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The Role of Pharmacists in Patient Care: Beyond Dispensing Medication

Muhra Abed Almowalad[1], Amnah Mohmmed Alghamdi[2], Ahmed Awadh Almutairi[3] Aseel Sami alhathal[4], Ghalia Adnan Qanaq[5], Alanoud Suliaman alhibs[6], Dalia Naji Alhaqbani[7] and Nadiyah Ibrahim Qushaysh[8]

[1] Corresponding Author, Pharmacist, Muhraalmowalad@yahoo.com, KFMC, Riyadh
[2] Pharmacist, Amnah_ghamdi@hotmail.com, KFMC, Riyadh
[3] Pharmacist I, aawaalmutairi@kfmc.med.sa, KFMC, Riyadh
[4] Pharmacist, J.khp24@gmail.com, KFMC, Riyadh
[5] Pharmacist I, Gqanaq@kfmc.med.sa, KFMC, Riyadh
[6] Pharmacy, aalhibs@kfmc.med.sa, KFMC, Riyadh
[7] Pharmacy, Pharmdn3@gmail.com, KFMC, Riyadh
[8] Nursing, nqushaish@kfmc.med.sa, King Fahad medical city

ABSTRACT

Historically, medication dispensing has been the focal role for pharmacists. Graduated in 1884 during the establishment of Health Sciences at The University of Sydney, the key role of pharmacists clerical was preparing and dispensing medicine. With community pharmacy presents in the community through Baltimore, community pharmacy has a role in dispensing medications (Steeb, 2017). In contemporary society, community pharmacists spend a significant portion of their time and resources in a dispensing role due to diverse dispensing services. With advancements in pharmacy education and the public's growing demand for health services, the role of community pharmacy is evolving rapidly. The scope of pharmacy services is expanding, with a transition from the product-based role as dispensers to a patient-focused role that optimises pharmacotherapy (Taylor et al., 2020). A greater emphasis on clinical pharmacy services operational nursing homes in regard to reconciliation role is increasingly evident in community practice. However, prior to the transition and implementation of enhanced clinical pharmacy services, it is vital to better understand the current perceptions of the community pharmacists' role. There is currently limited research regarding community pharmacists' current role perception, notably their perceptions of the expanded role. With shelf-stable medications, properly enrolled pharmacists would define medications of the patient to change the active drug substance or to modify the release. The advent of the community pharmacy in the pharmaceutical care era opened various opportunities for Australian community pharmacists with a burning passion for patient care. Recent developments of pharmacy practice globally indicate an increasing trend toward a patient-focused approach in the delivery of pharmaceutical care services. However, the practice has been challenged by diverse issues or commentaries. A better insight into the flourishing and promising pharmacist professional era is important to handle these issues. Transformed communities and the variety of health service delivery formats require versatile and all-round pharmacists. An ever-growing evidence base regarding safety consideration and health outcome betterment has confirmed the eminence of pharmaceutical care. Though relatively novel in Australia, the service has been explored and implemented by different health professional societies in practice. In Australia, although recent health policy reform is anticipated to revolutionise and

better health service delivery, impediments in pharmacy practice to improve consumer protection and quality are apparent and maximal. By understanding every challenge, optimal solutions can be sought to render the reasonable expansion of the pharmacist's role to better enhance public health.

1.2 **Keywords:**

Clinical pharmacy, pharmacist-led interventions, patient care, medication therapy management, interprofessional collaboration, pharmaceutical care and healthcare team

1.3 1. Introduction

Recent factors have brought pharmacists to the forefront of primary healthcare. National guidelines have endorsed their involvement in promotion and preventative health, with pharmacists expected to undertake a broader range of professional healthcare roles, reaching out to a wider patient base than they have traditionally engaged with (Garattini et al., 2021). The community pharmacy network in particular is seen as ideal for establishing a greater health promotion role, capitalizing on its accessibility, close community know-how, and audience-alignment of the skills and knowledge required of pharmacists. It is envisioned that community pharmacy health promotion will take the form of organized health-specific campaigns, using existing services, a extended role of some licensed services untaken by a subset of pharmacies, and campaigns involving co-outsiders such as government agencies and not-for-profits, re-purposing pharmacies for education inclusion and wellbeing (Taylor et al., 2020). Examples include campaigns to help with smoking cessation, irregular pill use, childhood coughs, incidents of Balint syndrome, healthy weight and food choices, travel vaccinations, alcohol abuse, or sleep apnea.

Education-specific initiatives such as decreasing experimentally-caused micro-aerosol obesity or weekly pharmacy-based educational sessions exploring each of seventy-seven percents of high-burden chronic diseases are envisaged. This increased involvement in health promotion intersects deeply with the core values and code of ethics of pharmacists as health professionals, whilst remaining dramatic or at least challenging given shift in skills and expectations of professionals and patients alike. There is profound ambiguity around adoption of this new health-specific role by pharmacists as healthcare professionals, due to the difficulty of discordance between community pharmacy's commercial role and the ideals of neutrality, equality and even-handedness, largely used as a ploy to enhance patient engagement, education and empowerment.

1.4 2. Historical Perspective of Pharmacy

Ever since a product was started to be made, the person whose duty it becomes to dispense a product has been there and associated with it in some manner. The duties of this person later evolved, leading to the emergence of the profession Pharmacist and the emergence of a new branch of the Health Care System (HCS) known as Pharmacy. The pharmacist has been in the health care profession since the history of the origin of civilization, with its root traces going back to prehistoric times. This is evident from the existence of historic stone tablets written on health in different languages across different civilizations. The duties of the pharmacy started only with compounding and dispensing medicines on prescriptions from Physicians. It was only in the early 19th century that the respect, recognition, and reputation that an integral part of the HCS started

to be achieved. Pharmacy has undergone many evolutions through ages as a science, profession, and integral part of the HCS. The duties and responsibilities of the pharmacists have also gained momentum and widened to a great extent by world over during the last half-century. The professional and practical ramifications of this enlargement in duties and responsibilities of the pharmacist in the HCS are many at the operational, professional, academic, legal, and ethical levels, globally.

Nevertheless, Pharmacy is yet to become a fully developed profession in many developing countries including India. Most of the dispensing of medicines is done by under-qualified personnel with little or no knowledge of the product dispensed. But it is heartening to note that pharmaceutical education both pharmacy and pharmacist on the whole is on the threshold of an "Education Revolution" (Tripathi et al., 2018). The Government of India has taken an initiative in this respect with the approval of a concept note on Indian Pharmacy Education Model 2035. This concept note envisages equipping pharmacy education and pharmacists with knowledge and skills for a broad set of professional roles especially Clinical Pharmacy roles. Academic, professional and practical ramifications of roles for pharmacists with special reference to Clinical Pharmacy in the Indian context are discussed in general. Meanwhile, as Pharmacy education is on the verge of a paradigm shift in India, it is very helpful for the readers and researchers elsewhere to know the evolution of pharmacy in the Indian perspective, to see if it helps tackling the situation at the ground level.

1.5 3. Pharmacists' Responsibilities

As the profession of pharmacy expands, careers and job opportunities in pharmacy can be varied. The pharmacy profession is changing quickly. From the multitude of new students enrolled in pharmacy colleges to the growing number of graduates looking for jobs, the pharmacy profession continues to grow. Traditionally, pharmacists' primary role had been medication dispensing. However, with changes in healthcare policies and increased demand for more responsibilities by various healthcare professionals, pharmacists have taken a huge leap forward into the realm of direct patient care. In addition to medication dispensing, patient care responsibilities have taken on more prominence for pharmacists. Pharmacists are ideally situated to make an even greater impact in the management of medication therapy due to their accessibility. Moreover, pharmacy's unique skills and experiences will be essential in providing critical services to the increased number of patients in chains and hospitals, as well as in helping to head off a future health care crisis. Coupled with the creation of a national electronic health record system, which will afford pharmacists the same access to and visibility into patient information as the rest of the health care providers, the impact that pharmacists will have on patient care is certain to increase.

During the last few decades, pharmacists have been called on to contribute more to patient-centered pharmacy care. Pharmacists have the opportunity to interact with more patients on a daily basis than do other health care professionals such as physicians, dentists, and advanced practice nurses. Consequently, patients often initiate contact with pharmacists when they have questions or concerns regarding their medications. This "opportunity window" can be leveraged by pharmacists to conduct assessments of specific health concerns to help ensure that patients receive immediate drug therapy or referrals for other health care services. The patient-centered approach to pharmacy practice has evolved considerably over the years. Patient-centered care has been traditionally viewed as care that is respectful of, and responsive to, individual patient preferences, needs, and

values (Safaeian et al., 2014). Pharmacists often see patients at their most vulnerable, with potentially life-altering disease states. More than two-thirds of patients seek out pharmacists at least once a year, indicating that pharmacists can greatly impact health, especially in underserved populations. As the profession of pharmacy continues to evolve, patients increasingly expect that their pharmacist will be involved in their overall medication therapy management. Pharmacists should take the steps necessary to develop, implement, and evaluate patient-centered pharmacy care systems.

3.1. Medication Management

There is strong evidence that optimization of drug treatment plays an important role in improving patient safety. Drug utilization and clinical use are in focus in medication management. In order to support community pharmacy's role as a primary health care professional in medication management, medication management research in future should provide evidence of the MS' and related process-centre practices in the community pharmacy perspective. New pharmacy service professions prospectively impacts on pharmacies' processes and also on their pay models. If value is created, the need for service is likely to be enhanced. Contemplation about the pharmacist's role in the community pharmacy also continues to be relevant. However, supporting productivity while assuring service liveliness may be challenging (Kallio et al., 2020). Patients with polypharmacy are at greater risk of drug-related problems. Patients' awareness of their medications varies. Poor compliance with medications results in various negative health outcomes. Most research is clinically orientated. There is an urgent need for studies focusing on the primary (community) pharmacy's potential to support patients' medication management. Therefore, the aim of this study was to explore community pharmacies' and patients' preparedness to participate in patients' medication management. In addition, drug-based and patient-based factors affecting patients' and pharmacies' preparedness were explored. Moreover, whether patients' own initiatives could be an impetus to promote community pharmacies' activity as primary care providers in medication management was studied.

3.2. Patient Education

Combining clinical service and health education allows pharmacy students to develop patient education skills while providing population health benefits. Placement into pharmacist-facilitated group diabetes education classes helps students learn to counsel on complex disease states, thereby transforming them into immediate practice-ready providers by enhancing overall learning and practice outcomes (Cernasev et al., 2024).

The one-hour, semi-structured educational class includes an overview of diabetes pathophysiology and review of common pharmacotherapies. Breakout sessions focus on providing a basic overview of blood sugar monitoring, diabetes management with lifestyle measures, insulin delivery equipment, and a presentation of the A1C test. After the first delivery of the classes, a quality-improvement survey was sent to patients, and three pharmacy students were integrated as counseling facilitators. In their role, students collaborated with pharmacists on logistics, brainstormed patient-centered educational needs, and delivered the education class under pharmacist supervision. The quality of education delivery to a population of older adult patients with uncontrolled diabetes has been assessed from multiple perspectives including patient

knowledge gains, student skill development, pharmacy faculty development, and pharmacist job satisfaction.

Undergraduate pharmacy students who were expected to teach a health lesson to patients with chronic diabetes not only succeeded in conveying the expected information to the patients but also gained practical learning and experience. In an attempt to teach chronic disease control holistic management to a cohort of pharmacy students, medically-focused knowledge and skills were found to be recognized as important for patient management by the pharmacy educators. Health professional educators should aim to integrate medication dispensing and administration skills training with the necessary communication skills for chronic disease management within the pharmacy education curriculum (Coetzee et al., 2017).

3.3. Health Screenings

The role of pharmacists in providing patient care has often been viewed solely through the lens of their dispensing medication. However, a separate realm exists in which pharmacists operate and have been proven to provide valuable health interventions. By virtue of their accessibility and the ability to gain trust as health professionals, they can reach out to patients who are disengaged from health care providers. Community pharmacists can conduct health screenings as part of the public health services they have been successfully providing for years (Steeb, 2017). Pharmacists can provide health screenings for broad disease states such as diabetes, hypertension, hyperlipidemia, and osteoporosis, as well as more targeted screenings such as pregnancy testing and skin cancer risk assessment. Health screenings are important because these diseases often have no symptoms until the later stages. Health screenings will allow for the early detection and intervention of these diseases, thus providing a better outcome for patients. In addition, these screenings, with the accompanying health interventions, often motivate patients to pursue further services with a health care provider.

Pharmacists providing health screenings has proven to be beneficial in various studies. Community-based preventative service programs have been evaluated and have demonstrated a favorable response from patients. In addition to health screenings, pharmacists can provide immunizations and collaborate with public health organizations to organize vaccination campaigns. Vaccines are important tools in combating diseases that inflict suffering on society, and pharmacists providing vaccines are a means by which a well-trained underutilized workforce can help with the current vaccination efforts. Pharmacists are able to utilize their access, positive rapport, and training to the fullest extent to better the health of those served by them. Programs of this type have been designed, tested, and implemented with great success in the United States and around the globe. Pilot programs in the United States demonstrated that pharmacists could effectively and safely provide immunizations in a community pharmacy setting.

1.6 4. Pharmacists in Collaborative Care

Research indicates that patients with chronic diseases who engage in self-management and medicine dispensing pick about 60%–70% of their drug therapy. The potential for success is thought to be about 90% with the assistance of health care providers (Center for Chronic Disease Prevention and Health Promotion (U.S.), 1970). The aim of this article is to define the duties of physicians and community pharmacists in consultative caring for chronic diseases, such as asthma, depression, diabetes, hypertension, hyperlipidemia, etc. By interacting with community

pharmacists and taking use of MTM coaching, patients can expect to enhance control of chronic diseases in a way that lessens discomfort and impairment and lowers potential and actual health care expenses. In order to ensure that patients understand, physicians must clearly state to patients that pharmacists can assist them in the care of chronic diseases.

Patients need to know that community pharmacists are accessible health care professionals. A survey found that roughly 70% of Americans interact with community pharmacists at least once a month. However, few patients are aware or educated regarding the potential of these encounters to significantly improve care. To remedy this need for knowledge, physicians and pharmacists are collaborating through partnerships. Some individual physicians and clinics have contacted the local pharmacy regarding collaborative care. Local pharmacy managers have been recognized by large health systems and pharmacy chains as partners.

Others have entered into formal agreements akin to primary care that designate, among other things, types and amount of reimbursements. Health plans who now reimburse for mental health management have also turned to the help of pharmacists. The association and collaboration has been spurred by a number of factors including recent publicity regarding normal and uncontrolled chronic diseases and treatment gaps; requests from local organizations or health care delivery systems for pharmacists to provide expanded services; personal knowledge of another colleague's prior experience; revenue enhancements or cost reductions for employers.

4.1. Interdisciplinary Teams

Collaboration between pharmacy and medicine is very variable across health care settings. The pharmacy and medicine professions are similar in that they are dedicated to patient care, care for the same patient population yet their collaboration is often seen as awkward. Healthcare organizations must promote interprofessional education and training so next-generation healthcare practitioners are prepared to engage with one another for the benefit of the patient. In turn, hospital leadership must provide opportunities for this team-based care to occur. Roles need to be clarified and understood, positive team dynamics established, and a culture of shared responsibility developed so that the investments in interprofessional capacity building yield positive gains (Al-Salloum et al., 2020). The involvement of pharmacists in patient care teams across many health systems is not uniform. Hospital medicine and pharmacy team-based models of care for the benefit of the patient have been very fruitful in many settings, diminishing medication-related problems, for example. This collaboration needs to be built on in order to capture the benefits of the potential role of pharmacy in the future hospital care of patients. Pharmacists as drug experts are situated well within the patient-centered medical home and need to be more visible acting on medication safety concerns. The importance of their training/education needs to be well understood by all of the team members. Further, they need to be brought into the fold gradually either on their own or as part of the expanded pharmacists' workforce. Given the sometimes awkward introduction of physicians into a medical team in the emergency department it would be reasonable to expect that it will take time for pharmacists to stay relevant and join the collaborative fold in the acute care setting more uniformly.

4.2. Communication with Healthcare Providers

The role, responsibilities, and impact of healthcare providers in supporting safe and effective medicine use and patient care have grown among pharmacy professionals, shifting from its

traditional procurement and supply focus to a clinical one. Community pharmacists are the most accessible healthcare providers. They are highly trained medication specialists capable of contributing to patient outcomes, leading to an increased demand for clinical pharmacy services (Tan et al., 2024). The clinical role of community pharmacists in chronic disease management has evolved from expanding medication supply to demonstrating the impact of medication management on disease outcomes, leading to new collaborative stakeholder arrangements to enhance population health.

Engagement with partners in addressing chronic disease management began early; with restrictions and growing traditional pharmacy services, their roles needed to adapt, with unaffected services continuing and new partners sought. Pharmacy was recognised as an integral partner of the health system and a selective priority in managing vaccination rollouts among existing partners, with the introduction of pharmacy workforce support needing to be carefully pitched and negotiated with new partners. Pharmacists managing patients with hypertension faced multiple barriers in communication with their healthcare providers. Physicians communicated prescriptions/referrals through electronic medical records, requiring all members in the primary care team to access a single platform. However, many pharmacists reported that they had difficulties navigating the system, leading to events when important information was missed. In addition, some physicians were reluctant to communicate reminders through this medium. Urgent requests/inputting reminders to the overall patient management were directed at case-specific panel meetings, video calls, or text messages, whichever means that they were most comfortable with.

Given how important communication is among health-factors' providers, pharmacist-physician collaboration has been identified as a critical issue. Health-promoting interventions alone may have little honest value if there is a lack of trust and mutual respect among pharmacists and other healthcare providers. Many pharmacy service offers with collaborative care pathways in place suffered to a lack of referral uptake from other healthcare providers (Shah, 2018). Perceptions of poor engagement from other healthcare providers might be inappropriate. A shadowing initiative that allows pharmacy service offers to better understand how other healthcare providers work within their scope would be valuable.

1.7 5. Clinical Services Provided by Pharmacists

There are various definitions for clinical pharmacy services (CPS) and pharmaceutical care services. The standard definition for CPS is a "professional service provided by a pharmacist in a health care system" (Schulz et al., 2023). The European Society of Clinical Pharmacy (ESCP) defines CPS by explicating forefront terms: "Clinical Pharmacy aims to optimize the utilization of medicines through practice and research in order to achieve person-centered and public health goals". The word "clinical" refers to the focus of clinical pharmacy activities—that is, patients rather than drugs. To this end, CPS addresses the therapeutic optimization of drug therapy: Finding the right drug in the right dosage form, at the right time, by the right route of administration, for the right patient, with the right duration of treatment, with a minimum of adverse drug reactions, and at a fair price. The Pharmaceutical Care Network Europe (PCNE) defines that "Pharmaceutical Care is the pharmacist's contribution to the care of individuals in order to optimize medicines use and improve health outcomes" (Garattini et al., 2021). In other terms, pharmacy care is defined as the pharmacist's contribution to patient care that ensures the safe and effective use of drugs with a view to producing specific therapeutic outcomes that improve patients' quality of life (i.e. in

diligence, effort, and responsibility). A service represents one of the elements of an organization that enables it to perform actions of interest to other organization(s). Usually, a service is defined, in a friends-language, by viewing it as an offer-a-counter-offer partnership with specific tasks, efforts extensive of a known geography, and a qualified organization (time, cost, and measures). The five newly reimbursed CPS below may also be called pharmaceutical care services (PCS). Comprehensive Medication Review. This CPS offers a documented review of multiple medications taken by the patient and aims to optimize the safety and effectiveness of the drug therapy. Thereby, appropriateness of the therapy is investigated based on medical history and laboratory parameters. Medication Therapy Management. Medication therapy management (MTM) is a patient-centered service. The patients' competence is strengthened to take their medications appropriately and avoid adherence problems. Medication Review Concerning an Individual Drug. This systematic review of a single prescription with particular relevance for the patient considers pharmacological and non-pharmacological therapy as well as laboratory parameters.

5.1. Chronic Disease Management

Chronic disease prevention programs can support pharmacists in their efforts to improve outcomes. Chronic diseases, such as high blood pressure, high cholesterol, diabetes, and asthma, cause over 70% of deaths in the United States. By addressing chronic diseases earlier, they may be preventable and less costly. Dietary changes, increased physical activity, and medication adherence can prevent people from retaining these chronic diseases. The case for working with pharmacists in preventing and controlling chronic diseases is outlined through their role in medication, the prevalence of medication non-adherence, and the impact of medication adherence (Center for Chronic Disease Prevention and Health Promotion (U.S.), 1970).

Medication adherence is degree to which patients take medications as directed by the physician writing the prescription. This includes the proper medication, the correct pill count or days' supply, proper dosing timing, and the correct route of administration. Conversely, medication non-adherence is a failure to take the medication as directed. As one of the most prevalent issues facing physicians and patients, 25-50% of prescribed medications aren't filled, and of those, 50% aren't taken appropriately. No other area of healthcare is this costly, preventable, and dangerous. As a result of medication non-adherence, 18% of unresolved drug-related problems (DRPs) involves medication non-adherence.

Medication non-adherence is tough to calculate, but it is estimated to be $100 billion each year in avoidable hospitalizations. Medication non-adherence affects more than just economic considerations. Decreased quality of life and longer life expectancy are negatively affected by medication non-adherence. One study estimates that improved adherence to antihypertensive treatment could prevent 89,000 premature deaths annually among current hypertensives. One of the main focuses of these programs is to improve adherence to medication to prevent future occurrences and reduce chronic disease-related health outcomes.

5.2. Immunization Services

Pharmacists' engagement in vaccine advocacy began relatively late, yet many nations across Africa now recognize both the necessity and importance of deploying nurses, midwives, and pharmacists in immunization service delivery. However, to maximize pharmacists' potential in broader

immunization governance and vaccination screening, enabling legislative environments are needed. There is a need for legislative frameworks detailing pharmacists' rights and responsibilities in vaccination (Hassan Wada et al., 2021) for broader immunization management. Each country's context concerning legislation, as well as other ecosystem factors such as immunization service delivery models, may differ. What works in one country may not in another. Legislation in each country must yield circumstances under which pharmacists can safely and effectively screen health literacy, produce and interpret screening results, administer vaccines, and monitor vaccine safety. In some countries, pharmacists can dispense vaccines, while other countries do not allow this but allow other health practitioners to dispense vaccines. Enabling environments can support collaborative practice with partner health disciplines as advocates of collaborative practice. Educating and inspiring pharmacists and other health professions to work together in vaccinations in schools, pharmacies, and clinics can be implemented, with globally developed toolkits being adapted for use in each setting.

Governments, professional and regulatory bodies, and pharmacy education organizations have a moral obligation to engage in the enactment of broad immunization governance frameworks. Governments and their agencies must adopt regulations spelling out implementation requirements, stressing the mandate of each health profession as recipient, arbiter, or distributor, training and skill required, safety nets against abuse, and monitoring mechanisms. Universities must develop interdisciplinary education modules that equip graduates from all professions to effectively operate within agreed governance frameworks.

5.3. Medication Therapy Management

Pharmacists deliver and promote the safe, effective, cost-conscious use of medications. Medication errors contribute to preventable adverse outcomes and are a multi-factorial issue in the health care system. As a trusted health care professional, pharmacists are well-positioned to catch potentially dangerous medication orders, particularly in respect to high-risk medications (Nuffer et al., 2019).

Medication therapy management (MTM) services are an essential way for pharmacists to provide cognitive services to patients and receive reimbursement. Delivering MTM services is recognized as a Medicare benefit with the intention of improving patient care and health plan performance. However, these rules cannot be used by other health plans. For insurers that do not reimburse pharmacists for MTM, they can consider submitting an application to the state to start a pharmacy benefit manager (PBM) or post-MTM services outside of those offered by insurance companies. A more feasible route may be to explore ways to implement MTM under current law while collaborating with primary health care providers and major providers in the state.

Staff pharmacists conducting MTRs of new medication orders prior to dispensing to patients can detect medication therapy problems for pharmacists and other health care professionals and determine their provider’s eligibility. Efforts should focus on creating streamlined dissemination pathways for pharmacists and the development of order set safety nets. Causative factors and their clinical significance should specifically be communicated to providers to avoid putting more pressure on their already limited workload.

1.8 6. Role of Technology in Pharmacy Practice

Pharmacy practice involves a complex set of interactions among practitioners and other stakeholders, including patients, healthcare professionals, industries, government, insurers, and society. Interaction typically leads to the production of goods and services. In the context of pharmacy practice, goods are drugs and devices which alleviate and treat illnesses, and are produced by the pharmaceutical or devices industry. Services are components of pharmacist–patient, and pharmacist–healthcare professional interactions, which directly or indirectly lead to the meaningful use of drugs or devices. Both goods and services generate value for society, and inputs are necessary to produce them, which in turn leads to costs. In addition, proctors exist, which exert pressures that constrain pharmacy practice. Proctors are stakeholders that, in relation to a specific stakeholder, possess a superior resource in terms of power or status which enables them to influence that stakeholder. Therefore, reading pharmacy practice as a system involves understanding pharmaceutical care's production and proctoring, the value generated for the distinct stakeholders, costs with respect to the toll taken or assets lost, and the innovative dynamics of pharmacy practice systems. It provides an alternative, productive lens for understanding pharmacy practice that may facilitate novel approaches to enhancing pharmacy practice and pharmacist education and training (Baines et al., 2018). In addition, a novel conceptual framework explaining productivity in pharmacy practice, which is centered on the traditional and novel contexts of pharmacy practice, is proposed. To this end, it is argued that pharmacy practice is a productive system of actors, interactions, goods, services, states, and proctors. These initially and continually interact through touchpoints in the creative context of practice, which allows the production of a net throughput. This throughput, which is cast in terms of novel goods, services, states, and understanding, and exerts a transformative effect on the proctors. Healthcare systems across the world are struggling with an ever-increasing demand for care, driven by aging populations and higher expectations in terms of quality of and access to care. Simultaneously, as the cost for care is on the rise, governments call for a more efficient use of the available healthcare budgets. These challenges create an emergent need for healthcare transformation and open the door for increasing application of technology. Research on the role of technology in pharmacy practice is scarce despite the rapid uptake of technology and the ongoing socio-political demands for improving and expanding pharmacy practice. Addressing the above challenges will require an understanding of the role technology plays and could play in improving pharmacy practice, identifying technology–practice misfits, and addressing these misfits through school, research, and policy, which is the ambition of this article.

6.1. Electronic Health Records

Electronic health records (EHRs) have been used as a way to share patient health information in a secure manner in all healthcare settings since the 1960s (J. Krauss et al., 2022). The advent of this technology was meant to change how health information was stored, shared, and accessed by all health care professionals and patients. In most states across the United States, pharmacists and pharmacy technicians are considered providers. This means that they have the ability to develop patient-centered strategies to care for patients and bill insurance plans for clinical services. To provide these clinical services and bill health plans, they must have access to patient health information (PHI) in the form of an EHR. This same access to PHI would allow pharmacists to easily transition patients to different care settings and provide a complete picture of a patient's

medication therapy. However, access to an EHR is a very large barrier and currently not widely utilized by pharmacists in the community setting.

Access to patient health information (PHI) in a form of an EHR has been shown to allow pharmacists to implement a greater number of pharmacist-led interventions and improve patient outcomes. Patients who receive MTM review services completion by pharmacists having access to that patient's complete health record in an EHR format should expect to see even greater clinical outcomes. A lack of access to a patient health information in a form of an electronic health record (EHR) versus other less structured forms of communication is a large barrier for pharmacists in the community pharmacy setting to provide quality clinical interventions, as perceived by pharmacists in the community pharmacy setting. Studies have shown that this gap in knowledge has been associated with increased readmission rates and increased financial burden for patients. Results indicated that respondents preferred using an EHR as compared to other less structured forms of communication. Literature has shown that access to health information exchange (HIE) and EHR information has been associated with an increase in preventive medication services and the ability to recognize medication-related problems. The literature regarding this topic for community pharmacists is sparse. The purpose of this article was to describe the experiences of a pharmacist with access to a web-based EHR system within his pharmacy and the effects it has had on his pharmacy in the past year. Overall, a description of how accessible EHR's would most likely impact the practice of pharmacists in the community pharmacy setting is provided.

6.2. Telepharmacy

Telepharmacy is the science of pharmaceutical care delivery over telecommunications. Telepharmacy services in the outpatient setting are beneficial to patients, especially in limited access areas. In many developing countries, patients have trouble accessing healthcare facilities, including pharmacies. Telepharmacy services appeared as a direct hit to the problems by providing pharmaceutical care that could help patients fill their medication at home. The application of telepharmacy services aims to improve patient care through accessible pharmaceutical care, medication adherence, drug interaction screening, effective drug therapy recommendations, and medication education. Accessibility and cost-effectiveness are the main criteria for the proposed telepharmacy services. Most patients have mobile phones, which can seek almost all access to the internet. A patented telepharmacy application is proposed to accommodate access to telepharmacy services independently from mobile phones or computers as well (Nadhifah Iftinan et al., 2023).

Similar to telepharmacy application development, the proposed application design needs a targeted analysis of user needs and the development outcome. The target user is patients with diabetes in the outpatient setting since they need close and continuous monitoring of their health conditions and medications, which is also beneficial for pharmacists. The primary and practical features of telepharmacy applications are based on user needs analysis, among others. Staff login can only be accessed by pharmacists. Telepharmacy services can be forwarded through live chats, phone calls, video calls, and text messages. Each transaction history in pharmacotherapy must be recorded in the application. This application can facilitate inpatient telepharmacy services such as obstetrics, geriatric, cardiovascular disease, HIV-AIDS, oncology, and psychiatry. Pharmacists with expertise can use this application to deliver pharmaceutical care in telepharmacy services and analyzers to develop medication management plans.

Telepharmacy education can be delivered practically through workshop training, simple mock trials, or multimedia and online training. In addition, it is essential to provide education regarding telepharmacy, including its origin, methods of implementation, telepharmacy application, and benefits for patients and pharmacists. Since most education tools require smartphones, telepharmacy education is also crucial for elderly patients and other vulnerable groups. With patients' limited knowledge of pharmacy, education regarding medicine also needs to be provided using simple terminology and addressing strict issues.

1.9 7. Pharmacists and Patient Safety

Emerging evidence on the role of pharmacists in patient care is showing that they can play a key role in ensuring patient safety by reducing the likelihood of adverse events occurring, as they possess a unique set of skills. These skills can form the basis for several independent roles performed by pharmacists to enhance patient care, many of which can relieve some of the burden faced by primary care providers. However, although there is a good understanding of how pharmacist contributions can improve patient care, there is less evidence on how perceptions of the role of pharmacists in patient safety influence their contributions to the healthcare team.

Pragmatic frameworks for interprofessional collaborations have been recommended, but emergent factors unique to the home care context (i.e. lack of timely access to patient records, provider mindset, and lack of cross-disciplinary knowledge) have proved challenging, influencing the effectiveness of collaborating structures and reducing the potential contributions from pharmacists in improving patient safety. These emergent factors have also resulted in some misconceptions about the pharmacist's safety role, outlining the need for better understanding of this pharmacist role from the view of non-pharmacist patient care providers.

Researchers focused on hearing the perspectives of primary care providers, patient care leaders, and care service managers from home care organizations. Home care has been selected as a study context since it provides a unique model of healthcare delivery and comprises an intricate web of healthcare providers, many of whom are not physically co-located. Since these care provider types are not exclusively responsible for performing any one task within the healthcare delivery process, their lack of access to capable instruments or organizational support can impact their generic role performance and collaboration with others.

Safeguarding patients from adverse events is a goal of healthcare organizations around the globe. Evidence is emerging that pharmacists can provide patient care independently of physicians and nurses, enhancing patient safety and medication therapy outcomes, managing a unique set of tasks to do so. The pharmacist's work broadly includes the prescribing, dispensing, and monitoring of medications in collaboration with patients and their care providers. Similarly, older adults consider a unique set of tasks to be the role of a pharmacist. However, the safety tasks they considered to be unique to pharmacists were largely about filling medications, with more emphasis being placed on the roles of prescriber and patient.

7.1. Error Prevention Strategies

Preventing information errors is an essential issue for all health care providers because they can lead to disastrous outcomes, especially for the patient's health. As pharmacists who have educating of drugs for patient-use, they play a key role in prevention of errors. Promotion of information

accuracy by modeled on the Peak-end theory: Pharmacists should provide correct instructions to patients. Ending information must be simple and clear and thorough Q&A sessions should be performed. Information relevance must be taken into account, helping ability and experience of pharmacists need to be focused. Utilizing the conveniences of health IT system and advertisements is also recommended. But according to the health care context, clearable responsibilities among health care providers should be determined to optimize the promotion of information accuracy. All these recommendations are expected to enlarge health care provider knowledge, understanding, a better control needing only admin authorizations, risk assessment, and less destroy efforts in consultations of medicine use.

Care for medication safety has been paid much attention especially after the devastating outcomes because of fatal errors. As front-line health care providers in the medication process, they are the ones who directly provide instruction to patient-use of medications (A Arun, 2014). Errors in information given to patients by pharmacists can be easily acquired and lead to outcomes of wasting time and money, injuring of health and even death. Thus preventing information errors which can be also regarded as a narrow or response-down/feedback quality error is essential to care and must be concentrated accordingly. Brainstorming for the methods to prevent error types, Advice for prevent strategies of reason-down/understanding errors. As the best available evidence to derive strategies for prevention, it aptly classifies error into four types: errors that occur at the side of expectation machine, errors that occur on the side of knowledge itself.

7.2. Adverse Drug Reaction Monitoring

Pharmacists play a crucial role in the identification and monitoring of Adverse Drug Reactions (ADRs). Most medicines can cause ADRs; some serve beneficial purposes, while others may induce unwanted effects. ADRs are defined as responses to a drug that are noxious and unintended and that occur at doses normally used in humans for the prophylaxis, diagnosis or therapy of diseases, or for the modifications of physiological function. In general, ADR means an unwanted or unintended effect produced by a drug. Adverse Effects and Side Effects are terms that can be used interchangeably with ADR in indications and design. Adverse effects are considered as those events that are undesirable prospects of drug treatment for a patient, which may result in failure to achieve effective therapy with that agent. Side effects are also defined as any accompanying effects, normally undesirable, which may accompany a drug's use. Side effects may occur in addition to the primary object of treatment and are not necessarily an adverse effect (Sundaran et al., 2018). As many as 70% of drugs have been implicated in ADRs. This is alarming, in that many drugs are not on the market FDA-approved because of serious ADRs.

Pharmacists monitor patients during medication therapy, observing for and identifying potential medication-related problems. One of the serious medication-related problems that may arise is an ADR. A successful program for monitoring ADRs requires appropriate physical and human resources. Drug utilization review programs must have access to patients' medical records and complete information on the drugs they receive. Monitoring skills, such as knowledge of pharmacotherapy, clinical laboratory tests, and the clinical recognition of ADRs and drug interactions, must be developed by the pharmacist. A fairly extensive time commitment from the pharmacist will be required to review patients' medication regimens daily and obtain laboratory test results that became available on a previous day.

Reporting suspected ADRs to the FDA is one of the most important responsibilities of a pharmacist in an ADR monitoring program. Reporting may lead to the following important actions by the FDA: a decision to restrict the use of the drug to a specific age group; to use the drug under a physician's supervision rather than over the counter; to require additional indications to be included in the drug's label; or to require the development of an adverse reaction or special population labeling and/or a so-called "Dear Doctor" letter.

1.10 8. Pharmacists in Public Health

As trusted healthcare providers, pharmacists have the unique opportunity to advocate for public health. Pharmacists in global public health around the world need the recognition and assistance of organizations, industry and governments in order to successfully fill these roles in public health. The IOM recommends four disciplines need to be front of mind with planning organizations in addressing the health of the public: increasing the effectiveness of the governmental public health infrastructure; encouraging the emergence of more interdisciplinary students and professionals; increasing the ability of the continuing education mechanism to foster new competencies in those already in practice; and evaluating the quality of institutions, processes and, ultimately, public health outputs and outcomes. These needs are directly translatable to pharmacy (Steeb, 2017). Pharmacists have the knowledge to advocate for the enhancement of existing government health departments through provision of resources, network and training; the clinical experience to increase the engagement of pharmacy students with other disciplines; the passion to plan for long-term, evidence-based education models and opportunities; and the management skills to monitor through service evaluations and metrics.

There is an urgency for innovation and cooperation amongst the pharmaceutical care and public health communities and educators. Decades-long relationships, arrangements and assumptions about the respective roles of pharmacy and public health in healthcare can be disrupted. It is often assumed that healthcare primarily occurs inside of a physician's office, hospital or clinic. Pharmacy, evidenced by its history and considering the potential that already exists, could lead global change if character-based service roles, influenced by passion, would be prioritised. Resources from and regulatory jurisdictions of healthcare systems are better pooled, understood and acted on. This served as the foundation from which the more formalized concept of public health was built on. In many low-resource countries, medicines were derisively termed "small things" that served as payment for lower cost education, housing or sermons. They were an insufficient means of shaping healthy behaviours and environments. In such countries, pharmacy could be the presence that leads positive change, as brave examples of assessments and political advocacy are selected, created and implemented. Innovation with this in mind is needed globally, but specifically in low-resource countries, with a benefit on a level, and potential population scale, not yet matched by any other field.

8.1. Community Outreach Programs

Community outreach programs are becoming increasingly important to pharmacy practice. Besides proven benefit of dispensing of prescription medications to patients, pharmacist-led community outreach programs provide health and education service in various areas, ranging from immunization, smoking cessation, counseling and education on chronic illnesses, safe medication disposal and patient medication review programs (Steeb, 2017). Community pharmacists have

always heard community's healthcare concerns, but now they are striving overtly to become more active in addressing health needs of their communities. The clinically-driven pharmacy practice is expanding from traditional focus of prescription services to health and education services in various areas beyond prescription medications. There are various creative opportunities for pharmacist-based outreach programs which require collaboration with the local community organizations. Most prominently, outreach programs have been created with a goal of improving the health of the community such as immunization, safe medication disposal, community health screening and patient medication review programs. In addition, collaborative programs with educational organizations are prevalent and other areas of emergent needs such as substance abuse prevention and health program development are creating additional opportunities for community pharmacists to become involved more actively. Thus, it is expected that there will be continuous growth in community pharmacist-led outreach programs in the future. Pharmacists are drug specialists whose primary focus is on patients' health and wellness. There are various legally defined community pharmacy services that were intensively studied and could be classified into the following functional areas: dispensing medication, preparing pharmaceutical products, promoting and contributing to the quality use of medication, providing primary healthcare and supplying information and instructions related to health and medication. Community pharmacies have the potential to respond to public healthcare needs due to their extensive network as well as healthcare professionals with high accessibility and affordability. However, concerns are raised regarding the widespread quality of practices since studies have shown that community pharmacies in many countries are underperforming significantly below the minimum standards.

8.2. Health Promotion Activities

The promotion of good health and the prevention of diseases have been among the major functions of the health care system throughout history. In the 1980s, the WHO drew attention to increased morbidity and mortality from diseases that could be prevented, and the importance of preventive programs aimed at disease and disability prevention was emphasized. During this time, with a particular reference to cardiovascular disease (CVD), governments were encouraged to formulate policies, implement programs, and promote strategies to reduce heart disease and stroke. As a response, a lot of priority was given to the promotion of health through general measures and a variety of prevention strategies. Psychology indicates that many factors (psychosocial, environmental, and genetic) contribute to unrealistic perceptions about health risk. Social support helps to reduce the risk of both fatal and non-fatal CVD events. Physicians can improve the adherence of patients to pharmacotherapy and lifestyle recommendations. In addition, because everyone is exposed to multiple risk factors and because the propagation of underlying risk factors varies from individual to individual, it is difficult to set a starting point of intervention involving lifestyle changes. Thus, health promotion is nowadays broadened to also focus on determinants of health and the involvement of groups other than solely health care professionals (Coetzee et al., 2017).

Pharmacists have been part of health promotion from the inception of the profession. Nowadays, the pharmacist in the community pharmacy has a unique position for this activity. Community pharmacies are ubiquitous. Pharmacist availability, accessibility, and proximity make pharmacies an important link in the healthcare system. As such, community pharmacies have a role in health promotion, chronic disease prevention and control, and adherence to therapy (medication use as

intended). Both adherence using drugs and adherence to a non-pharmacological healthy lifestyle are difficult to quantify and hard to tackle both theoretically and practically. Approaching all interventions in an integrated way might make it easier to understand and to communicate with both health care professionals and patients. To understand the expert pharmacist's view on the involvement in health promotion at a community pharmacy, the essence of pharmacist health promotion, the daily practice, its complexity, and the organization is described (Miljković & Pokrajac, 2003).

1.11 9. Challenges Facing Pharmacy Practice

The practice of pharmacy is dynamic, continually adapting to the changing landscape of health care systems and the responsibilities of providers. In the United States, pharmacy practice is evolving rapidly in the context of patient-centered care and controlled substances. Additionally, pharmacogenomics is a rapidly evolving field aimed at researching and developing individualized treatment protocols, an application that could potentially impact pharmacist roles and responsibilities (Taylor et al., 2020). Pharmacy practice in 2030 will be dramatically different from pharmacy practice in 2015. Major changes will occur within pharmacy practice over the next 15 years as a consequence of advances and changes in health care systems and the education of practicing pharmacists. Future pharmacy practice will be characterized by enhanced patient-centered care, influenced by health-care reform and pharmacy education. To remain relevant and ensure fulfillment of unmet needs, pharmacy practice, including how pharmacy knowledge is created and translated, must evolve.

The United States health care system is fragmented, with a business orientation and a focus on episodic care. Because of its poorly organized system of care, the United States spends more on health care than any other nation. Reimbursement for health care services is based on the provision of services and procedures, creating an environment in which medical providers are paid for what they do rather than patient outcomes or health status. Providers are neither consistently incentivized to promote better care nor efficient use of resources. In addition, patients have limited access to care because of inadequate numbers and geographic maldistribution of health professionals (Coetzee et al., 2017). Pharmacists currently fill medications and educate patients but do not typically share responsibility for patient outcomes or attend to population-based medication needs. Healthcare delivery and insurance systems, along with provider relationships, will need to undergo major reform for players to enhance their relevance, shift to a focus on overall health status, and incentivize the delivery of better patient care. Validation of proficiency in new pharmacy practice roles and designation of regulatory agencies will need to occur.

One of the changes anticipated in pharmacy practice is increased participation in medication therapy management (MTM). MTM is a component of the comprehensive medication management service package that is viewed as a best practice in primary care, further consensus and validation of effectiveness. Recognition of provider status for pharmacists is seen as an important step for pharmacy's ability to provide MTM services that improve patient outcomes and are reimbursed. Increased reliance on medication therapy management for the long-term care of patients with chronic illnesses will further drive this transformation.

9.1. Workforce Shortages

Worldwide, human resources for health are at a critical low. By 2035, the shortage is projected to reach over 13 million (Bates et al., 2018), including a shortage of pharmacists in particular in many countries. Education and training need to be strengthened globally. There is a high policy priority across the pharmacy profession to ensure that pharmacy workforce and educational developments are appropriately informed by and matched to national, regional, and global pharmacy workforce needs, without which any national efforts may be wasted. The main driver for global workforce development has, in the past, been to better understand the pharmaceutical workforce across different countries and settings in order to better inform action at national and supranational levels, leading to global reports on changes to pharmacy workforce and education first published in 2008. A key message from the Global Pharmacy Workforce reports was that pharmacy workforce density varied considerably between countries and WHO regions and generally correlated with population numbers and country-level economic development indicators.

Those countries and territories with lower economic indicators tended to have relatively fewer pharmacists and pharmacy technicians, which meant that commonly used workforce metrics derived in high-income countries were unsuitable for use unadjusted in low- and middle-income countries. Access to high-quality health services is vital for the delivery of a nation's positive health outcomes. Ensuring the availability of an appropriately skilled pharmacy workforce with effective distribution (geographic and institutional/sector) is an important approach for improving equitable access. The impact of changes in the density of the pharmacy workforce on population health outcomes is, however, difficult to judge. Changing epidemiology and disease burden at a country level need to be additionally considered. Noting this, the proportion of women in the pharmacy workforce continues to increase resulting in more part-time working and therefore a greater headcount being required to meet demand.

9.2. Regulatory Barriers

Regulatory barriers include any regulation or law that prescript upon the practice of patient-care service by pharmacists and limit them from providing it. There are some regulations that would assist in giving patient-care service by pharmacists if they are modified. These include the sole possession of some responsibilities that are viewed to be done only at hospitals or gotten involvement in a multidisciplinary team, and service fees authorized without consideration for patient care service settings. The fee of the drug or its delivery should accommodate to patient care service, while it should not be set at a high rate due to the pharmacy setting. Fees for patient-care services should be authorized under law (Shumet Yimer et al., 2020). And the type or duration of patient-care service that is limited by law, such as plain services with no monitoring, illustrations that would lower medical adherence, and services solely stated in other health professionals' scopes of practice. The development of legislations that make it easy to discard share information among members in disparate settings and those that endorse the establishment of a universally accepted electronic health record system should be an ultimate goal. The absence of the internal control system of drug distribution, which is inefficient, should be addressed.

In regard to the types of patient-care service that are disallowed due to regional regulatory environment/legislation or which assurance measures are in place, it includes all aspects of service delivery that is an enthusiastic social counter plan which does not prepare fully matured form in a

society. Initial interaction to the issue and awareness should be provided. There is absence of legislative framework or a law to protect the patient's right to receive counseling however the absence is not that of protecting the pharmacy profession. Actually, simply practicing the right to two side consent is an option against opponents (Adams & Weaver, 2019).

1.12 10. Future Directions for Pharmacists

Over the last 20 years, the role of the pharmacist as an essential member of the healthcare team has been well documented and acknowledged. Barriers to optimizing the pharmacist's role have been identified, and several key lessons learned from the success and failures of previous pharmacy practice models have been documented. In tandem with demand and growth in pharmacist services, pharmacy schools are expanding to meet workforce needs, with greater focus on practice-ready graduates and population-based health. The evolution of pharmacy practice to its fullest potential will depend on how well this growth is complemented by and aligned with workforce education, acceptance and adoption of new roles, access to and compensation for services provided, and resolution of professional liabilities. Creating, supporting, and communicating a roadmap for workforce development and practice advancement would encourage and enable faster integration of pharmacy into the healthcare system and improved healthcare access and outcomes for the population (Taylor et al., 2020). In 1970, a variety of forces converged, resulting in the publication of a seminal paper titled "Pharmaceutical Care." This paper introduced pharmaceutical care as a service-delivery model/philosophy in which the pharmacist is a care-provider, optimizing drug therapy and medication use in cooperation with the physician and patient. Subsequently, an expanded practice model emerged in which the pharmacist is a primary care, interdisciplinary health professional. Though these expanded roles were proposed more than 50 years ago, and practice models were implemented and evaluated relatively earlier in practice, uptake has been slow; most pharmacists remain in dispensary-based, traditional roles. Clearly, pharmacy practice has advanced significantly, and associated models were successful. However, current models were developed in different contexts and have not gained acceptance across health systems. The complexity and traditionally conservative nature of the healthcare system leads to hesitancy regarding a new professional's take on an established framework. With many unexplored processes and not enough data supporting or opposing the proposed model, capturing early buy-in from healthcare professionals and health system leaders was difficult. Substantial barriers exist to the uptake of new roles for pharmacists. Despite demonstrable benefit, the current healthcare system structure and the approach to workforce development do not optimally enable or support the extended care model. Efforts to further integrate pharmacy into the healthcare system will depend on the resolution of ongoing barriers. Watchful wait-and-see attitudes regarding changes to the existing model of care by stakeholders can undermine acceptability and availability of resources for integration. An alternative, preemptive approach to integration of expanded roles would capitalize on early opportunities. Formalizing a plan for the integrated, sustainable, and phased rollout of pharmacist care expended practice model would allow larger or more routine involvement in the development and implementation process.

10.1. Expanding Roles in Healthcare

Pharmacists have historically been recognised as drug experts who collaborate with patients, prescribers and other health professionals to optimise medication management for positive health care outcomes (Taylor et al., 2020). The pharmacy profession has witnessed major developments

in health service delivery focused mainly in metropolitan areas, while rural areas often remain the poor cousins, enjoying few of the advances seen in metropolitan areas. Rural community pharmacists are highly skilled health professionals who offer expanded services in areas such as disease screening, vaccinations, health promotion, medication disease management, and compliance aids. Unfortunately, the rural community pharmacist role remains poorly defined, with ambiguous boundaries, making it hard for both the client and service provider to identify the unique contribution rural community pharmacists can provide to the healthcare system.

Pharmacists are now increasingly in a transitional state of expanding their role; acquiring, safeguarding, and developing skills and competencies to provide various services, in addition to, medication management. Community pharmacists are accepted in non-dispensing roles within multidisciplinary clinical teams in outpatient subspecialty and other settings such as out-of-hospital and GP clinics. The role of pharmacists has evolved through the last 15–20 years to a stage where there are now heightened expectations for pharmacists to be embedded in, and at the centre of, all settings involving medicines. There has been a promulgation of a variety of prescribing models internationally (Steeb, 2017). The expansion of the pharmacist's role has resulted in proliferation of terms such as expanded pharmacy practice, extended practice, advanced pharmacy practice, and rural scope of practice, which indicates a provision of services beyond medication management. However, there appears to be a lack of understanding regarding these roles and the terminology used. Further to this, limitations with a traditional understanding of the pharmacist's role creates confusion and misunderstanding, which is augmented by other health professionals who hold on to historical, and therefore outdated, perceptions of what pharmacists do.

10.2. Advocacy for Policy Changes

Pharmacists play a vital role in the provision of quality patient care. In recent years, community pharmacists have begun to advocate for active involvement in patient care as part of an independent pharmacy practice model. Efforts have focused on policy and practice changes in pharmacies that would enable community pharmacists to expand their role as health care providers. However, political advocacy has historically not been a priority for pharmacy practice nor viewed as a necessary activity. This research paper details the challenges and opportunities associated with advocating for active involvement in patient care. Understanding the historical context of community practice and approaches to advocacy success provides important lessons for pharmacists seeking to join the ranks of those professions defined as belonging to a separate specialty or that own the practice of their profession (E Apollonio, 2014).

Consideration of as yet unanswered questions offers important insight into the details of feasible advocacy strategies and avenues already pursued that may present a model for pharmacy. These include coordinating a single voice for all pharmacists to address political advocacy, providing training opportunities for pharmacists at all levels of the profession, defining what new roles community pharmacists may take on as part of patient care teams, identifying stakeholder groups that should be organized into coalitions to advocate for patient care involvement and including patients and patients groups in advocacy activities. It is important to explore other opportunities for advocacy, such as those already perceived to exist for community pharmacy such as fostering collaborative agreements with physicians, working with federal government agencies to expand the use of Medicare Part D to support enhanced services, and leverage electronic health records to

create new coding and billing opportunities. It is also crucial to explore the threat of failure to engage in advocacy. If community pharmacy does not seize opportunities to advocate for change, it risks expanding its role as provider and losing what it now has.

With state and federal health reform, efforts are underway to garner attention for the role of pharmacists in disease management and medication therapy management. Advocacy for pharmacy does not simply indicate promotion of a set of services in the same way that advocacy of broad level framework for pharmacy services is of concern to health planners. The challenge then lies not in what approaches are available but rather which ones are practicable and which will lead to the desired result.

1.13 11. Case Studies on Pharmacists' Impact

Pharmacists have a long history of working within the healthcare setting, dispensing medication and advising patients. However, expanded roles are becoming increasingly common. Pharmacists may take on a variety of new duties, including staff training of fellow healthcare professionals within their institutions, conducting research in a variety of areas, and reviewing current hospital policies and procedures in order to improve patient safety. Case studies will be highlighted that detail successful implementation of various advanced roles undertaken by pharmacists in order to illustrate the different ways pharmacists can utilize their professional training and expertise to benefit patients and prescribers.

Optimizing pharmacotherapy in elderly patients: the role of pharmacists. The aging population is expected to increase exponentially in the coming decades. Pharmacists are positioned to meet the challenges associated with aging population by providing optimally justified pharmacotherapy. A literature review is conducted to synthesize findings from randomized controlled trials of pharmacists' interventions in elderly patients; such interventions involved direct collaboration with patients and/or working as members of multidisciplinary healthcare teams. The impact of pharmacists' interventions on clinical outcomes (e.g., clinical effectiveness, safety, economic outcomes, etc.) was investigated. A total of 321 articles were located, and 12 duplicates were removed. After screening abstracts and full text of 16 possible studies, ten studies were included in the current review that reported pharmacists' impact and were published in the past 10 years. All included studies were published between 2007 and 2014, provided distinguishable interventions by pharmacists to patients aged 65 years and older, and measured clinical outcomes in comparison to non-pharmacist interventions or controls. Nine studies were conducted in a hospital, with four specifically in a geriatric care setting. Pharmacist-delivered interventions included medication reconciliation; and medication-management interventions included systematic medication care plans, warfarin dosing, interim residential care medication administration charts, pharmacotherapy changes, PIMs, potential prescription-omission resolution, and an in-hospital pharmaceutical care program. All studies involved pharmacists providing direct and/or health care team-based collaborative interventions to older patients. Four studies used the MAI as an outcome measure, while one study tracked PIMs specifically. Clinical and safety outcomes were evaluated by other studies, with one study assessing an economic outcome (cost of readmission). Nine studies found positive impact by pharmacist-provided services on older patients, reporting significant benefit from pharmacist care in the intervention group compared to the comparison group. One before-and-after study that measured cost found a lowered 30-day readmission rate and decreased average length of stay. Therefore, current evidence

of positive geriatric patient-oriented outcome achievement by pharmacists' interventions supports the previously published findings (K Lee et al., 2015).

11.1. Successful Interventions

Pharmacists routinely think about patient care services in relation to drugs first, rather than in a patient-centered way relating to patients' disease and preventative care needs. With this rallying point, every pharmacist can look to target interventions that can be accomplished as a team involving pharmacy technicians and pharmacy clerks, thus minimizing the time burden on pharmacists. The choice of the chronic disease states targeted by these interventions also affects the involvement of the pharmacy team members. Interventions targeting chronic disease states that require long-term preventive care services can easily be addressed by pharmacy technicians and pharmacy clerks. On the other hand, interventions targeting chronic disease states that require frequent medication titration and adjustment cannot be targeted by pharmacy technicians.

More importantly, a few successful and sustainable patient care services need to be introduced to pharmacist-administered medication therapy management teams. Clinically led pharmacist-administered medication therapy management teams targeting many disease states tend to lack in sustainable growth. For a sustainable growth plan, a clinical lead pharmacist administering a narrow scope of patient care services focusing on a few chronic disease states is needed (Pringle & C Coley, 2015). Such successful cases are expected to illustrate the patient care services during the onboarding process of new pharmacists, as well as serve as coaching examples to other pharmacists interested in expanding their patient care services. A few reasons are important to consider before embarking on highlighting successful cases. First, the pharmacy practice model can differ greatly by pharmacy settings, resulting in variances in what services are feasible. Second, highlighting a few successful case examples will lead to a net-loss of marketing efforts for most pharmacists. The potential market capture offered by highlighting successful interventions from pharmacists will exceed that of highlighting just a few interventions from one pharmacist. Third, highlighting only successful cases may itself lead to losing the credibility of the Journal or the authors. Most importantly, if only a few case studies are highlighted, readers may presume that the chosen cases are the "gold standard."

11.2. Patient Testimonials

Patient input is a critical component in the shared decision-making process and is invaluable in terms of evaluation. Patient testimonials are a form of quantitative evaluation that provides the evaluator with concrete examples of pharmacist contributions to patient care. These testimonials are first-person narratives that often include demographic and episode of care information. Testimonials may contain a reference to the co-pay for a prescription for an expensive medication. They may also describe symptoms that led the patient to visit the pharmacist or an explanation of how the pharmacist's intervention improved their health or quality of life.

More broadly, pharmacist contributions might also be notable concerning patient education using pamphlets, brochures, or other types of written information provided to the patient. And lastly, patient testimonials may contribute some useful evidence or references concerning the quality of care provided by a pharmacist. Like accounts of the healthcare system, pharmacy care, or individual pharmacists' contributions, examples need not be scored; any relevant statement counts as an instance of patient input. Perhaps requiring some scoring, for some evaluators, is patient

questioning. Pharmacists are often noted for their role in seeking information concerning patients' understanding of initiated therapy or treatment. This information can provide evaluators insight into the sophistication of pharmacist counseling and patient care intervention offered (C. Schommer et al., 2018).

Words used in references to the healthcare system were grouped around five themes: coordination and continuity (e.g., "help in coordination"), comfort in communication (e.g., "feel comfortable"), depth and breadth of care, (e.g., "knowledgeable in many aspects"), medication management (e.g., "speak about my medications"). These themes address several potential questions regarding the quality of coordination and continuity offered by the healthcare system. Words used in reference to pharmacists were concentrated in three areas. These concerns are not surprising but rather reflect a shadow wagging the dog observation about pharmacy care. Finding meaning for words associated with health care providers proved much more difficult.

1.14 12. Ethical Considerations in Pharmacy Practice

Pharmacists are obligated to weigh the rights and obligations of both patients and health professionals to ensure the best outcome for patients (Javadi et al., 2018). Pharmacists' innovative services in pharmacy practice in the last decades rose the attention of health policy-makers. However, their challenges in practice-oriented qualities have made health care decision-makers reluctant to purchase the pharmacists' innovative services in the face of report of insufficient roles and responsibilities in pharmacy practice. They either lacked experience or showed non-compliance and were not acting within the professional values expected of pharmacists. These concerns remain to be explored since it affects the effective implementation and integration of pharmacists' innovative services that require a value shift of services in traditional practice models in future pharmacy practice. The need for a concerted decision to guide the profession as a whole is described. The trends and obstacles to the implementation of the new accreditation standards for pharmacy practices in the U.S.A. are examined. Analysis of the ethical dilemmas revealed the dual role of individual pharmacist, who has to balance social responsibility with the obligation to protect the business interest of the pharmacy. Since many pharmacy practice standards aim to ensure the quality of pharmacy services rather than remedy adverse consequences of poor quality pharmacy service, their dual responsibility is challenging. Therefore, the health policy-makers' concern on pharmacy practices should be directed at reframing the rules for the competition for pharmacies. The issues highlighted in these ethical dilemmas not only resonate in the U.S.A. but possibly all over the developed countries where third-party payers dominate the pharmacy practice. Pharmacy ethics education can facilitate pharmacy students' understanding of pharmacy-specific ethical dilemmas and socialization into the professional values. The measurement scale on understanding of pharmacy ethics during pharmacy ethics education was developed and validated using confirmatory factor analysis. The trends in pharmacy faculty's pharmacy ethics teaching in U.S.A. and challenges faced will be examined. Finally, potential issues in pharmacy ethics education in China will be discussed. Meeting the moral philosophy requirement outlined in the National Pharmacy Accreditation Standards in the U.S.A., the pharmacy ethics course was developed and offered for the last few years. The course broadly introduced pharmacy ethics including biomedical ethics, pharmacy-specific ethical dilemmas, and ethics in pharmacy practice research and education. Owing to the unique situation of Chinese pharmacy education, the course

was offered in both English and Chinese with regular attendance by both international and Chinese students.

12.1. Patient Confidentiality

Patients often disclose very sensitive information concerning their health, personal lives and medication use to their pharmacist. However, there is an ongoing concern regarding the transparency and adequacy of this disclosure. Pharmacists need not only to be aware of the expectations of privacy and confidentiality of patients but also deemed trustworthy enough for patients to feel comfortable providing this sensitive information to them. This study explored consumer perceptions of privacy and confidentiality at the pharmacy, and the factors that influence these perceptions. Qualitative interviews were conducted with 23 consumers at community pharmacies. Interviews were audio recorded and transcribed verbatim. Data were analysed thematically using an inductive framework. Consumers desired privacy and confidentiality with regard to medications, health and personal information, but perceived that the pharmacy context, nature of interactions and pharmacists' behaviours could compromise privacy. Shoppers' observations of neglect of privacy were unsettling, and compromised their ability to engage in honest conversations. Further complicating matters, some consumers were unaware of how disclosure could promote pharmacist interventions. Reservations about approaches used to facilitate conversation, along with assumptions about the purpose of questions asking for a medication or determination of eligibility for services, made some consumers reluctant to engage.

Approaches to facilitate privacy appear varied and negotiable. Acknowledgement that approaches could compromise the ability to discuss sensitive information brought discomfort for some. The pharmacists' role in conversation was viewed as one that required conduct of some discretion, so that professional behaviours or patient strategies did not overshadow medication discussion and complicate the interaction. Additionally, where observations pointed to a disregard of privacy, embarrassment followed. The pharmacy context, alongside the nature of advance questioning in these interactions, presented a challenge to consumer trust. Community pharmacies are poorly equipped in terms of physically delivering privacy for patients. Beyond limiting privacy that should be naturally provided within relevant structural design, inappropriately located interactions could generate discomfort and mistrust. Pharmacy settings can impose a conflict on trust by creating a perception of a lack of respect for privacy, discussed within the wider context of confidentiality (Laetitia Hattingh et al., 2015).

12.2. Informed Consent

As one of the most important ethical and legal principles concerning patient care, informed consent requires a health care provider to obtain a patient's permission prior to providing any type of treatment or intervention. The traditional informed consent process focuses on a dialogue between the patient and the health care provider, including an explanation of a diagnosis, treatment options, and benefits and risks involved in each treatment option. Informed consent must then be obtained prior to proceeding with treatment. Traditionally informed consent was treated as a static document that was signed by the patient and placed in the record. A provider dispensing a treatment regime without first obtaining an informed consent from the patient could be found guilty of negligence and, in certain cases, assault. However, informed consent is much more than signing a form, it is a process that begins with the entry of a patient into the provider system and at which time various

conditions must be met for that patient to have received a true informed consent. A fundamental and critical element of informed consent is that patients have the right to be the makers of their own decisions regarding health care not only to feel secure in the fact that whatever is done by the doctor to them was within the realm of medical care and had its benefit. Patients are best served when they receive accurate, relevant information regarding their condition and treatment options so that they can be true participants in the decision making regarding their health care.

Patients have a valid reason to question the information provided by providers, and what they want in their own care is often contrary to their expectations. However, patients typically don't have a clear understanding of their own values and expectations, so they must rely on health care providers to address their problems with the misinformation that was previously consumed from other less reputable sources. Providers have access to the richest libraries of up-to-date health care information that are filtered by national experts and absorbed for time-consuming critical examination and utilization. One possible solution to this professional crisis is a reminder of the ethical/moral foundation of health care. Informed consent is sometimes a form made to clarify the details of treatment that are to occur with the patient's signature as proof of understanding. Informed consent does not stop there. Informed consent is a process that begins at the initial interaction of the patient with the health care system and continues through the entire course of treatment, both therapeutic and supportive. Communication, understanding, and validation are critical for secure, concordant participation in any treatment.

1.15 13. Education and Training for Pharmacists

The advancement in the education, training, and certification of pharmacists has vastly expanded the scope, nature, and type of patient care services provided by pharmacists (A. Owen et al., 2020). Originally, pharmacists' education primarily consisted of basic science, pharmacy practice, and therapeutic courses. As pharmacists have assumed greater patient care roles, there has been an increased focus on the assessment and resolution of medication-related problems and enhanced training in communication and patient assessment skills early in the education process. Consequently, the education, training, and ongoing professional development of pharmacists now account for the greatest number of continuing education credits entered into the National Association of Boards of Pharmacy CPE Monitor system and utilized by state boards of pharmacy to monitor continuing education compliance. It is important to note that the type of training and education varies by provider and their scope of practice. However, it is a topic with growing interest as the push to ensure providers are trained properly is a top priority of the federal administration as part of improving health equity.

With the adoption and regulatory parameters in place, it is expected that the number of federally authorized and certified MEDs will dramatically increase. As part of this, opportunities to participate in Medical Management Assistant (MMA) training will be made aware of. To support this transition, new positions, such as patient support team and patient support managers, will be added or incurred into existing staff duties. It is anticipated that those in existing positions who consent will have greater opportunities to progress into the new positions as a move toward the required 408110 ratio of educators to MMAs (Cernasev et al., 2024).

13.1. Pharmacy School Curriculum

The role of pharmacists is to assist in improving patient care in the health services. Currently in South Africa, the health services are grappling with challenges concerning the accessibility of quality care, inequity in the delivery of care, the poor health outcomes of patients and inefficient use of resources. In such a constrained and pressured healthcare environment, pharmacy schools are encouraged to work collaboratively with the health services to identify and address medicine-related problems and ensure appropriate patient care as they develop collaborative agreements on patient care. Many pharmacy schools believe that students will benefit from the opportunity to learn about patient care in a clinical or practice-oriented settings during their programmes (Coetzee et al., 2017). Only a few pharmacy outcomes related to patient care exist neither at the university nor the facility. Pharmacy schools should unilaterally, collaboratively and in consultation with the health services, to identify the best methods to remedy the situation. The outcome of collaborative action to this end is the production of generically-specified outcomes related to the delivery of patient care.

Pharmacy education manifests in a variety of formats or blended learning methods such as collaborative group learning, peer learning, role-playing, expert feedback, student-led presentations, supervised experiential placements, site visits, and a combination of varied methods (Noble et al., 2011). The literature strongly points to the need for investment in staff development concerning teaching, assessment and technology use focusing on learner engagement. The importance of developing cooperation and collaboration between universities and faculties regarding pharmacy education for mutual benefit is acknowledged. Pharmacy practitioners are also significant change agents in pharmacy education. They can support, contribute and be involved in the development of pharmacy education whilst expecting quality education in return. A learning and teaching framework should also support the accreditation and continuing professional development of preceptors assisting in the education of student pharmacists whilst acknowledging the importance of quality assurance measures and putting into context quality criteria accordingly. Acceptable formative assessments, sufficient curriculum time and a commitment to engaging pedagogy are necessary enablers of quality assurance measures in the teaching and assessment of skills such as active listening, eliciting medication history and patient counselling. 58% of students believe the pharmacy curriculum prepares them for practice as less than satisfactory knowledge and skills gaps are still evident illustrating the potential for improvement.

13.2. Continuing Education Requirements

State laws govern the continuing education (CE) requirements for pharmacists. With the exception of a few states, all require CE as a condition for relicensing. A state may require as little as 5 to 12 hours but more commonly 15 or 20 hours. CE requirements for pharmacy technicians are generally lower than for pharmacists, with the exception of Minnesota which established 20 hours of CE per two-year renewal period for pharmacy technicians (Jacob Henkel & Marvanova, 2018).

All states and territories except Delaware and Puerto Rico accept live presentations as valid CE format. All states and territories but Delaware and Minnesota accept web-based CE credits without limitation as a valid CE format. Internationally, pharmacists in Canada are required by law to carry out CE in all ten provinces and three territories. Pharmacists in each of the provinces and territories

must complete 15 to 30 credits of CE over a one to three year time frame. In contrast, pharmacists licensed in Australia and the United Kingdom are no longer required by law to carry out CE. However, registration is dependent on each pharmacist conducting a minimum of 20 hours of CE per one to three years; however, there is no formal document regarding self-education in pharmacy in New Zealand.

The only CE requirement not mandated by law is in the Netherlands. Pharmacists are expected to carry out self-evaluation to maintain their competency through education review and personal development plans. The American Pharmacy Association and the Canadian Council on Continuing Education in Pharmacy established a CPD framework for pharmacists and pharmacy technicians as a guide for engaging in the CPD process. The stated vision is to enhance the availability of medicines through the CPD process of specifically pharmacy profession degree holders. Most of these processes are anticipated to involve/provide both limited and extensive CPD programs to meet the mandatory CE for renewing the practicing license.

1.16 14. Conclusion

Pharmacy service is one of the essential health care services in Malaysia. It provides many services to the community such as drug dispensing, drug counseling, education on generic medications, and adverse drug reaction. Dispensary services ensure that medications needed for treatment are promptly supplied to the patient (Siang Chua et al., 2012). This helps to ensure that patients attend regular physician visits and refill their medications regularly. In addition, pharmacists at the general practice clinic provide patient health counseling through various approaches such as providing leaflets and face-to-face brief personal counseling on medication therapy. In recent years, the medicament usage has changed into a new strategy in which health care professionals take influence on drug therapy results mainly doctors and pharmacologists (Thaqi et al., 2017). In this new strategy, cooperation of health care team and patients plays a critical role on drug therapy results. On the other hand, a dynamic wide education policy and government steps have promoted the effectiveness of bureaucratic health care services. To evaluate multicomponential roles of a pharmacologist on the new health care system of the usage of medicaments, prospective observational method in form of pharmaceutical care records based on a quantitative method of statistic and mathematics was used. About 80% of the experience is from the main hospital while only less than 20% is in the other health care points. Further, intervention of additional roles primarily education influences more drug therapy results than the prescribed regimens which include doses and dosing regimens. Finally, cooperatively every member of health care team is recommended to take an active part on drug usage and a new strategy of health care delivery should be given meticulous consideration and implemented.

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