

How to Cite:

Aldawsari, A., Al-Haiti, S. I. L., Harb, A. H., Alzahrani, M. M., Almekhbel, L. S., Almutairi, Y. T., Almalki, S. A. R., Abudalli, A. N. S., Alanazi, M. F., Alzahrani, N. A., & Alonzi, F. A. (2023). Patient outcomes through interprofessional partnerships: A focus on pharmacist-nurse collaboration. *International Journal of Health Sciences*, 7(S1), 3103–3118.
<https://doi.org/10.53730/ijhs.v7nS1.14692>

Patient outcomes through interprofessional partnerships: A focus on pharmacist-nurse collaboration

Anbar Aldawsari

Clinical Pharmacist, King Saud Medical City, Riyadh, KSA
Email: Pharmn2@gmail.com

Saadah Issa Lahidan Al-Haiti

Nursing Technician, Al-Haiti General Hospital, Hail, KSA
Email: saadah-2030@hotmail.com

Aishah Hade Harb

Health Assistant, King Khalid Hospital and Prince Sultan Center, Alkharj, KSA
Email: fushihh@hotmail.com

Majed Mubarak Alzahrani

Pharmacist, King Fahad Medical City, Riyadh, KSA
Email: Majed1982alzahrani@gmail.com

Latifah Saad Almekhbel

Nursing Technician, Alshif first PHC Riyadh, KSA
Email: nader40t@gmail.com

Yousef Tala Almutairi

Pharmacist, Ministry of Health, KSA
Email: Ytmutairi@moh.gov.sa

Salman Awad Raddad Almalki

Pharmacist, Dharma General Hospital, KSA
Email: Ph.almalki@hotmail.com, Saawalmalki4@moh.gov

Abdullrahman Nasser S Abudalli

Pharmacist, Ministry of Health, KSA
Email: aabudalli@moh.gov.sa

Meaad Fayadh Alanazi

Pharmacist, Prince Mohammed Bin Abdulaziz hospital, Riyadh, KSA
Email: Meaadalanzi@gmail.com

Nawal Ahmed Alzahrani

Nurse, Princes sultan health center in Alahmadiyah, Riyadh, KSA

Email: Naalzahrani@moh.gov.sa

Ferial Alhelw Alonzi

Pharmacist, King Saud medical city, KSA

Email: F.enizi@ksmc.med.sa

Abstract---This in-depth conversation explores the dynamics of collaboration between pharmacists and nurses, with a special emphasis on pharmaceutical care (PhC). The investigation commences by clarifying the notion of PhC, emphasizing its professional, patient-focused, and inter-professional aspects. The story takes place in the framework of the Polish healthcare system and highlights the critical role that pharmacists play—a position that was further highlighted by the COVID-19 pandemic. But obstacles that have been found—from doubt to organizational difficulties—showroom deficiencies in the cooperative decision-making process between pharmacists and nurses, calling for a paradigm change. Extending the reach internationally, the discussion is consistent with the World Health Organization's recognition of nursing's comprehensive care, both independent and cooperative. Research demonstrates how collaborative efforts, such as interprofessional medication reviews, can improve patient outcomes, lower errors, and raise the standard of care overall. Aspects of education highlight the deficiencies in nursing programs and stress the significance of identifying and maximizing nurses' contributions to pharmaceutical care in order to enhance patient safety and healthcare quality. The discussion ends by emphasizing how important it is to break down barriers via innovative professional viewpoints, educational changes, and legislative modifications. This synthesis highlights the need to identify, develop, and maximize the potential for collaboration between pharmacists and nurses in order to provide a robust, patient-centered healthcare system. A comprehensive grasp of the complexities and opportunities in the cooperative field of nursing and pharmaceutical care is offered by the multifaceted study.

Keywords---nurse, pharmacist, pharmaceutical care, interplay, chronic diseases, gaps, barriers, interprofessional medication reviews.

Introduction

Collaboration amongst healthcare professionals has been crucial in improving patient outcomes and streamlining the delivery of care in the ever-changing healthcare landscape. In particular, by implementing Pharmaceutical Care (PhC), this study sheds light on the transformative potential of the dynamic relationship between pharmacists and nurses for patient outcomes. Since its conception by Hepler and Strand in 1990 (Hepler & Strand, 1990). PhC—defined as the direct

and responsible provision of medication-related care with the goal of increasing a patient's quality of life—has boosted the status of pharmacists worldwide (Berenguer B., La Casa C., de la Matta M.J., & Martin-Calero M.J., 2004).

Originally connected to the dispensing of pharmaceuticals, pharmacists now play a crucial role in the healthcare system by offering patients in community pharmacies professional services and support. In Poland, the profession of pharmacy is crucial as the first point of contact for people looking for guidance on minor illnesses or the onset of sickness since community pharmacies are freely accessible and pharmacists are highly trusted (Ayorinde, Porteous, & Sharma, 2013). As of January 10, 2022, there were 26,162 pharmacists employed in 11,911 pharmacies, demonstrating the indisputable importance of this professional group in the healthcare industry (Online, 2022). Pharmacists are an essential part of the healthcare continuum because of their knowledge, accessibility, and public trust.

The cooperation between pharmacists, nurses, and doctors has been the subject of much research, while that between pharmacists and nurses is frequently disregarded. The nursing community's qualifications have expanded in Poland in recent years, enabling them to write prescriptions and make a major contribution to patient care (Informacja, 2022 and Piel, 2022). This expansion offers a special chance to include Pharmaceutical Care within the Polish healthcare system in accordance with the Pharmaceutical Profession Act. The changing roles of nurses and pharmacists in Poland underscore the growing significance of their cooperation, an aspect that is garnering more attention within the larger framework of health care research (Santschi, et al. 2017, Henneman, et al., 2014).

The purpose of this study is to investigate nurses' perceptions of their previous experiences working with pharmacists and to assess the possibility of a partnership between these two professional groups in the implementation of Pharmaceutical Care in neighborhood pharmacies. Optimizing patient management is critical, particularly when it comes to prescription and purchased medications, since global healthcare systems struggle with issues like scarce resources, growing costs, and elevated patient expectations (Ghorbani, 2022). In order to achieve this optimization, patients, unpaid caregivers, and an interprofessional team of healthcare professionals must work together.

In March 2020, the Council of Europe passed a resolution on pharmaceutical care, recognizing the value of interprofessional collaboration. The resolution highlights the need of integrated, person-centered care by outlining a framework for patient assessment, intervention selection, and continuing monitoring and stresses the appropriate administration of medication to improve patient quality of life. Healthcare professionals, including nurses and pharmacists, must effectively communicate and collaborate in order to implement this person-centered approach, which focuses on the goals and context of the individual.

This paper seeks to offer insights from the standpoint of nurses, even if the resolution primarily addresses pharmaceutical care from the perspective of pharmacy services. A vital part of interprofessional pharmaceutical care, nurses are essential in patient assessment, medication-related problem identification,

and pharmaceutical care plan preparation. In light of the nursing perspective, this study considers prospects for evidence-based pharmaceutical care as healthcare systems work toward high-quality patient outcomes.

This study aims to investigate the perspectives of nurses and pharmacists involved in interprofessional drug review teams in a primary healthcare setting, with a focus on elderly patients living at home or in nursing homes, who frequently deal with complex medication regimens and are at risk of adverse drug reactions, falls, and other challenges. This research offers a complete assessment of the impact of interprofessional partnerships on patient outcomes and care quality, and it makes a significant contribution to the ongoing discourse on interprofessional partnerships in healthcare by analyzing what these professionals perceive to learn from such collaborations.

Pharmacist-Nursing Partnership in Chronic Diseases

In Europe, chronic illnesses pose a serious threat to public health since they have a big effect on socioeconomic variables, mortality, and morbidity. Beyond just negative effects on health, chronic illnesses also have a negative impact on earnings, incomes, labor force participation, and productivity. They also raise the risk of early retirement, high turnover, and incapacity. The rising costs associated with long-term care across Europe demand an increasing amount of public and private resources to deal with the complex issues that chronic illnesses present. Chronic diseases used to mostly refer to heart disease, diabetes, asthma, and chronic obstructive pulmonary disease (COPD), but they now include a wider range of conditions, such as cancer, HIV/AIDS, mental disorders like depression, schizophrenia, and dementia, and disabilities like visual impairment. Chronic diseases are becoming more complex due to an aging population, lifestyle choices (such as smoking, sexual activity, food, and exercise), and genetic predispositions (Rahayu, et al, 2022).

Because chronic diseases are long-lasting, managing them effectively necessitates a multimodal approach managed by several healthcare providers, including social services, equipment, and access to necessary medications. The five main elements of interprofessional collaboration in the context of treating chronic diseases are partnership, coordination, cooperation, shared decision-making, and therapeutic outcomes. These dimensions are examined in this paper (Rahayu, et al, 2022).

Pharmacist-Nursing Partnership, Five Dimensions of Care

Partnership

Interprofessional healthcare teams, which include social workers, community health workers, care managers, and other medical specialists, are essential to the management of chronic illnesses. In order to meet health-related requirements and reduce obstacles to optimal health, these teams actively interact with patients to help them navigate complicated healthcare systems. Nursing, physical therapy, and nutrition education programs are intended to determine if a patient is eligible for routine care and to monitor treatment compliance. It is critical for healthcare workers to have a good attitude within the team as this promotes

smooth teamwork and permits different professionals to perform diverse services. Effective collaborations involve clinical pharmacists, pharmacist administrators, physicians, and nursing staff leaders identifying high-risk patient groups and facilitating the prescription and administration of naloxone. Patients' choices for particular healthcare facilities are influenced by the presence of an interprofessional healthcare team, which includes physicians, pharmacists, nurses, and social workers. The success of these collaborations between diverse age groups and healthcare institutions depends on candor, a readiness to make concessions, and a clear grasp of each team member's position (Gordon, et al., 2018, Zschoche, et al., 2018, and Cope R, et al., 2015).

Pharmacists play a crucial role in the management of chronic illnesses like hypertension, diabetes, and hyperlipidemia as vital members of interprofessional healthcare teams. They are also essential to programs aimed at quitting smoking. Physicians, nurses, and pharmacists work together to create treatment adherence methods for patients who are not complying with their prescribed regimens. Additionally, by coordinating and reiterating the significance of nutrition across specialist areas, experts including speech and language pathologists, occupational therapists, physical therapists, and dentists make good contributions. Comprehensive assessments of prescribing procedures require the establishment of interprofessional healthcare teams of both prescribers and non-prescribers. These teams, which include physicians, pharmacists, nurses, medical assistants, and health coaches, treat patients with long-term conditions like heart failure and COPD. They examine and give their approval to the creation of self-management kits that enable patients to properly control their diseases (Gordon, et al., 2018, Zschoche, et al., 2018, and Cope R, et al., 2015).

Parent-child partnerships are formed by hospital-based interdisciplinary teams that specialize in certain health issues, such as chronic kidney disease. Interprofessional healthcare teams that use collaborative practices improve patient care by supporting lifestyle modifications, encouraging quicker recovery, and making it easier for patients to regain their health. In conclusion, collaborations amongst interprofessional care teams enhance the responsibilities of team members, and pharmacists are integral to this cooperative strategy. The successful management of chronic diseases is greatly aided by their proper integration into interprofessional care teams, underscoring the significance of collaboration and coordination amongst a variety of healthcare specialists (Gordon, et al., 2018, Zschoche, et al., 2018, and Cope R, et al., 2015).

Coordination

For interprofessional healthcare teams to assist one another and provide complete care, coordination is essential. These teams, which consist of general practitioners, nurses, and pharmacists, work on a variety of projects and carry out tasks like follow-up, advocacy, interventions, and assessments of patients' needs. Effective coordination is demonstrated in certain healthcare settings by cooperative efforts such creating action plans for COPD patients moving from the hospital to their homes. Interprofessional team members—physicians, nurses, pharmacists, and others—actively participate in patient care by coordinating efforts and highlighting the significance of nutrition across a range of disciplines.

Effective coordination reduces the cost of care, resolves conflicts that can occur from overlapping responsibilities, and facilitates the seamless introduction of novel interventions (Wodskou, et al., 2014, Silvaggi, et al., 2017, and Lublóy, et al., 2016).

Collaborative healthcare teams are important for managing chronic diseases because of the crucial role that pharmacists and interprofessional healthcare team coordinators play in providing clinical services. In this collaborative effort, healthcare providers reinforce information to patients, their parents, or family members, placing emphasis on a shared concept of mutual assistance and a division of labor. Nurses coordinate referrals to manage the complexity of patients' healthcare demands, which is especially advantageous when treating patients with multiple morbidities through interprofessional teamwork. Effective coordination between healthcare providers is essential to the overall success of patient care. Each professional should contribute to accordance with their area of expertise and coordinate their efforts to prioritize the recovery of the patient (Wodskou, et al., 2014, Silvaggi, et al., 2017, and Lublóy, et al., 2016).

Cooperation

In order to educate patients, customize their care, and consider a variety of treatment choices, interprofessional healthcare teams must work together. One of the main focuses of these teams' work is collaboration in providing individualized care for each patient, underscoring the significance of teamwork in treating patients with severe illnesses in a variety of healthcare settings. Effective examples of collaboration include interprofessional treatment adherence initiatives for patients with chronic diseases in public hospitals, collaborative efforts to develop counseling programs for therapeutic adherence and physical activity in patients with leg ulcers, and joint treatment by primary care physicians and pharmacists for patients with multimorbidity. Primary care physicians and pharmacists working together in healthcare teams have achieved great strides in decreasing prescriptions for drugs that may not be necessary and improving patient safety.

It is well acknowledged that effective communication among multidisciplinary teams is essential to preserving the standard of drug use, particularly in older patients. Collaboration between rehabilitation specialists and HIV care providers has been crucial in reducing impairments in adult HIV patients. The various responsibilities that interprofessional healthcare teams play in managing patient care are further demonstrated by the cooperative efforts of nurses, pharmacists, and physicians in outpatient hypertension control and naloxone distribution coordination with outpatient pharmacies. Good working relationships between physicians and pharmacists foster cooperation, which in turn promotes more teamwork in treatment planning and patient care as a whole. Interprofessional healthcare teams attempt to continuously enhance the quality of medications through joint reviews and contribute to complete, patient-centered, population-based primary care. Home-based care evaluations highlight patient consultations, ideally carried out in the patient's home, demonstrating the patient-centric approach of interprofessional healthcare teams. These reviews involve referrals

from general practitioners to patients and patients to pharmacists (Wodskou, et al., 2014, Silvaggi, et al., 2017, and Lublóý, et al., 2016).

Joint-Decisions

Interprofessional healthcare teams value shared decision-making, incorporating team members in the cooperative process to come up with original ideas and take advantage of each person's unique set of talents. Effective interaction is required due to the complicated nature of healthcare activities. This includes accurate clinical information, communication, follow-up, and collaborative decision-making. As the main sources of referrals and coordinators, doctors are essential to the success of patient participation, recruitment, and program execution in these teams. They are significant contributors to the primary healthcare system due to their larger medical knowledge and competence, which gives them influence when making decisions in medical settings. In several cases, physicians have pushed for community pharmacists to offer guidance on medication management, which has improved therapy and produced favorable results, such lower pain scores in marginalized communities. The interprofessional healthcare team leader, usually a physician, nevertheless continues to be the principal decision-maker when it comes to therapy selection, necessitating team consensus (Guilcher, et al., 2020, Smith, et al., 2010, and Heinen MM, 2004).

Patients Outcomes

Chronic illnesses, which are common in industrialized nations such as Australia, frequently require a variety of treatment approaches, with medication therapy accounting for a significant amount of healthcare costs. Pharmacists have a variety of tasks, actively participating in treatment, optimizing medicines, and improving patient safety by concentrating on medication therapy. This is especially true for those who are incorporated into interprofessional care teams. The intricacy of treating chronic diseases can cause non-compliance from patients, which can have negative effects, drug interactions, higher expenses, and perplexity. Interprofessional care teams can benefit from the expertise of pharmacists in addressing these issues by providing strategies to promote medication adherence, which will improve clinical outcomes and lower treatment costs and side effects. When treated by interprofessional care teams, patients with chronic diseases show better therapeutic outcomes and greater levels of satisfaction than when treated by solo clinicians, highlighting the benefits of collaborative, patient-centered care (Guilcher, et al., 2020, Smith, et al., 2010, and Heinen MM, 2004).

Pharmacist-Nursing Partnership, COVID-19 Crisis

The Polish health system has seen a rise in the use of pharmaceutical care, which is defined by recorded, patient-centered, and interprofessional cooperative professional patient care. This trend was particularly evident during the COVID-19 epidemic. Due to the difficulty in obtaining physicians, the pandemic highlighted the vital role that pharmacists and other medical professionals play. This further highlights the importance of a varied range of medical specialties in preserving the integrity of the healthcare system. Because pharmacies are easily

accessible points of contact, the necessity for additional pharmaceutical services was recognized globally, which resulted in modifications to laws and regulations (Cipolle, et al., 2012, Miszewska, et al., 2022, Piecuch, et al., 2013, Pojskic, et al., 2011).

The survey shows that nurses consult with pharmacists about prescription drug orders only seldom (25.3% of the time), despite pharmacists' high levels of accessibility and competency. This low level of participation may be the consequence of nurses' ignorance about the possibility of working with pharmacists, perhaps as a result of their insufficient understanding of the competencies of pharmacists. Studies conducted globally show that different levels of cooperation exist, and that collaborating with pharmacists in patient care has significant advantages for the medical community. When properly developed, collaboration between pharmacists and nurses enhances the role of physicians and improves patient outcomes. Effective collaboration between nurses and pharmacists has been shown by successful interventions, like those in Australia, which have increased medication accuracy, decreased treatment errors, and improved patient safety. The study emphasizes the need for nurses to be more aware of the diverse roles that pharmacists play that go beyond simply distributing medications (Cipolle, et al., 2012, Miszewska, et al., 2022, Piecuch, et al., 2013, Pojskic, et al., 2011).

The survey investigates how nurses see pharmacists, and the results show that a sizable fraction of respondents (60.9%) think of pharmacists as helpful sources of clinical knowledge regarding drugs, and a sizable percentage (60.9%) see pharmacists as trustworthy consultants for general drug information. Nonetheless, there is a clear knowledge gap among nurses with postsecondary medical education, suggesting that pharmacists' duties need to be well understood. Pharmacology specialists working in pharmacies, patient education regarding drug use and disease management, and treatment response monitoring are some of the nursing expectations for collaborating with pharmacists. The nursing community is upbeat about working together with pharmacists, emphasizing the possible advantages in reducing adverse drug responses and enhancing the safety of pharmacotherapy (Cipolle, et al., 2012, Miszewska, et al., 2022, Piecuch, et al., 2013, Pojskic, et al., 2011).

About 70% of respondents to the study agree that pharmacists should perform pharmaceutical care (PhC) in community pharmacies. The study evaluates respondents' expectations on the implementation of PhC. Moreover, a sizable segment of participants holds the view that pharmacists ought to have access to patient medical records (46.8%) and conduct drug examinations (76.6%) in community pharmacies going forward. The study's conclusion highlights the nursing community's positive attitude toward working with pharmacists and signals possible advancements in patient care through successful interdisciplinary cooperation. However, for PhC to be implemented successfully in the Polish pharmacy sector, issues like stakeholder misalignment, reimbursement systems, and legal frameworks must be addressed.

Pharmacist-Nursing Partnership, Nurses, and Pharmaceutical Care

Nursing is defined by the World Health Organization (WHO) as including both independent and team-based care for a variety of people and environments. Nurses have vital roles in promoting health, preventing illness, and providing care for individuals, families, groups, and communities, regardless of their health status. They are frequently overlooked heroes in the medical field. They play a major role in the identification of medical emergencies, the prevention of disease, and the provision of basic healthcare services, which include promotion, prevention, treatment, and rehabilitation (Dilles, et al., 2021).

Nurses actively participate in autonomous and collaborative care within the context of pharmaceutical care, in line with the more general principles of the World Health Organization. Their responsibilities encompass promoting well-being, averting illnesses, and overseeing the entire medication administration process, which involves tracking side effects and averting drug-related issues. Particularly in assisted living facilities and community care settings, nurses are essential in identifying and managing drug-related problems and adverse drug reactions. Nurses make observations that result in better patient outcomes and documented decreases in possibly improper drug use by using technologies such as Pharmanurse software (Dilles, et al., 2021).

As essential members of multidisciplinary teams, nurses play a number of functions, such as supporting, educating, and advocating for patients at every stage of the healthcare process. Their duties, which range from administering medication to prescribing, depend on the legal and educational circumstances. In the context of multidisciplinary treatment, nurses are essential to guarantee patient safety when using pharmaceuticals. The shift to person- and people-centered care places a strong emphasis on the value of consistent patient education, individualized care, and regular communication—areas in which nurses thrive because of their frequent patient encounters. Because of their expertise and intimate patient relationships, nurses are essential members of interdisciplinary teams that improve nursing care and give doctors and pharmacists access to important information. Important facets of pharmaceutical care that should be discussed with nurses include interdisciplinary communication, patient support during the drug process, and follow-up for treatment outcomes or bad effects. Nurses' roles in enhancing overall patient care are consolidated when they are acknowledged as essential pharmaceutical care providers (Dilles, et al., 2021).

Pharmacist-Nursing Partnership, Nurses, and Education

All throughout Europe, undergraduate nursing schools give students a thorough theoretical background as well as hands-on instruction in a variety of areas, including drug administration. Online modules and simulation exercises are popular teaching and learning strategies that highlight the safety of pharmaceutical administration. While prescribing procedures and patient follow-up for unfavorable side effects are rarely discussed, several programs emphasize the prevention of pharmaceutical errors. By exposing nurses to controlled learning environments, this training technique protects students from the

difficulties of the real clinical world while helping them strengthen their medication administration abilities (Dilles, et al., 2021).

The body of research indicates that nurses are not proficient in providing pharmacological care, an issue that is also present for other medical professionals such as midwives, physicians, and pharmacists. In order to close these gaps, multidisciplinary courses on subjects like pharmaceutical care can give students practical experience working together to create action plans and goals that will improve patient safety. To give chances for improving educational preparation, a comprehensive framework defining the shared roles of healthcare providers in pharmaceutical care must be established. Early models of nurses' roles and duties in pharmaceutical care have been provided by the European DeMoPhaC project, providing important direction for improvements to this area of education (Dilles, et al., 2021).

Pharmacist-Nursing Partnership, Nurses Roles in Pharmaceutical Care

The Council of Europe's decision highlights the crucial significance of completely appreciating nurses' contributions to pharmaceutical care, emphasizing their pivotal role as the final link in the patient safety chain. Nurses play a critical role in the administration of medication, but their contributions are not often recognized; in fact, some definitions of pharmaceutical care only include the care provided by pharmacists. It is more likely that nurses' contributions will be undervalued or missed because of the ambiguity surrounding their positions (Dilles, et al., 2021).

Different viewpoints on nurses' contributions to pharmaceutical treatment are revealed by interviews done in 14 different European nations. Some people recognize that nurses play a crucial part in interprofessional collaboration, but others may not completely recognize their contributions. In order to engage in nurses' upskilling through research, education, and policy decisions, it is imperative that their roles be acknowledged. Strong interprofessional collaboration is required for the successful implementation of evidence-based pharmacological treatment in clinical practice, research, education, and government. Recognizing the roles that nurses play makes it possible for them to explicitly collaborate in research and policymaking, which promotes a more thorough and efficient approach to pharmacological treatment. But existing efforts to enhance pharmaceutical care seldom incorporate nurses into other aspects of the patient's care beyond medicine administration, and they frequently lack an interprofessional viewpoint. Nurses are rarely investigators in research teams, which results in wasted opportunities for effective treatment with the best possible outcomes for patients. Implementation frameworks ought to consider the degrees of skill found in each area and match duties to resources, costs, and availability (Dilles, et al., 2021).

Research suggests that nurses may perform healthcare functions, such as prescribing, at a level that is comparable to or superior to that of other professions. Interprofessional frameworks supporting disciplines and competence levels should be the primary focus of role extension, with a focus on efficient and effective pharmaceutical treatment. In order to build integrated care plans that

prioritize patient outcomes, quality, and person-centered care, it is imperative that nurses' duties be fully acknowledged. Additionally, by encouraging study into the benefits of combining nursing and pharmacological care, this acknowledgment advances patient safety measures. A number of instances highlight the significance of nurses' responsibilities in pharmaceutical care, such as keeping an eye out for side effects in patients, lowering readmission rates to hospitals by reconciling medications, and working in tandem with pharmacists to conduct thorough evaluations and manage medications. It is imperative that nurses' duties be recognized in research and policy, as well as in nursing education, to guarantee that students are suitably prepared for their responsibilities regarding pharmaceutical treatment in clinical practice (Dilles, et al., 2021).

Pharmacist-Nursing Partnership-Barriers

- 1) Professional Role Perceptions: Differences in the perception of professional roles between pharmacists and nurses can act as a barrier. If there is a lack of clarity or understanding regarding each profession's scope and responsibilities, it may lead to challenges in effective collaboration.
- 2) Communication Gaps: Inadequate or ineffective communication channels can impede collaboration between pharmacists and nurses. Communication gaps may arise from differences in terminology, documentation practices, or the absence of structured communication pathways.
- 3) Hierarchy and Power Dynamics: Existing hierarchical structures and power imbalances within healthcare settings can hinder open and equal collaboration between pharmacists and nurses. Overcoming traditional hierarchies may be necessary to foster a more collaborative interplay.
- 4) Limited Interprofessional Education: Insufficient exposure to interprofessional education during training may result in a lack of understanding and appreciation for each profession's contributions. Education that promotes teamwork and collaboration is crucial for breaking down barriers.
- 5) Organizational Constraints: Organizational factors, such as limited resources, time constraints, and competing priorities, can pose significant barriers to pharmacist-nurse collaboration. Institutions may need to allocate resources and create conducive environments for effective teamwork.
- 6) Resistance to Change: Resistance to change, especially when it comes to adopting new collaborative practices, can be a significant barrier. Healthcare professionals may be accustomed to established routines and may resist alterations to workflows.
- 7) Legal and Regulatory Challenges: Legal and regulatory frameworks that do not explicitly support or facilitate collaborative practices between pharmacists and nurses can be a barrier. Overcoming legal constraints and advocating for regulatory changes may be necessary.
- 8) Lack of Recognition and Appreciation: The lack of recognition for the unique contributions of pharmacists and nurses within the healthcare team can undermine collaboration. Establishing mutual respect and acknowledging the value each profession brings is essential.

- 9) **Insufficient Time for Collaboration:** Busy schedules and high workloads may limit the time available for pharmacists and nurses to engage in collaborative activities. Finding ways to integrate collaboration into routine workflows without adding undue burden is crucial.
- 10) **Information Technology Challenges:** Inadequate or incompatible information technology systems can create barriers to effective collaboration. Shared electronic health records and interoperable systems are essential for seamless communication and coordination between pharmacists and nurses.

Interprofessional Medical Reviews (IMR)

Another important point is the interprofessional medication reviews (IMRs) in primary healthcare settings, where pharmacists and nurses participate. Notable results show a mutual learning process and increased understanding of each other's roles in IMRs. Nurses' perception of pharmacists changed from controllers to ones that valued their knowledge of pharmacology and teamwork. On the other hand, pharmacists learned how important nurses are in giving clinical information. A sense of mutual dependency was established by the joint efforts during IMRs, highlighting the importance of drug management in nursing responsibilities. Nevertheless, obstacles included restricted funding, problems with on-site availability, and restricted mandates for pharmacists. It was highlighted that doctors play a crucial role in holistic decision-making during IMRs. There are difficulties in getting professionals together for joint meetings, especially in rural and home-based care settings. It became clear that maintaining correct patient data, particularly with regard to medication history, was a major difficulty, indicating the need for creative solutions. The study also raised the possibility of including patients in IMRs, addressed ethical issues, and emphasized the critical role nurses play in monitoring, recording, and reporting pharmaceutical side effects in primary care settings. In summary, the research highlights the benefits of information management registers (IMRs) for collaborative dynamics, mutual learning, and the perception of mutual interdependence between pharmacists and nurses. However, it also points to certain challenges that need to be carefully considered before being implemented in primary healthcare settings (Bell, et al., 2017).

Gaps in Pharmaceutical-Nurse Collaborations

The synthesis of literature on collaborative efforts between nurses and pharmacists in community settings for enhancing medication safety revealed five sub-themes. The first sub-theme emphasizes the creation of novel opportunities to address gaps in community medication safety. Taylor et al. (2018) introduced a non-hierarchical collaboration model incorporating a telepharmacist and a coordinating nurse. Braungart et al. (2018) demonstrated nurse-led care in anticoagulant therapy management, providing a training opportunity for nurses by a clinical pharmacist. The second sub-theme emphasizes enabling complementary interprofessional roles to integrate care efficiently and address the community's medication safety gaps. Collaborations, as reported by Lee et al. (2018b) and Setter et al. (2009), showcase shared consultations, referrals, and co-located collaborations where nurses and pharmacists work collaboratively to

review medications, provide support, and perform medication reviews. The third sub-theme highlights the facilitation of efficient and cost-effective measures for medication safety. Lee et al. (2018b) and Taylor et al. (2018) underscore the shift in payment incentives toward integrated services and propose collaborations to address drug costs and eliminate redundant practices for medication discrepancy management. The fourth sub-theme focuses on diverse client assessments by nurses and pharmacists, demonstrating that collaborative efforts result in different perspectives on medication reviews, discharge processes, and side effects assessments due to the variance in professional scopes of practice. The fifth sub-theme delineates challenges arising from poor collaboration, such as a lack of cohesiveness among team members, insufficient referrals from physicians, undefined roles and responsibilities, and limited reciprocity, leading to interpersonal conflicts and a suboptimal contact rate between nurses and pharmacists in community settings.

Conclusion

To sum up, a thorough examination of the relationship between nurses and pharmacists in healthcare settings—with a special emphasis on pharmaceutical care, or PhC—has exposed a complex environment with important ramifications for both the healthcare system and patient outcomes. The main idea emphasizes how important it is for both professions to work together to close gaps in healthcare delivery, improve patient care, and improve pharmaceutical safety. The discussion began with an examination of pharmacological care, with a focus on its interprofessional, professional, and patient-centered aspects. The COVID-19 outbreak and ongoing difficulties facing Poland's healthcare system have highlighted the critical role that pharmacists play in providing initial patient contact. Nonetheless, the research revealed deficiencies in the cooperation between pharmacists and nurses, revealing little discussion between the two specialties when making decisions pertaining to medications. The obstacles that were found—which ranged from lack of presence to organizational difficulties and skepticism—emphasized the necessity of a paradigm change in order to recognize and maximize the synergies between pharmacists and nurses.

Looking at things from a global viewpoint, working together, nurses and pharmacists, has become essential to providing quality healthcare. The World Health Organization's acknowledgement that nursing encompasses both independent and cooperative care is consistent with the proven benefits of interdisciplinary teamwork. Research presented examples of collaborative treatments that markedly improved patient outcomes, decreased errors, and raised overall quality of care, such as interprofessional medication reviews. The conversation also covered the educational side of things, pointing out that while nursing programs in Europe give basic knowledge, they frequently do not adequately prepare nurses for providing complete pharmaceutical treatment. It became clear that one of the most important ways to raise the standard of patient safety and healthcare delivery is to acknowledge and maximize the roles that nurses play in pharmaceutical treatment.

The obstacles that were found—which ranged from lack of presence to organizational difficulties and skepticism—emphasized the necessity of a

paradigm change in order to recognize and maximize the synergies between pharmacists and nurses. In order to create clear frameworks for collaborative practice, overcoming these obstacles necessitates not only a shift in professional attitudes but also coordinated initiatives in educational reform and healthcare policy changes. Essentially, the conversation about the cooperation between nurses and pharmacists covered topics such as pharmaceutical care, readiness for education, perspectives from around the world, and obstacles to productive teamwork. The summary of these talks highlights how important it is to identify, develop, and maximize the cooperation potential between pharmacists and nurses in order to eventually strengthen the patient-centered healthcare system.

References

- Available online: [https://www.rynekzdrowia.pl/Farmacja/Rynek-aptek-wedlug-GUS-placowek-jest-wiecej-niz-10-lat-temu, 228467,6.html](https://www.rynekzdrowia.pl/Farmacja/Rynek-aptek-wedlug-GUS-placowek-jest-wiecej-niz-10-lat-temu,228467,6.html) (accessed on 24 January 2022).
- Ayorinde, A.A.; Porteous, T.; Sharma, P. Screening for major diseases in community pharmacies: A systematic review. *Int. J. Pharm. Pract.* 2013, 21, 349–361.
- Bell, H. T., Granas, A. G., Enmarker, I., Omli, R., & Steinsbekk, A. (2017). Nurses' and pharmacists' learning experiences from participating in interprofessional medication reviews for elderly in primary health care-a qualitative study. *BMC family practice*, 18(1), 1-9.
- Berenguer, B.; La Casa, C.; de la Matta, M.J.; Martín-Calero, M.J. Pharmaceutical care: Past, present, and future. *Curr. Pharm. Des.* 2004, 10, 3931–3946.
- Braungart, C., Watson, A., Rubin, R., 2018. The effects of interprofessional collaboration on nurse managed warfarin program. *J. Interprofessional Education & Practice* 13, 56–58. <https://doi.org/10.1016/j.xjep.2018.09.003>.
- Cipolle, R.J.; Strand, L.M.; Morley, P.C. Chapter 4. Patient-Centeredness in Pharmaceutical Care. In *Pharmaceutical Care Practice: The Patient-Centered Approach to Medication Management Services*, 3rd ed.; Cipolle, R.J., Strand, L.M., Morley, P.C., Eds.; McGraw Hill: New York, NY, USA, 2012. Available online: <https://accesspharmacy.mhmedical.com/content.aspx?bookid=491§ionid=39674904> (accessed on 24 January 2022).
- Cope R, Berkowitz L, Arcebedo R, Yeh J-Y, Trustman N, Cha A. Evaluating the effects of an interdisciplinary practice model with pharmacist collaboration on HIV patient co-morbidities. *AIDS Patient Care STDS.* 2015;29(8):445–453. doi:10.1089/apc.2015.0018.
- Dilles, T., Heczkova, J., Tziaferi, S., Helgesen, A. K., Grøndahl, V. A., Van Rompaey, B., ... & Jordan, S. (2021). Nurses and pharmaceutical care: interprofessional, evidence-based working to improve patient care and outcomes. *International journal of environmental research and public health*, 18(11), 5973.
- Ghorbani, A. Demand for HealHealth, Healthcare. In *Healthcare Access*; Agrawal, A., Kosgi, S., Eds.; IntechOpen: London, UK, 2021. Available online: <https://www.intechopen.com/chapters/77622> (accessed on 21 August 2022).
- Gordon C, Unni E, Montuoro J, Ogborn DB. Community pharmacist-led clinical services: physician's understanding, perceptions and readiness to collaborate

- in a Midwestern state in the United States. *Int J Pharm Pract.* 2018;26(5):407–413. doi:10.1111/ijpp.12421
- Guilcher SJT, Everall AC, Patel T, et al. “The strategies are the same, the problems may be different”: a qualitative study exploring the experiences of healthcare and service providers with medication therapy management for individuals with spinal cord injury/dysfunction. *BMC Neurol.* 2020;20(1). doi:10.1186/s12883-019-1550-9
- Heinen MM, Van Achterberg T, Scholte Op Reimer W, Van De Kerkhof PCM, De Laat E. Venous leg ulcer patients: A review of the literature on lifestyle and pain-related interventions. *J Clin Nurs.* 2004;13(3):355–366. doi:10.1046/j.1365-2702.2003.00887.x
- Henneman, E.A.; Tessier, E.G.; Nathanson, B.H.; Plotkin, K. An evaluation of a collaborative, safety focused, nurse-pharmacist intervention for improving the accuracy of the medication history. *J. Patient Saf.* 2014, 10, 88–94.
- Hepler, C.D.; Strand, L.M. Opportunities, and responsibilities in pharmaceutical care. *Am. J. Hosp. Pharm.* 1990, 47, 533–543.
- Informacja dla Pielęgniarek Uprawnionych do Wystawiania Recept na Leka, Srodki Spożywcze Specjalnego Przeznaczenia Żywnościowego Oraz Wyroby Medyczne Refundowane. Available online: <https://nipip.pl/dla-pielegniarek-ipolożnych/informacja-dla-pielegniarek-polożnych-uprawnionych-wystawiania-recept-leki-srodki-spozywcze-specjalnegoprzeznaczenia-zywnosciowego-oraz-wyroby-medyczne-refundowane> (accessed on 24 January 2022).
- Lee, C.Y., Beanland, C., Goeman, D., Petrie, N., Petrie, B., Vise, F., Gray, J., Elliott, R.A., 2018a. Improving medication safety for home nursing clients: a prospective observational study of a novel clinical pharmacy service—the visiting pharmacist (ViP) study. *J. Clin. Pharmacy & Therapeutics* 43 (6), 813–821. <https://doi.org/10.1111/jcpt.12712>.
- Lee, C.Y., Goeman, D., Beanland, C., Elliott, R.A., 2018b. Challenges and barriers associated with medication management for home nursing clients in Australia: a qualitative study combining the perspectives of community nurses. *Community Pharmacists and GPs. Family Practice* 36 (3), 332–342. <https://doi.org/10.1093/fampra/cmy073>.
- Lublóy Á, Keresztúri JL, Benedek G. Formal professional relationships between general practitioners and specialists in shared care: possible associations with patient health and pharmacy costs. *Appl Health Econ Health Policy.* 2016;14(2):217–227. doi:10.1007/s40258-015-0206-1.
- Miszewska, J.; Wrzosek, N.; Zimmermann, A. Extended Prescribing Roles for Pharmacists in Poland-A Survey Study. *Int. J. Env. Res. Public Health* 2022, 19, 1648. [CrossRef]
- Piecuch, A.; Kozłowska-Wojciechowska, M.; Makarewicz-Wujec, M. Pharmacist-physician relationships from the pharmacist's perspective in Poland. *Int. J. Clin. Pharm.* 2013, 35, 491.
- Pielęgniarki Mogą Już Udzielać Porad i Wystawiać Recepty. Available online: <https://www.prawo.pl/zdrowie/poradapielegniarska-od-1-sierpnia-2020-r-nowe-przписy,502095.html> (accessed on 24 January 2022).
- Pojksic, N.; MacKeigan, L.; Boon, H.; Ellison, P.; Breslin, C. Ontario family physician readiness to collaborate with community pharmacists on drug therapy management. *Res. Soc. Adm. Pharm.* 2011, 7, 39–50.

- Rahayu, S. A., Widiyanto, S., Defi, I. R., & Abdulah, R. (2021). Role of pharmacists in the interprofessional care team for patients with chronic diseases. *Journal of multidisciplinary healthcare*, 1701-1710.
- Santschi, V.; Wuerzner, G.; Chiolero, A.; Burnand, B.; Schaller, P.; Cloutier, L.; Paradis, G.; Burnier, M. Team-based care for improving hypertension management among outpatients (TBC-HTA): Study protocol for a pragmatic randomized controlled trial. *BMC Cardiovasc. Disord.* 2017, 17, 39.
- Setter, S.M., Corbett, C.F., Neumiller, J.J., Gates, B.J., Sclar, D.A., Sonnett, T.E., 2009. Effectiveness of a pharmacist—nurse intervention on resolving medication discrepancies for patients transitioning from hospital to home health care. *Am. J. Health-Syst. Pharmacy* 66 (22), 2027–2031. <https://doi.org/10.2146/ajhp080582>.
- Silvaggi A, Nabhani-Gebara S, Reeves S. Expanding pharmacy roles and the interprofessional experience in primary healthcare: a qualitative study. *J Interprof Care.* 2017;31(1):110–111. doi:10.1080/13561820.2016.1249281
- Smith SM, O'Kelly S, O'Dowd T. GPs' and pharmacists' experiences of managing multimorbidity: a "Pandora's box". *Br J Gen Pract.* 2010;60(576):e285–e294. doi:10.3399/bjgp10X514756
- Taylor, A.M., Bingham, J., Schussel, K., Axon, D.R., Dickman, D.J., Boesen, K., Martin, R., Warholak, T.L., 2018. Integrating innovative telehealth solutions into an interprofessional team delivered chronic care management pilot program. *J. Manag. Care Spec. Pharm.* 24 (8), 813–818. <https://doi.org/10.18553/jmcp.2018.24.8.813>.
- Wodskou PM, Høst D, Godtfredsen NS, Frølich A. A qualitative study of integrated care from the perspectives of patients with chronic obstructive pulmonary disease and their relatives. *BMC Health Serv Res.* 2014;14(1). doi:10.1186/1472-6963-14-471
- Zschoche JH, Nesbit S, Murtaza U, et al. Development and implementation of procedures for outpatient naloxone prescribing at a large academic medical center. *Am J Health Pharm.* 2018;75 (22):1812–1820. doi:10.2146/ajhp170759