



The Impact of Clinical Pharmacy and Pharmaceutical Care on the Quality of Drug Therapy

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Abstract

1. Introduction

In both developed and developing countries, the emphasis on the quality of health care services has been constantly increasing. The number of health care providers has thus increased. However, the notion of the quality of health care services implies both costs and quality metrics. As drug-related problems are constantly present, efforts to increase the efficiency and decrease the costs of drug therapy have been the most attractive part of health policies. Problems encountered during pharmacotherapy have led to the implementation of the concept of pharmaceutical care in health care policies. Although the need for the concept of pharmaceutical care and clinical pharmacy is not the same, the two subjects are closely related to each other.

Methods

Several methods were used to collect and analyze the data from this study. The definitions and rationale of the concepts may be repeated here for a better understanding of the readers. During a three-month period, clinical pharmacy was practiced on the medical and pediatric wards in the previously described way. It was the first experience of practicing clinical pharmacy at this hospital. The main results obtained by the clinical pharmacists were registered, and these data were used to verify the quality of the delivered pharmaceutical care. Some of the results, more specifically those concerning hospital-acquired infections, were used to confirm the hypothesis that clinical pharmacists could contribute to lowering the costs of hospital care and treatment.

Conclusion

As a clinical discipline, pharmacy offers a full range of knowledge and skills that promotes optimal pharmacotherapy in the practice of medicine, and the pharmaceutical care model of pharmacotherapy management has attracted the attention of clinical pharmacists. Pharmacy can offer favorable medication service only by pharmaceutical preparation before, during, and after drug therapy. All should be committed to establishing and improving the pharmaceutical care model. In the process of compromising with disease and medication, pharmaceutical care enlightens traditional outpatient dispensing into an outpatient dispensing mode



with services, and also surpasses simple dispensing work to a series of new levels. Such progress not only directly impacts the service capacity of public pharmacies but also has an advanced effect on the construction of the department of pharmacy in secondary hospitals and major hospitals in urban areas, and has an indirect effect on the effect of traditional hospital medication service models. In particular, it opens up an innovative thinking path for the development model of in-hospital pharmacies and also advances the contemporary development professionalization of clinical pharmacists.

Because of the new opportunities in the new century and the rapid development of China's health service industry, the five levels of pharmacy explore the way of external oriented management and the way of being incorporated into the in-hospital logistical service system, becoming one of the features of urban hospital pharmaceutical services as well. The rapid production has not gone through a strict selection process, or is particularly prominent in the prevention, control, and use of counterfeit and shoddy medicines. Prescriptions were significantly different, and the greater the number of drugs prescribed during a hospitalization, the higher the possibility the quality deterioration degree of the prescriptions. The medications prescribed in the Department of Emergency are more irrational compared with those prescribed in other specialized departments. It is now a major pharmacy service area with broad development prospects. However, this also brings about severe security concerns. The situation of tertiary hospitals has improved and the status at secondary hospitals has risen somewhat; however, the inadequacies in the overall service capacity and levels still exist. It generally falls into the service position hierarchy of the logistics center, which is mainly reflected as the department of preparation. Such a dispensing pattern has benefits for the patient and can make the outpatient department compassionate contact with patients.

Introduction

The practice of professional pharmacy services has developed along with the rapid development of modern pharmaceutical science, the entry and continued presence of new drug products in competition with older drug products, the cost containment efforts of the health care community in general, and the increasing sophistication of the patient population. These professional developments almost always represent new, expanded, or comprehensive capabilities of clinical and administrative significance for pharmacists in their service to individual patients, to groups of patients served by particular health care facilities and drug distribution systems, to organized health care professional groups, to allied health organizations and services, and to components of the health care system from third-party payers to governmental regulatory agencies. The focus of this text is on a therapeutic-managed professional service that has been developing to meet the drug-related needs and concerns of acute or seriously ill hospitalized patients. This therapeutic-managed pharmacy service is known as clinical pharmacy in the formal context of the general hospital and has developed most rapidly and completely. Each of these connotations is reflected in the following definitions of clinical pharmacy, which are evaluative because they reflect a commonly accepted standard of performance for the hospital-based clinical pharmacist in the form of a specific role, responsibility, or service commitment.

1.1. Definition and Scope of Clinical Pharmacy

In Lithuania, the knowledge concerning clinical pharmacy and pharmaceutical care in scientific literature is insufficient considering the development of Western countries towards adequate pharmacy practice services, legal regulation, and development of training possibilities. Lithuanian legal acts have low requirements. As a result, the content and quality of the Pharmacy Fundamental Study and Pharmacy Practice Study do not meet the requirements presented by clinical pharmacy area standards. Contemporary society requires a pharmacist who works at pharmacies to be a highly qualified professional and who, solving the problems of a therapeutic nature arising in practice adequately, could use their pharmaceutical knowledge. This section deals with the essence of clinical pharmacy and pharmaceutical care, classical and contemporary approaches towards its



development, and legal background in Lithuania. The aim of this section is to reveal the essence of clinical pharmacy and pharmaceutical care, to deal with the legislative base for the activities of pharmaceutical care, and to discuss the principles and standards performed in practice. In the sequence of the topics, the role of the pharmacist in the medical team, requirements for the content of professional studies, and granting of the qualification of the pharmacist are discussed. To write this work, the method of comparison of the contents of some international and Lithuanian standards, as well as the content of legal acts, was used. Data received from various sources of literature were systematized, also employing a method of document analysis.

1.2. Evolution and Development of Pharmaceutical Care

The task of presenting the very recent origins of pharmaceutical care is difficult. Those responsible for this are, in many cases, still alive when we should not yet be reflecting too much on the past. Despite everything, it can be acknowledged that pharmaceutical care, under different designations, was already being put into practice many centuries ago. From the moment when drugs were used, something has been done to ensure their efficient use. Healers have always prepared reliable substances, identified by names or marks, and their use has been recommended in certain conditions. With time, this preparation activity was linked with other functions such as collecting, processing, and dispensing medicinal plants, producing, preserving, and supplying finished pharmaceutical products, including more or less complex medicinal specialties, or even practical information about their effect and mode of use. At the time of Jesus Christ, a whole series of rules, recommendations, and legal provisions regulated activities for safeguarding the quality of drugs, something that would only be observed much later in the medical profession.

Over time, the pharmacist kept his role, formalizing, from the 12th century, professional organization at various levels, evolving, to the present day, in numerous ways and places. Agricultural pharmacy and institutional pharmacy, military pharmacy and civilian pharmacy, public pharmacy and private pharmacy, are different conceptualizations for often functionally identical pharmacy types. They have always been above all therapeutic agencies. The preparation of drugs became regulated, these being exclusively dispensed by the pharmacist in his pharmacy, and the appropriateness of their use was assured by suitable descriptions. With time, the "recipe" was gaining increasing importance, along with information provided for the pharmacist detailing the preparation method and the drug subdivision suitable for a single dose. It should be noted that, at the time, this was the only therapeutic act for which a diploma was required. The prescription was always attached to the preparation and required that it be manually transcribed by the pharmacist's hand in a special register. Only with the appearance of machine preparation equipment did the first exceptions to the above mention and transcription in the register appear. However, the pharmacist no longer verified the written contents of the prescription independently. When diarrheas became frequent, the empirical use of opium in children became the first intervention made by a pharmacist in a doctor's prescription for health reasons. Today, the relationship between the two professions is based on facts and rules, with a firm collaboration that has always existed between them, with new complementary logical arguments, leading to a more conscious objective confrontation and, without a doubt, much healthier.

2. The Role of Clinical Pharmacists in Improving Drug Therapy Quality

Clinical pharmacists are qualified and trained professionals who acquire adequate knowledge and experience to contribute to a better quality of drug therapy. They not only ensure that the drugs are judiciously employed, but also enable the patients to assume the responsibility of self-care as the direct recipients of pharmaceutical care. They maintain the rationale for drug prescriptions and facilitate the delivery of health care primarily from the clinical settings, like hospitals and clinics, to patients. The adoption of the clinical pharmacy concept has been led by hospital pharmacy practice and then penetrated through the ambulatory settings. The first clinical pharmacy concept was used for the first time in the United States in 1962. The request for more pharmacists



engaged in clinical activities arose in the 1980s alongside the deinstitutionalization of hospitals, leading to the emergence of new positions in the health system, like outpatients and brigades in the communities.

The term "clinical pharmacy" started to be used around 1965, and the fabric of knowledge, attitudes, and behaviors that characterize the concept continued to be developed. Provided that clinical pharmacists work directly alongside practitioners, over the years they have played a fundamental role in the management of pharmacotherapy for patients. Alongside this base, the clinical pharmacist has a function as a prescriber and a member of the medical team, dealing with additional activities linked both to the strategic development of pharmacotherapeutic processes and to the education of patients. The possibility for clinical pharmacists to manage the drug therapy of patients during their stay in the hospital has highlighted the importance of clinical pharmacists in oncology, which has been stressed even more in recent years, thus leading to their official inclusion in oncology clinics and incorporation into medical teams.

2.1. Medication Management and Optimization

There are different models of medication management that aim to optimize the effects of drug therapy and pharmacotherapy for the individual patient and to achieve the desired health outcomes. There are several models for optimized medication therapy, including patient-centered, collaborative practice, genetics-based treatment, and cost-effective analytical methods. The core concept of patient-centered medication therapy is that the patient is at the center of clinical decision-making and therapy. It emphasizes preventive care, early intervention, and medication therapy management. The core concept in collaborative practice is that several healthcare professionals are in the primary care team, and they communicate with the primary care physician about the patient's diagnosis and treatment. Medication management includes expert medication therapy management, health and patient education, and help with self-management tools and advice to make medication management easier.

The core concept of genetics-based treatment is treatment that uses detailed knowledge of a patient's genetic information to help make better clinical decisions. Personalized medication management is a concept that developed from the core concept of genetics-based treatment. A cost-effective analysis model is a model that considers medication and pharmacotherapeutic optimization with an analytic cost indication. Clinical pharmacists are an integral part of the primary care team. They collaborate and help patients and other healthcare providers optimize the patient's medication therapy through the principles of pharmaceutical care.

3. Key Components of Pharmaceutical Care

Key components of pharmaceutical care can be divided into three main categories: patient care, drug therapy, and disease-state management. Many ways exist to categorize pharmaceutical care services, and in reality, they overlap, making it sometimes difficult to draw a sharp line between them. Irrespective of the categorization used, the similarity of service goals and the nature of providing care to patients should be the focal point of pharmaceutical care, regardless of country borders. The patient is the primary beneficiary who receives direct pharmaceutical care. Different forms of drug therapy services are intertwined with patient care. Disease-state management represents clinical pharmacy care and comprises therapeutic drug monitoring, adjustment of the pharmacotherapy, and lab testing.

To improve the functional independence and quality of life of the patient, all these components should be integrated into the work routine of the community pharmacist. We must not forget that in most cases, we see the patient earlier than the GP and have the opportunity to prevent a problem from developing into a disease. At the beginning and at the end of any patient-pharmacist meeting should be the concern and well-being of the patient.



3.1. Patient Assessment and Monitoring

During the past decade, considerable efforts have been made to promote the role of clinical pharmacists to include the assessment of patient outcomes, such as drug-related needs or hospital reentry. It could encompass a number of measures, such as illness activity scores, coagulation times, the incidence of adverse drug events, the appropriateness and adequacy of drug therapy, and so on. These efforts took account of the fact that early recognition of suboptimal pharmacotherapy and proper interventions are crucial public health issues in modern societies. The patient monitoring activity consists of various elements, such as monitoring the influence of various drug treatment modalities on several psychological dimensions, monitoring adverse drug reactions utilizing a system of standardized and computerized ADR reporting forms of clinical laboratory assessment, and so on. After assessing a patient and identifying drug-related problems, the clinical pharmacist should be able to choose which drug information sources/formats are most relevant to obtain pertinent clinical and/or laboratory data about the patient.

The clinical pharmacist should use drug information databases to retrieve necessary information about the patient. Moreover, due to the evolution of Health Information Technology, more and better IT-related tools are available. However, having access to a plethora of information in the domain of drug treatments might not be a panacea for clinical pharmacists. Indeed, there is a plethora of research that has documented the weaknesses in accomplishing the drug therapy-related work of clinical pharmacists. However, one factor receiving relatively little attention concerns clinical pharmacists' actual use of the drug information made available to them. In view of the aforementioned considerations, we argue these observations underscore the importance of research-based considerations of the drug information use of clinical pharmacists, and of factors that can be predicted to influence the use of drug information by these professionals too often. This issue has been framed solely in practical terms, but it also deserves theoretical efforts to understand such practical choices. We posit that the domain of drug treatments is, in fact, a key mediating interface between clinical research and decision-making in the real world.

The academic discourse has also shown quite a variety recently, not to say inconsistency, with respect to who should conduct the assessment activity. Often, a clinical pharmacist can be involved in performing the patient assessment. Yet, the field of pharmaco-economic assessment has been increasing. It is generally fractionated and compartmentalized. Moreover, while many patients need these services due to health problems, the actual demand for pharmaceutical care is a function of many factors beyond health improvements, such as monetary, time, and expertise. Even though empirical evidence and expert-based standards have shown that these services might not have acceptable quality standards. Thus, a patient assessment and monitoring function might be preferable due to the better qualifications of a clinical pharmacist and the rich reminiscence of his/her drug information knowledge.

4. Challenges and Barriers to Implementing Pharmaceutical Care

4.1. Practical Challenge First, the cost of pharmaceutical care would increase the overall medical expenditure. Insured individuals and payers expect a reduction in the cost of medical or drug therapy with an improvement in the quality of drug therapy, and the application of pharmaceutical care must prove a reduction in expenditure rather than further increases. Even though pharmaceutical care could indeed reduce health spending by identifying drug therapy problems and providing guidance, the costs of training clinically oriented pharmacists and offering additional pharmaceutical services are also predicted to be significant. There is doubt whether any proven cost savings resulting from intervention in the drug-use process would be returned to the current drivers of the system, which is also difficult.



4.2. The Barrier of Medical Practice The majority of doctors and nurses are either unacquainted with or dismissive of the significance of the services that clinical pharmacists have to offer. Pharmacists, as part of the clinical team, should assume some responsibility for patients' drug therapy problems like other practitioners. Otherwise, they believe that interacting with patients is outside the boundaries of standard practice, which means being utilized to control drug therapy prescribed by the delegating clinicians. The negligent references for clinical pharmacists are significant barriers that are most difficult to overcome, and a lack of understanding of pharmacists' contributions in controlling drug therapy underlines this. (Mohammed et al.2022)(Hu et al.2022)(Shrestha et al.2024)(Koh et al.2022)(Chang et al., 2021)(Mazid & Azam, 2024)

4.1. Healthcare System and Policy Issues

This section discusses the US healthcare system's current inadequacies and policy issues for extending pharmaceutical care and clinical pharmacy services. The section concludes with the personal, corporate, and societal objectives that affect the implementation of clinical pharmacy and clinical pharmacy benchmarking as value creation models. The role of pharmacy in the current US healthcare system has not been specifically defined, nor is it widely understood by the majority of citizens, medical and other healthcare practitioners, policymakers, or leaders in industry, government, and the community. This lack of definition is problematic because the extant healthcare system is not functionally aligned to use its current health and medical knowledge to achieve several desired gains, including making high-quality health benefits accessible to the majority of citizens by addressing the healthcare-related quality issues that currently arise from inadequacies in the modern realization and use of these benefits.

Healthcare access for many citizens is hindered throughout their lifetime, particularly during their adolescence and throughout the remainder of their lives due to poverty, criminality, unemployment, retirement, prolonged dental and medical illnesses, having the wrong skills, working in the wrong occupation, working for the wrong employer, and/or working without adequate benefits. Since 2005, we need more time to develop and disseminate pharmaceutical and clinical pharmacy practice models, particularly those using new patient-administered therapies designed to make high-quality drug therapy more accessible and convenient. A few of these models are designed to enhance the behavioral, social, and other less tangible results of drug therapy that empower financially insecure and inadequately educated patients to treat their often multiple acute and chronic illnesses simultaneously and successfully.

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