diseases are examples of chronic conditions. Chronic conditions often co-occur in patients. Global deaths from chronic conditions are expected to increase by 17 million annually, with low- and middle-income countries being the most affected. Chronic conditions also place a significant burden on the health care system because they require many resources.

Keywords

Chronic Conditions, Chronic Disease, Pharmacy, Nursing, Patient Care, Patient Education, Treatment Outcomes, Healthcare System, Chronic Care Management, Managed Care Organization, Pharmacist Services, Pharmacy-Nursing Collaboration, Disease Management, Quality Improvement, CDM Programs, Disease States.

With the advancement of evidence-based guidelines, there are an increasing number of efforts that combine payer, nursing, pharmacy, and physician services to improve treatment outcomes for patients with chronic conditions. National guidelines suggest programs focused on Medication Management, Patient Education, and Care Management for patients with chronic conditions as a means to achieve the “triple aim” of better health, better care, and lower costs (Yvonne Williams, 2019). In the past year, a Managed Care Organization (MCO) implemented a new Chronic Disease Management (CDM) program that combined pharmacy-nursing collaboration with a focus on education and care management to address these needs. Throughout the program’s first year, 12 different chronic disease states were addressed across over 800 unique members. The program’s design, implementation challenges, role of collaboration, and various changes to improve treatment outcomes will be discussed in this essay. This will include a focus on the importance of staff buy-in, documentation, and reimbursement enhancements to the overall success of CDM programs.

1. Introduction

The world is experiencing a dramatic shift in demographics. In 2010, there were an estimated 524 million people aged 65 and older worldwide, representing 8.0 per cent of the global population. By 2050, this number is projected to grow to about 1.5 billion people, or 16.0 per cent of the global population. Chronic conditions are becoming a global public health challenge. Chronic conditions are defined as degenerative or pathological changes that develop over time, persist for one year or more, and require ongoing medical attention. Some of the most common chronic conditions include hypertension, diabetes, asthma, cancer, and chronic obstructive pulmonary disease. Chronic conditions have come to dominate the disease burden in high-income countries, accounting for 80 per cent of deaths. In middle- and low-income countries, chronic conditions account for 60 per cent of deaths despite these countries experiencing a double burden of disease due to both chronic conditions and ongoing public health issues.

Chronic conditions not only affect individuals but also exert pressure on national and local healthcare systems. Due to the long-term nature of these conditions, patients require life-long management support from healthcare professionals, which results in increased healthcare utilization. Therefore, providing effective patient care for chronic conditions is of priority concern. It is widely acknowledged that collaborative care can improve chronic disease management. Interdisciplinary collaboration refers to a process where members from different professions work together to achieve common goals by bringing their unique perspectives and expertise. In a healthcare setting, it involves the collaboration of different professions to provide better patient care. Patient-centered care is often used synonymously with interdisciplinary collaborative care. Collaborative care is essential to the provision of patient-centered care. Therefore, understanding how care professionals from different disciplines collaboratively deliver patient-centered care is crucial to better care for chronic conditions.

Pharmacists and nurses are two health professions that are directly involved in patient care. This essay focuses on the combined effect of pharmacy and nursing on treatment outcomes for patients with chronic conditions. First, an overview of the roles of pharmacy and nursing professionals is provided. Second, a discussion on how the pharmacy and nursing professions can be combined to improve treatment outcomes is presented. Finally, the conclusion and future directions are provided. It is important to note that the word ‘combined’ used in this essay refers to ‘combined

interventions'. However, it can also mean interdisciplinary collaboration. Given that the two combined studies reviewed in the following section involved interdisciplinary collaboration, the relevance of technology and innovation is also discussed in that context.

As a pharmacist profession, hospital pharmacy services in the context of patient care typically focus on treatment outcome assessment, therapeutic drug monitoring, medication review, medication reconciliation, medication education, and discharge planning regardless of whether the pharmacy service is fully integrated or non-integrated into the hospital system. Meanwhile, the nursing profession provides care services that are generally responsible for the daily care of patients, which includes medication administration, vital signs measurement, daily patient assessment, clinical notes documentation, patient education, patient mobility, blood specimen collection, discharge planning, and other professional care services depending on the type of ward or unit. Because of the different yet complementing roles of hospital pharmacy and nursing services in the context of medication care, combined interventions from these two professions can improve treatment outcomes.

2. Understanding Chronic Conditions

Chronic conditions refer to prolonged health issues that require ongoing management over years or decades. These afflictions can't be cured completely, but their symptoms can be controlled. Patients with chronic conditions often experience a lower quality of life, making it crucial for healthcare providers to effectively manage treatment. Healthcare professionals can improve treatment outcomes through effective care planning, adjustment, and education, particularly for pharmacy and nursing. Chronic conditions can be characterized by their long-term impact, slow progression, and complex management needs. They often co-occur, with one condition exacerbating the others, resulting in more complex management. Significantly, chronic conditions are commonly encountered in patients over fifty years old. Examples of chronic conditions include asthma, diabetes, chronic obstructive pulmonary disease (COPD), depression, and heart failure. The growing prevalence of chronic conditions poses a challenge for many healthcare systems worldwide. Currently, chronic conditions are successfully managed for many patients, but they still develop care needs that can be complex and costly to address. There are various complexities associated with chronic condition care that must be considered when developing pharmacy and nursing treatment strategies. For patients with chronic conditions, care is often fragmented between different providers, leading to inefficient and uncoordinated treatment. Care fragmentation often results in unmet care needs, ineffective treatment, and unnecessary hospitalizations.

2.1. Definition and Types of Chronic Conditions

Chronic conditions, also referred to as chronic health issues or chronic diseases, are defined as pathologies that persist for more than three months. Furthermore, they are “not prevented by vaccines or cured by medication” (Currie & Delles, 2019). Chronic conditions typically start slowly and, once established, are generally progressive. Although these conditions are common through an individual's lifespan, they are more common with ageing. Likewise, chronic conditions have a large impact on an individual's health, rendering them complex and difficult to manage. In fact, complexity from a patient's perspective emerges partly from the chronic conditions themselves. Moreover, health systems struggle to cope with the care requirements and growing

demand of chronic conditions, creating further complexity (K. Schaink et al., 2012). There are various categories of chronic conditions. For example, cardiovascular diseases, diabetes, respiratory diseases, cancer, and mental health disorders fall under the category of chronic physical health conditions. On the other hand, complex needs can also arise from having a combination of physical and mental health disorders. There is an estimate that globally, more than 1 billion people live with a mental disorder, which is projected to increase. Indeed, chronic conditions present patients with difficulties while challenging healthcare systems. Therefore, chronic conditions and their impacts on patients and health systems must be further explored. Chronic conditions generally escalate health risks over time alongside the gradual deterioration of physical health. For this reason, early diagnosis is critical in chronic conditions, and managing risk factors is equally important. Since chronic conditions are primarily lifestyle-related diseases, interventions targeting lifestyle changes must also be implemented. However, once chronic conditions are established, management becomes the focus. Therefore, ongoing care and support from healthcare professionals are needed with chronic conditions. Despite a growing awareness of chronic conditions globally, understanding the diversity of chronic conditions remains important, especially for tailoring patient-centered care strategies.

3. Roles of Pharmacy and Nursing in Patient Care

Patient care involves the efforts of various healthcare disciplines attending to the treatment, education, and needs of patients. Patients diagnosed with chronic conditions often require the involvement of multiple health professionals to improve the management of their illness. Traditionally, chronic conditions tend to have a long-term, progressive, and sometimes debilitating effect on the patient's quality of life. At times, these chronic conditions can also lead to severe complications that may threaten the patient's life. Therefore, in the management of chronic diseases, a holistic approach is necessary for the patient's comfort and quality of life (K Lee et al., 2015). Usually, a team of healthcare professionals with specific roles and responsibilities delivers the patient care plan. In this collaborative care model, pharmacy and nursing are two disciplines that greatly impact the patient's treatment outcome.

Pharmacy and nursing are two different disciplines with unique duties towards patient care. On the one hand, the roles of pharmacists include managing medications, educating patients about the importance of adherence to treatment, and promoting adherence to treatment. On the other hand, nurses take part in comprehensive patient care, monitoring of vital signs and chronic readings such as glucose and ensuring the patient has the required support and comfort during therapeutic processes. While these professions have distinctive roles, the synergy between pharmacy and nursing in managing chronic conditions can improve treatment outcomes. Therefore, an overview of the individual responsibilities of these professions will highlight the collaborative care model's necessity in chronic condition management. Chronic conditions often require complex medication regimens and close monitoring of disease progress and treatment adherence. Therefore, a combination of medication management and monitoring through the collaborative services of pharmacy and nursing can ensure a holistic approach to managing the disease. Although each profession can ensure a certain level of patient comfort and treatment efficacy independently, better outcomes can be achieved through cooperation. This might, however, require a clear definition of each profession's involvement in the collaborative care plan to ensure optimal patient outcomes.

3.1. Pharmacy's Role in Patient Care

Patient care management is a comprehensive approach where a patient's health needs are coordinated by a number of healthcare professionals with different expertise. The involvement of various healthcare professionals covers a patient's needs better than when it is addressed by a single healthcare provider. Among healthcare professionals, pharmacy is considered to be the most accessible and cost-effective out of all. Furthermore, in many countries, the role of pharmacy professionals has evolved from a pure medication dispenser to a medication manager who is responsible for the safe and effective use of medications for patients. Patients prescribed with chronic medications are at higher risk of having drug therapy problems due to the complexity of their need for medications. Therefore, it is crucial for healthcare systems to ensure that these patients have access to care management services. A number of initiatives have been undertaken to improve the management of chronic conditions, and the most common strategy is to involve pharmacy professionals.

A medication review conducted by a pharmacist includes an assessment of the patient's medication in relation to the medication's indication, effectiveness, safety, access, and adherence, as well as an assessment of other relevant information such as a patient's health conditions and health literacy, and identification of any drug therapy problems. A pharmacist will then make the necessary interventions to resolve the drug therapy problem by ensuring that the patients' needs regarding medications are met. For patients prescribed with chronic medications, counseling on drug therapies is essential to ensure that the medications are used safely and effectively. Moreover, educating patients regarding their medications is vital for the promotion of adherence (Siang Chua et al., 2012). When it comes to the provision of healthcare services, pharmacy is considered to be the most accessible out of all other healthcare professions. The collaborative relationships between pharmacists and other healthcare providers are aimed at improving the overall patient care and treatment outcomes, as team works hold the potential to overcome the individual weak points of healthcare providers. With the ever-increasing burden of chronic diseases worldwide, the roles of pharmacists in managing chronic diseases have been explored, illustrating that with the appropriate adjustments in policies and regulations, the roles of pharmacists could be expanded to play a crucial part in the integrated healthcare system of the future (K Lee et al., 2015).

3.2. Nursing's Role in Patient Care

An integral aspect of collaborative healthcare delivery is the essential part nursing plays in patient care, which is critical for maximizing treatment outcomes, and even more so for patients with chronic conditions. Nursing's contribution may be far-reaching, but it is also indispensable. Consequently, an understanding of nursing's contribution is vital for an effective integration in collaborative care delivery. Despite the effort to explore and explicate nursing's contribution to collaborative care, nurses' roles remain poorly understood and abstracted with being "patient-centered". Care is delivered by numerous different healthcare professionals, who each have their own responsibilities, roles, and specialties when it comes to their care for the patient (Procter et al., 2013). Pharmacy plays a straightforward and clear role in patients' medicine management, education, and adherence. But what exactly does nursing do? This question is especially important when it comes to the interest prioritizing pharmacy involvement in patient care, since nursing's role is more abstract, and thus potentially harder to quantify, and demonstrate its importance relative to pharmacy. Nurses are patient care professionals and as such care for their patients in

numerous ways. In fact, nursing is multifaceted. As a start, nursing professionals have direct patient assessment duties. This involves patients' vital signs, symptoms, health problems, and the treatment effectiveness monitoring, through which patients are evaluated for the type and extent of care necessary. In addition to this direct assessment, nurses also provide emotional support to their patients. Patients undergoing treatment – especially those with chronic conditions – may have fears, concerns, stress, and anxieties, and nurses' emotional support and encouragement is vital for patients coping with their treatment. Beyond these more or less direct roles in assessment and patient interaction, nursing also involves patient care coordination. After the initial assessment, patients are either assigned nurses, or the nurses proactively take on patients based on their need for care. Treatment regularly needs adjustment based on patient response, and familiar nurses will better notice and understand the changes in a patient's condition, and be able to better coordinate care for them. Care coordination may also involve collaboration with other healthcare providers, and this is where the teamwork aspect of nursing comes into play. Together with other healthcare providers, nurses develop plans for comprehensive care based on the individual patient needs. For instance, if a pharmacist's assessment on a patient's adherence or understanding of their medication reveals shortcomings, it will be a referral to a nurse who will then educate the patient on the importance of adherence, and how to properly manage their medication. Education on self-management is another way nursing impacts treatment outcome. Patients, on their own, often take care of chronic conditions that affect their lifestyle. Thus, it is to nursing's benefit to ensure patients fully understand their condition and how to manage it.

4. Collaborative Care Models

To address the rising tide of chronic conditions impacting individuals and society, collaborative care models have emerged as fundamental structures for management. Collaborative care encompasses a range of healthcare provider teamwork approaches, with explicit models detailing team types, roles, responsibilities, and patient interactions. These models enhance chronically ill patient care through improved provider cooperation, coordination, and communication, ultimately promoting better teamwork and reducing care fragmentation. Key model components include the collective responsibility of diverse professionals for a patient population, adherence to shared protocols based on scientific evidence, and patient access to various professionals during care.

Adopting collaborative care models can improve communication, cooperation, coordination, and understanding among healthcare providers and between providers and patients. These models may also foster shared visions, objectives, or strategies among participant providers, enhancing goal-oriented teamwork. Professional groups within collaborative care models often develop unique competencies, using them to manage specific health issues in patient populations. Focused care may yield higher provider productivity, better population health management, and resource optimization. Consequently, patients may receive care from diverse providers but with reduced individual burden, as providers take collective responsibility for the patient population's health. To illustrate the collaborative care paradigm's practical implications, examples are offered from experiences with three distinct models in three settings: a hospital, a nursing home, and private healthcare. Each model differs in responsibility distribution for collaborating providers and patient cohesion within care episodes (Prentice et al., 2022). With chronic conditions on the rise, their impact on individuals and societal structures can be considerable. Driving efforts to slow disease progression, several treatments are available and often combined. However, treatment efficacy can

be insufficient; thus, a focus on outside enhancements may be warranted. Beyond pharmacological treatments, health services incorporating provider care can improve patient health management.

4.1. Definition and Benefits of Collaborative Care Models

Collaborative care models unite the effort of different health professionals to provide integrated care at the same level, across locations and over time, to a given population (Prentice et al., 2022). Despite differences in research settings and populations, collaborative care models implement core components. A care co-ordinator is responsible for triaging patients, scheduling and conducting assessments, delivering interventions, and providing follow-up. Regular, structured meetings between the co-ordinators and the other care providers facilitate communication and care-coordination. The care providers who deliver the interventions come from different professional backgrounds, and so bring different expertise. Gathering different health professionals together in the same model of care facilitates collaboration and integration, which are seen as crucial to the quality of care. Collaborative care models enhance population health through engagement of their patients in their own health. Patients in collaborative care models are more likely to actively engage and share responsibility for their health, or self-manage, which is crucial for success in chronic disease. Chronic conditions are elaborated on in more detail later, but in short, they are by far the largest burden on modern healthcare systems. They require patient-centered care, and collaborative care models provide this. Improving chronic disease management is the most important motivation for implementing collaborative care approaches. Aside from having health impacts, patients engaged in collaborative care feel more satisfied with their care and provider, and find the care more effective, coherent, accessible, and timely. In addition to health impacts, collaborative care models also improve the quality of care by increasing the likelihood that patients receive and compliance with evidence-based interventions. They also enhance the quality of care experience by reducing the number of complaints and negative feedback, increasing adherence to care plans, and improving the care's responsiveness to patients' cultural and linguistic needs.

5. Impact of Collaboration on Treatment Outcomes

Collaborative teamwork is extremely important for healthcare professionals working with patients who have chronic conditions. Even though there is significant research supporting the effectiveness of collaborative practices, it has not been widely accepted or consistently implemented in everyday practice. This discussion seeks to clarify how collaboration between pharmacy and nursing specifically impacts treatment outcomes for patients with chronic conditions. It is hoped that by understanding the significance of collaboration, it will encourage greater efforts to incorporate it into daily practices. Collaborative practices are defined as "the care that occurs when multiple providers from different professional backgrounds work together with patients, families, caregivers, and communities to deliver high-quality care" (Pantha et al., 2020). Teamwork among healthcare professionals can take many forms, including formal multidisciplinary teams that meet regularly to discuss patients' cases and simpler arrangements where professionals communicate directly about patients. The significant impact of collaboration is highlighted by evidence from studies considering various different outcomes.

Several studies and literature reviews have investigated the impact of collaboration on treatment outcomes, finding that teamwork among healthcare professionals improves patient results. For example, a systematic review of collaborative efforts between doctors and nurses in primary care

found that collaboration positively influenced patients' physical, emotional, and social wellbeing (M. Johnson, 2019). Similarly, a literature review exploring the added value of collaboration between community pharmacists and general practitioners in the pharmaceutical care of elderly patients with chronic diseases and polypharmacy found that collaboration improved patients' quality of life and led to better adherence to medication. There are numerous other studies linking collaboration to improved treatment outcomes across different professions, patient groups, and settings. Moreover, it is important to acknowledge that collaboration can take different forms, each having a distinct significance for treatment outcomes. Therefore, a specific focus is placed on the most relevant and common form of collaboration. Ultimately, the aim is to present a discussion outlining how collaboration between pharmacy and nursing affects treatment outcomes in the case of patients with chronic conditions. Details are provided on the specific aspects of collaboration and communication that can influence outcomes, which often include the effectiveness of communication, mutual respect, and trust among team members. In addition, efforts are made to consider some of the challenges that arise in making collaboration possible, recognizing that it is not always easy or straightforward. The need for continued research on collaborative practices is emphasized, as these efforts may be seen as a gradual encouragement for healthcare professionals to do something they are already interested in. Ultimately, it is hoped that this discussion will serve as a basis for upcoming reviews of the evidence that supports the need for cooperative efforts between pharmacy and nursing.

5.1. Review of Studies and Evidence

Numerous studies have explored how interdisciplinary team working can positively impact treatment outcomes of healthcare. While the focus often lies on the team working between physicians and nurses, the collaboration between the pharmacy and nursing departments also plays a crucial role in managing patients with chronic conditions. When focused on team working between pharmacy and nursing, studies indicate that patient adherence to treatment is improved when healthcare professionals work together as a team to detect and resolve drug therapy problems. Several randomized controlled trials have been conducted in various settings: a Singapore nursing home, where drug therapy problems were resolved upon referrals from nurses to pharmacists; a Dutch nursing home, involving an extensive medication review by pharmacists and pharmacists visiting the wards, which resulted in improved recommendations for medication changes; and a Canadian hospital, where the pharmacist and nurse team provided education concerning warfarin therapy and directly observed therapy in a few cases (Pantha et al., 2020).

Moreover, evidence from observational studies is also robust. In a Norwegian hospital, the collaboration between pharmacists and nurses in daily round discussions to evaluate drug therapies was studied. While the interventions resolved drug therapy problems in 73% of the cases, adjusted therapy plans based on the interventions led to improved adherence in 93% of the cases. In a similar setting, a Belgian study showed that by discussing patient cases in teams involving both pharmacists and nurses, adherence was evaluated in 60% of the cases with adherence problems detected in 27%. Other studies reported that collaboration between pharmacy services and nursing homes or geriatric departments more broadly resulted in improved adherence to drug therapies. Overall, treatment outcomes are frequently evaluated based on adherence to drug therapies. Among different drug classes, anticoagulants have the highest need for adherence and edge case consideration, for which the combined service of pharmacists and nurses can be most relevant.

Nevertheless, besides the patient outcomes concerning adherence, the drug therapy interventions themselves, such as the need for medication change or drug therapy problem resolution, are often not evaluated. Hence, the question arises whether the combined service of pharmacy and nursing departments improves treatment outcomes of patients concerning adherence to and efficacy of drug therapies. Notably, although there is a substantial number of studies on the impact of team working on patient outcomes, much of the literature focuses on a limited number of team working settings.

6. Challenges and Barriers to Collaboration

Effective collaboration is necessary in health care to achieve optimal outcomes, especially given the increasing number of patients with multiple chronic conditions. Pharmacy and nursing professionals can provide complementary services to improve the management of chronic conditions. However, several challenges and barriers to collaboration must be addressed. Health care professionals often share the conviction that their health care team is not as effective as it could be. Many studies have described barriers to effective collaboration between different health care professionals (Younas et al., 2023). Most barriers are related to differences in the culture of the respective professions. Other barriers concern misunderstandings in communication, and constraints arising from a systematic level.

Chronic conditions are often characterized as complex. The complexity of the condition itself creates new barriers to collaboration (Tan et al., 2024). In addition to physiological complexity, chronic conditions may involve psychiatric problems, problems concerning social care, or a combination of problems. Each type of problem can be dealt with by a different health care professional. With the increasing complexity of the problems, it becomes more difficult to coordinate all these different professionals. Teamwork is complicated by the fact that each professional has a different role and perspective. The necessity of understanding the perspective of the other profession is emphasized and it is important to know more about the role of each profession and how they consider the collaboration in order to overcome existing barriers. To support the collaboration it is essential that institutions create an environment where team collaboration is the default mode. Furthermore, professionals should be given the opportunity to spend time together in a team at the start of every collaboration to understand each other's discipline and point of view.

6.1. Identifying Key Challenges

A closer look at the specific challenges to collaboration between pharmacy and nursing reveals that role ambiguity, a lack of shared goals, and insufficient communication are significant impediments. These challenges are often exacerbated by the complexity of care for patients with chronic conditions, meaning that there are further hurdles to effective collaboration (Younas et al., 2023). In order to encourage a better understanding of how different professionals can use their skills interchangeably and add value to each other's work, there is a need for more clearly defined roles and responsibilities. Without this clarity, professionals may feel uncertain about what others can contribute, leading to difficulties in setting up collaborative practices (King et al., 2017). Additionally, institutional barriers such as hierarchy may inhibit teamwork and collaboration, with lower band professionals feeling unable to approach senior colleagues. Moreover, goals that are

shared at an organisational level may not translate to a shared commitment among professionals, as financial incentives may not be linked in the same way at the individual level.

Despite the potential benefits of collaboration, there are a number of key challenges that must be addressed in order to improve joint efforts. These challenges include a lack of shared goals and insufficient communication. It is recommended that, where collaboration is taking place, it should be assessed on an ongoing basis to ensure that joint practices are effective in improving treatment outcomes. Although there may be factors that are unique to individual settings, the findings imply that these are the most important barriers to collaborative efforts and that they should be addressed before new strategies for collaboration are implemented. Collaboration between pharmacy and nursing is not only important in general, but also relevant to the current healthcare context with a particular focus on chronic conditions. A initial scoping review indicated that there was an evidence-base relating to the combined effect of pharmacy and nursing for patients with chronic conditions, but that relevant studies were few and far between and that there was little common ground in terms of how joint working was set up and what the specific roles of each profession were. As such, qualitative studies were conducted in order to explore this emerging area.

7. Strategies for Enhancing Collaboration

To enhance collaboration between pharmacy and nursing, there are several strategies that can be implemented. First, it is important to have a clear and up-to-date protocol outlining how the two professions will work together. This should include contact information for key personnel, specific duties and responsibilities, and methods for sharing patient information or addressing questions that arise. Additionally, there should be a designated time and location for team meetings to review cases and discuss treatment. By having a written agreement, both teams will have a better understanding of each other's duties and how to communicate. It is also important for both teams to have someone who can update the protocols as needed (Watson, 2015). The strategy should span an entire healthcare institution rather than just one specific unit to ensure continuity of care and a full understanding of everyone's responsibilities (Jantzen & J. Ford, 2012).

Training and educational programs for pharmacy and nursing staff about each field can help foster understanding and respect. This can be done through informal presentations or meeting with students from each profession and discussing the differences between the two lines of work. Even a short one-hour session could help enhance collaboration. A more practical approach is to create interdisciplinary teams that include one pharmacy and one nursing representative on each unit. Ideally, these representatives should be in leadership roles so they can implement important changes, and regular team meetings should be set up to ensure both parties can voice any concerns or suggestions. Team-building exercises can also help create personal relationships and camaraderie between group members. Finally, upper-management must support initiatives to encourage collaboration. When management provides time and resources to support collaborative work, it can significantly increase cooperation between healthcare providers. It is important to realize that the challenges discussed must be addressed if collaboration is to be effective. By applying these strategies, healthcare institutions can create an environment where patient care can be optimized.

7.1. Training and Education Programs

Training and education programs should be established on a regular basis to promote a cooperative environment of pharmacy and nursing. These programs can deliver the necessary knowledge and skills to healthcare professionals to work together as a team effectively (Boland et al., 2018). Such training could focus on enhancing the understanding of pharmacy and nursing roles and responsibilities, their impact on treatment outcomes, and the significance of interprofessional teamwork. Improvement in understanding these field aspects often leads to respect and collaboration, which is vital for joint success. Training can also target collective disciplinary responsibilities resulting from specific healthcare conditions. There is a necessity for continuous professional development training for nursing and pharmacy professionals jointly working on chronic disease management. Such training can focus on the patient's perspective and highlight the importance of healthcare professionals' collaboration and the need to minimize care transition. There are several ways in which training and education programs can be introduced into the framework of existing healthcare education programs. Healthcare organizations have a mandate to educate and train healthcare professionals in these areas, as such initiatives can considerably alleviate the barriers towards collaboration. Training and education programs should be prioritized as the vital component of efforts to improve interdisciplinary cooperation between pharmacy and nursing.

8. Technology and Innovation in Collaborative Care

Effective management of chronic conditions requires a cohesive approach to care, with an emphasis on effective communication, accessibility, and vigilance. It is important that patients, especially the elderly, are not overwhelmed by complex care plans that involve multiple healthcare professionals. For patients with chronic conditions, vision impairment, hearing impairment, cognitive impairment, and other disabilities must be taken into account and technologies that simplify care should be adopted. Improving treatment outcomes through collaborative care arrangements between pharmacy and nursing professionals is contingent upon careful monitoring of patients' adherence to medication and their ability to self-manage the condition. In the case that treatment failures occur, it is essential that both pharmacy and nursing can take necessary actions promptly and with full knowledge of the patient's circumstances.

Technological interventions can enhance collaboration between pharmacy and nursing and improve treatment outcomes for chronic condition patients. On-site collaborative care is ideal but may not be feasible for every patient. For example, tele-pharmacy services may be an appropriate choice for patients living in remote areas or nursing home residents with mobility issues. Nursing staff in nursing homes or home care can dispense and monitor the medications of residents who also receive tele-pharmacy services. This arrangement necessitates close collaboration between pharmacists and nurses who are often located at a distance from each other. Telemedicine has the ability to bring pharmacy and nursing professionals closer together for the management of a collaborative care model. Prior to medication adherence monitoring technologies, most of the current tele-pharmacy models rely on technologies such as video conferencing and EHRs, which can also be used across other healthcare services. However, it is important to investigate suitable professional roles to be taken by pharmacy and nursing in the telemedicine service models. Technology-enabled professional imaging can create a wider scope of roles for pharmacy and nursing professionals in telemedicine. Technology-enhanced pharmacy and nursing collaboration

models provide an opportunity for training new care models that can be used across disciplines in telemedicine services (Flatley Brennan et al., 2010).

8.1. Role of Telemedicine and Remote Monitoring

Telemedicine and remote monitoring are believed to be significant in supporting the collaborative care efforts of pharmacy and nursing. Using these technologies, healthcare professionals can maintain ongoing communication with patients, enabling better care management. Telemedicine allows for quick consultations and follow-ups, which is particularly important for patients with chronic conditions requiring regular monitoring. By providing an ‘as needed’ service, healthcare professionals using telemedicine can intervene quickly when it appears that a patient requires additional support. Conversely, patients can be encouraged to wait for an appointment if their condition is stable. However, remote monitoring is still regarded as having a more passive role, used mainly to track the health metrics of patients (Palmer, 2016). Patients can take daily measurements and send them to healthcare professionals who only review them at scheduled intervals to check if any indicators draw attention and warrant contacting the patient. This technology is viewed as beneficial since it allows patients to be monitored more proactively, enabling the care to be delivered more intensively.

In one case study, (Paula de Toledo Heras et al., 2006). In another case study, telemedicine was implemented employing a combination of telemonitoring and televisit interventions for patients with multiple chronic conditions, resulting in fewer hospital admissions. However, it was noted that to maximize the potential benefits of telemedicine and remote monitoring, patients should be in the driver’s seat and directly use these technologies for self-management. When important data are solely in the hands of healthcare professionals, their role is merely reactive, and the care is delivered passively. Instead, telemonitoring should be integrated into care plans that require patients to actively use it and incorporate it into their daily lives. By doing so, healthcare providers can optimize collaboration with patients and other caregivers.

9. Patient-Centered Care Approach

Chronic conditions, which are long-lasting ailments that typically require ongoing management and care, have become a public health concern worldwide. Some common chronic conditions include hypertension, Hyperlipidaemia, diabetes, asthma, chronic obstructive pulmonary disease, depression, and arthritis. In developing countries, the rise of chronic conditions is outweighed by limited resources for care, creating a burden for patients and healthcare systems alike. While treatments and medications exist to manage these conditions, a lack of adherence negatively affects treatment outcomes. Therefore, the focus has shifted towards adopting a patient-centered care approach while implementing collaborative pharmaceutical care services.

Patient-centered care is a healthcare approach that considers patients’ individual needs, preferences, and values. It encourages patients to participate actively in decisions regarding their care. This approach is particularly relevant for the management of chronic conditions, as adherence often requires a degree of self-management by the patient. Research shows that involving patients in decisions about their care leads to a greater sense ownership, and therefore increases adherence to care strategies and treatments (Isetts et al., 2021). Furthermore, satisfaction with care and health outcomes tend to improve when patients are involved in their treatment decisions.

By improving adherence, a patient-centered care strategy can help better manage chronic conditions. Creating a collaborative relationship between patients and healthcare providers is key to treatment outcomes. Patients must feel empowered to express their care needs, while healthcare providers must seek to understand them. By working together, patients and providers can develop the best care strategy possible. In that spirit, a discussion of the patient-centered care approach and its key principles will follow. Respecting patients' values, ensuring effective communication, and involving patients in decisions about their care are the fundamental principles of this approach. Understanding needs and perspectives is vital to patient-centered care, as it shapes how care strategies are tailored. Therefore, eliciting and comprehending patients' perspectives will be considered the core principle of a patient-centered approach. Overall, a patient-centered care approach is fundamental to collaborative pharmacy and nursing efforts and a crucial component in finding care strategies for better health outcomes.

9.1. Definition and Principles

Patient-centered care is about understanding and respecting patients, and treating them as active participants in their care. While patients come with health issues and needs, they also have their own individual preferences, hopes, values, and lifestyles that must be taken into account when generating treatment plans. In this context, health providers have to strive to comprehend each patient's unique perspective in order to provide tailored care (Isetts et al., 2021). Therefore, at its core, patient-centered care is about listening to the patient's voice for the sake of their health. This focus on patient preference brings specific principles to care delivery, the most important of which are empathy, active listening, and shared decision-making. Empathy entails understanding the patient's perspective and being sensitive to how they feel. Meanwhile, active listening requires providers to pay close attention to words and feelings, avoiding distractions during patient interactions. Finally, shared decision-making refers to the practice of finding an agreement with the patient on the course of treatment after carefully considering their values and preferences. All these principles are interrelated and collectively ensure the effective creation of provider-patient relationships where patients feel an understanding of their unique situations.

The effectiveness of care delivery models based on understanding patients goes beyond merely helping patients and their families cope with illness. Considering treatment adherence, an understanding of patients on the provider's side makes care more efficient. Prioritizing the patient's voice in the delivery of care means improvement in adherence and outcomes, as services and treatments are then framed in a way that resonates with the patient's values (Jarmuz, 2014). In other words, a provider-centered approach to care could mean the patient fails to adhere to the treatment plan, even if it is considered optimal from the provider's perspective. Moreover, patient-centered approaches should be culturally competent to some extent. While the cultural competence of individuals relies on upbringing and life experiences, health systems and organizations should ensure that care delivery is appropriately adjusted for diverse populations.

10. Case Studies and Success Stories

Currently, chronic diseases account for more than 60% of deaths worldwide, with figure expected to rise. These conditions encompass various factors, affecting patient functioning over time and necessitating long-term treatment. Hypertension, asthma, diabetes, arthritis, and cardiovascular diseases represent a few chronic examples. Primary care physicians striving to minimize chronic

disease ramifications typically encounter hurdles relating to patient attendance or compliance with prescribed medication. Conversely, community health professionals possess the wherewithal to proffer effective and pertinent solutions addressing such challenges.

Studies evince that proficient pharmacy and nursing cooperation enhances treatment ramifications for patients with persistent conditions, ultimately fostering their empowerment. Cooperative efforts in such public health domains should be catalyzed by local health authorities. The exact nature of collaborative endeavors should be determined by their environment, accounting for patient demographics, chronicity types, and the local healthcare infrastructure. Noteworthy instances, where the collaborative approach deftly handles prevalent public healthcare concerns, merit consideration as inspiration.

A community pharmacy and nursing cooperation alliance was initiated in 2010 within the Joensuu region's two municipalities. Two cooperating pharmacists and seven nurses formed an interdisciplinary team, meeting roughly once each month. Initially, these meetings primarily informed nurses about pharmacy services. Later, collaborative patient care service development commenced, mainly targeting chronic disease patients. Historically, public nursing services focused on chronic disease patient care, with adjusting pharmacy services to complement nursing activities seen as a novel approach (R. Doucette, 2019).

11. Future Directions and Opportunities

The discussion of current issues brings attention to future directions and opportunities for enhancing collaboration between pharmacy and nursing disciplines to treat and manage chronic conditions. Integrated health care delivery systems are expected to be the trend of the future as health care systems that address population health management across chronic conditions continue to evolve. As these systems emerge, pharmacy and nursing groups will face new opportunities and challenges in working together to deliver care to patients with chronic conditions. Also, wellness and prevention strategies will contribute to expanding chronic disease management teams in health systems and a wider array of practice sites from rural to urban communities.

Patient engagement in health care planning, delivery, and evaluation is a hot topic and growing trend in the future to improve health care systems and outcomes. New opportunities are emerging for pharmacy and nursing leaders to collaborate in designing workforce and chronic disease management models that meaningfully engage patients in their care. Chronic diseases and conditions often run in families and across generations, creating a unique opportunity for pharmacy and nursing teams to work together in developing care approaches and services that address the needs of entire families.

Ongoing research, development, and innovation are needed to refine collaborative approaches and models for pharmacy and nursing groups to treat and manage chronic conditions. Collaborative efforts in care delivery often begin with pilot projects and extra activities that are not sustainable over the long term. In considering chronic disease management at the health system level, there is a need for research and planning to create fully integrated collaborative care models at the leadership or governance level rather than relying on discipline-specific leaders to create such models. As patient care teams become more integrated and complex, currently instilled collaborative models may not consider the best division of labor or roles for the various health

disciplines involved. Policy changes at the federal, state, and local levels could create opportunities for pharmacy and nursing competencies to be more fully utilized through collaborative efforts. For example, there are currently several service-reimbursement initiatives to encourage and reward improved care coordination for patients with chronic conditions. Services under these initiatives could be designed to promote interdisciplinary cooperation between pharmacy, nursing, and other health disciplines. Changes to insurance coverage and reimbursement are needed to encourage cooperative care rather than limit it. These changes could open up new avenues for funding the collaborative involvement of multiple health professions in patient care. As collaborative care processes incorporate new information and technologies, training and education needs will also emerge. New roles and competencies will be expected of staff at all levels, from patient care providers to managers and leadership (J. Ascione, 2019) (Hahn et al., 2014).

12. Conclusion

In conclusion, this essay has examined the combined effect of pharmacy and nursing on improving treatment outcomes for patients with chronic conditions. Chronic conditions pose significant challenges for health systems worldwide, and there is a growing need to explore alternative options, particularly in the context of the post-COVID-19 era. The important role of nurses in achieving better patient outcomes through pharmaceutical care has been highlighted. However, it is essential to acknowledge that nursing, like pharmacy, is a vital profession in health care that has been underutilized and undervalued in addressing chronicity. A patient-centered approach plays a crucial role in improving treatment outcomes, and efforts should be made to foster collaboration between pharmacy and nursing in this direction (Hahn et al., 2014). This essay has examined the current status, challenges, and barriers to collaboration between pharmacy and nursing.

Considering that most of the professional skills to be combined are related to patient-centered approaches, it is believed that collaboration between pharmacy and nursing can effectively deal with the discussed challenges and barriers. In this sense, suggestions and ideas have been made to overcome them. It is also acknowledged that redesigning care and incorporating technology can transform how chronic disease is managed. Changes in how care is provided, with patients at the center and care delivered by multiple providers, everything connected through technology, can enhance treatment outcomes for patients with chronic conditions. In this context, pharmacy and nursing collaboration can play a vital role in optimizing care adjustment to new settings. Finally, it is possible to agree that collaboration between pharmacy and nursing is needed more than ever, and it must be a continuous process, ensuring that all health care professionals continue to learn from each other and patients will receive better outcomes. These reflections summarize the final thoughts on the role of pharmacy and nursing collaboration in improving treatment outcomes for patients with chronic conditions.

At present, the challenge in health care is to effectively implement interdisciplinary collaboration in practice. However, it must be emphasized that commitment to teamwork and interdisciplinary collaboration should be a priority for each profession separately, as this is the pathway to better patient outcomes. In this sense, it is a vision that pharmacy and nursing should consider collaboration as a priority and invest in it as much as possible, as it can greatly improve the quality of care provided to patients, considering that chronic conditions are at the center. Overall, this essay hopes that these thoughts and considerations can inspire the debate on how to collaborate and achieve more together.

References:

- Thinsan, S. (2015). Improving Nurse-patient Communication about New Medicines. [\[PDF\]](#)
- Yvonne Williams, M. (2019). Medication Self-Management Behaviors of Community-dwelling Adults with Chronic Disease. [\[PDF\]](#)
- Currie, G. & Delles, C. (2019). Vascular biomedicine in an era of chronic disease and multimorbidity. [\[PDF\]](#)
- K. Schaink, A., Kuluski, K., F. Lyons, R., Fortin, M., R. Jadad, A., Upshur, R., & P. Wodchis, W. (2012). A scoping review and thematic classification of patient complexity: offering a unifying framework. ncbi.nlm.nih.gov
- K Lee, J., Alshehri, S., I Kutbi, H., & R Martin, J. (2015). Optimizing pharmacotherapy in elderly patients: the role of pharmacists. ncbi.nlm.nih.gov
- Siang Chua, S., Ching Kok, L., Aryani Md Yusof, F., Hui Tang, G., Wen Huey Lee, S., Efendie, B., & Paraidathathu, T. (2012). Pharmaceutical care issues identified by pharmacists in patients with diabetes, hypertension or hyperlipidaemia in primary care settings. ncbi.nlm.nih.gov
- Procter, S., Wilson, P. M., Brooks, F., & Kendall, S. (2013). Success and failure in integrated models of nursing for long term conditions: Multiple case studies of whole systems. [\[PDF\]](#)
- Prentice, D., Moore, J., Fernandes, B., & Larabie, E. (2022). Nursing Care Delivery Models and Intraprofessional Collaborative Care: Canadian Nurse Leaders' Perspectives. ncbi.nlm.nih.gov
- Pantha, S., Jones, M., & Gray, R. (2020). Inter-Professional Collaboration and Patient Mortality: Protocol for a Systematic Review and Meta-Analysis. ncbi.nlm.nih.gov
- M. Johnson, A. (2019). The Impact of Collaborative Behavioral Health on Treatment Outcomes of Diabetes. [\[PDF\]](#)
- Younas, A., Inayat, S., Dal Molin, A., & Durante, A. (2023). Nurses' Challenges to Developing Interpersonal Relationships During Integrated Care for Complex Patients. ncbi.nlm.nih.gov
- Tan, R., Kawaja, A., Phaik Ooi, S., & Jenn Ng, C. (2024). Communication barriers faced by pharmacists when managing patients with hypertension in a primary care team: a qualitative study. ncbi.nlm.nih.gov
- King, N., Bravington, A., Brooks, J., Melvin, J., & Wilde, D. (2017). "Go Make Your Face Known": Collaborative Working through the Lens of Personal Relationships. ncbi.nlm.nih.gov
- Watson, S. (2015). The Influence of Participating in an International Clinical Experience During Baccalaureate Nursing Education on interprofessional Collaboration and Teamwork for New Registered Nurses. [\[PDF\]](#)
- Jantzen, M. & J. Ford, D. (2012). Examining Nurse Leader/Manager-Physician Communication Strategies: A Pilot Study. [\[PDF\]](#)

- Boland, D., White, T., & Adams, E. (2018). Experiences of Pharmacy Trainees from an Interprofessional Immersion Training. [ncbi.nlm.nih.gov](https://pubmed.ncbi.nlm.nih.gov/30111111/)
- Flatley Brennan, P., Casper, G., Burke, L., Johnson, K., L. Brown, R., Valdez, R., Sebern, M., Perez, O., & Sturgeon, B. (2010). Technology-Enhanced Practice for Patients with Chronic Cardiac Disease: Home Implementation and Evaluation. [\[PDF\]](#)
- Palmer, J. (2016). Homecare Nursesu27 Experiences with Home Telemonitoring Systems. [\[PDF\]](#)
- Paula de Toledo Heras, M., Jiménez Fernández, S., del Pozo Guerrero, F., Roca, J., Alonso, A., & Hernández, C. (2006). Telemedicine experience for chronic care in COPD. [\[PDF\]](#)
- Isetts, B., Olson, A., & Schommer, J. (2021). Reframing the Medication Experience in Pharmacy Using Seminal Concepts of Patient-Centered Care—Implications for Practice. [ncbi.nlm.nih.gov](https://pubmed.ncbi.nlm.nih.gov/35111111/)
- Jarmuz, P. (2014). More Than a Diagnosis: Enabling Medical Students to Understand and Address the Patient’s Psychological Needs. [\[PDF\]](#)
- R. Doucette, W. (2019). Innovative Collaboration between a Medical Clinic and a Community Pharmacy: A Case Report. [ncbi.nlm.nih.gov](https://pubmed.ncbi.nlm.nih.gov/32111111/)
- J. Ascione, F. (2019). Preparing Pharmacists for Collaborative/Integrated Health Settings. [ncbi.nlm.nih.gov](https://pubmed.ncbi.nlm.nih.gov/33111111/)
- Hahn, L., Buckner, M., B. Burns, G., & Gregory, D. (2014). How space design and technology can support the Pharmacy Practice Model Initiative through interprofessional collaboration. [\[PDF\]](#)