



Clinical Pharmacy Practice in Nepal; Current Scenario and the Way Forward

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Perspective

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Abstract

There has been a paradigm shift of pharmacy practice from traditional role of medication dispensing to direct patient oriented care in global scenario which has intensified the role of pharmacists in clinical setting. This has improved the safety and effectiveness of medicines and has made a significant contribution for maximizing therapeutic efficacy and avoidance of medication errors. Clinical pharmacy practice is in embryonic stage in Nepal as compared to that of the developed countries, though efforts are being made from experts with specialized training and education for effective clinical pharmacy practice. The aim of this article is to focus the present context and the future aspects of clinical pharmacy practice in Nepal in comparison to other parts of the world.

Keywords: Clinical Pharmacy; Present Scenario; Future Aspects

Introduction

Over the years, there has been a paradigm shift of pharmacy practice from traditional role of medication dispensing towards a more inclusive focus on patient care. This has improved the safety and effectiveness of medicines and has made a significant contribution for maximizing therapeutic efficacy and avoidance of medication errors. A simple paradigm definition of clinical pharmacy is "promoting rational use of drugs competently and responsibly to patients, taking into accounts their social, psychological and biological aspects in order to make positive change in their daily lives [1]. Clinical pharmacists are practitioners who provide comprehensive medication management and related care for patients in all health care settings. They are

expert with specialized education and training having clinical competencies necessary to practice in collaboration with other healthcare practitioners in direct patient care setting. Healthcare team comprising of clinical pharmacist, physician, nurse and other healthcare practitioners is fundamental in optimizing therapeutic outcome. Pharmaceutical service is considered as the major support for the entire health care system as patients do not usually visit health care centers where there are no medicines. Thus, availability of medicines and competent pharmacy practitioners is therefore crucial for the proper functioning of the pharmaceutical service [2].

Clinical Pharmacy practice was originated from USA and is now adopted by many parts of the world. With a view to emphasize clinical pharmacy practice, developing countries

including Pakistan, India, Bangladesh, many African countries and parts of the Middle East are changing their entry-level qualification to a Doctor of Pharmacy (PharmD) as American Association of Colleges of Pharmacy (AACCP) has approved PharmD as the only professional degree in pharmacy [3]. In Nepal, clinical pharmacy is at a preliminary stage. There exist many discrepancies in pharmacy curriculum and the syllabus fails to provide adequate clinical exposure to the students. Also, only a handful of hospitals have clinical pharmacists otherwise pharmacists are mainly involved in traditional role of medicine dispensing and manufacturing in pharmaceutical industries.

Roles and Responsibilities of Clinical Pharmacists

- a. Taking medication history of patients: Taking accurate medication history is the first step of medicine reconciliation process with the goal of providing correct medications to the patient at all transition points within the hospital [4]. It helps clinical pharmacists assess the medicine concordance, rationale of the drugs prescribed, patient's understanding of medicines, drug abuse, drug interactions (DIs) and adverse drug reactions (ADRs).
- b. Patient counseling: Clinical Pharmacists provide information to the patient about current clinical conditions, pharmacologic, non-pharmacologic measures of therapy and medical devices as well which improves patient compliance, treatment satisfaction, therapeutic outcomes and quality of life. At the same time, it increases patients' understanding about medication and lifestyle modifications in chronic illness [5].
- c. Patient care and ward round: Clinical pharmacists participate in ward round alongwith other members of healthcare team to improve understanding of patient's history, progress, clinical details providing information on clinical aspects of patient's therapy, selecting drug therapy, making effective discharge planning thus enhancing quality of patient care and clinical outcome. Clinical pharmacists check the rationality of prescribed medication and make appropriate interventions [6,7].
- d. Therapeutic drug monitoring (TDM): By practice of therapeutic drug monitoring and its proper interpretation, clinical pharmacists optimize individual dosage regimens using knowledge acquired from pharmacokinetics, pharmacodynamics, biopharmaceutics, pharmacology, pharmacotherapeutics, medicinal chemistry and pharmaceutical analysis etc. [6,8]. By appropriate drug selection and individualizing drug dosage regimen, involvement of pharmacists in TDM improves the appropriateness of drugs, reduces unnecessary cost and helps in better interpretation of results [9].
- e. Clinical review: Medication review by clinical pharmacists at hospitals leads to improved patient outcomes especially on medicine use and cost [10]. Clinical pharmacists ensure that the patient is getting appropriate drug therapy with proper dose and dosage form for required duration for their disease status correlating with their signs and symptoms, laboratory results, diagnoses, TDM results and therapeutic goals with the medication history.
- f. Drug interactions (DIs): With adequate knowledge about medicines and capacity to correlate with unexpected symptoms experienced by the patients to the possible interactions between the drugs being taken, clinical pharmacists have important role in effective drug interactions surveillance [6]. Clinical pharmacists effectively manage all types of drug interactions like drug-drug interactions, drug-food interactions, drug-disease interactions, drug-lab test interactions that might adversely affect drug therapy.
- g. Pharmacovigilance: Drug-related adverse events, including ADRs have been reported to be among leading causes of morbidity and mortality [11]. Participation of clinical pharmacists in detection, monitoring and minimization of ADRs not only increases patient compliance but also reduces drug related problems, cost of therapy and hospitalization and hence improves therapeutic outcome. Clinical pharmacists' intervention during medical rounding and review of prescription with drug therapy problems contributes to a significant reduction in preventable ADRs, shows direct benefits for patient safety as well as improves their quality of life [12,13].
- h. Research and development: Clinical pharmacists support and participate in research activities to advance human health and health care by developing research questions; conducting or participating in clinical, translational, and health services research; contributing to the evolving literature in evidence-based pharmacotherapy; and/or disseminating and applying research findings that influence the quality of patient care [14,15].
- i. Drug utilization review (DUR): By collecting, analyzing and evaluating patient specific data clinical pharmacists identify, resolve and prevent medication related problems. Clinical pharmacists also review the individual medication orders against the drug utilization criteria and work collaboratively with healthcare team to design effective medication use criteria [16].
- j. Formulation and management of drug related policies: Clinical pharmacists are key to policy making and strategic planning process for health care of patients [17]. They are vital in developing drug treatment protocol, standard treatment guidelines (STGs) and formulary development processes.

- k. Extended pharmacy services (EPS): Clinical pharmacists manage medication therapy by various ambulatory services, visiting patients both in ambulatory practice site and in home [18]. Clinical Pharmacists are involved in EPS like smoking cessation program, anti-coagulant monitoring, asthma care, diabetes care, geriatric care, pain management, wound care, medication therapy management in collaboration with general practitioners [19].

Global Scenario

The concept of clinical pharmacy was originated in 1960s that marked the beginning of rapid transition in the role of pharmacists towards a more patient-oriented practice giving rise to the concept of pharmaceutical care model in 1990. The model was adopted to emphasize the role of the pharmacists that involves “the responsible provision of drug therapy for the purpose of achieving definite outcomes that improve a patient’s quality of life” [20]. The discipline has started to become an essential component of the multidisciplinary team with inter-professional collaboration (IPC) which have now been globally recognized as an essential tool for constructing a more effective and patient-focused health care delivery system [21].

There is a huge role of research and development in uplifting the pharmacy profession [22]. In USA, clinical pharmacists are involved in direct patient care which contributes to the selection, modification, and monitoring of patient-specific drug therapy. This is often accomplished within an inter-professional team or through collaborative practice with another healthcare provider.

Decentralized services provided by satellite pharmacies in large hospitals have brought pharmacists and patients closer which ensures the presence of pharmacists in the patient care areas and facilitates interaction between medical staff, nursing staff, pharmacists and patient. ACCP has developed “Standards of Practice for Clinical Pharmacists” which has defined the roles and responsibilities of clinical pharmacist for rationalization of therapeutic outcome [15]. Inclusion of clinical pharmacist in ward rounds with healthcare team reduces preventable ADRs, incidence and duration of medication errors which is common practice in many hospitals of developed countries and in some developing countries [23,24]. Malaysian government has developed guidelines for inpatient pharmacy practice which provides guidelines for ward pharmacy, pharmacotherapy ward rounds and all other pharmaceutical activities including clinical pharmacokinetic service [25]. Pharmacists also have a prescriptive authority in different settings in developed countries, where they make significant contributions to the quality of drug therapy [26]. In USA, there is ambulatory

care pharmacy- residency program which provides residents with comprehensive pharmacy practice training and experience in a variety of ambulatory care settings. Clinical pharmacists’ anticoagulation service minimizes risk of ADRs of warfarin improving effectiveness of therapy maintaining international normalized ration (INR) level in optimum limit [27]. Clinical Pharmacists assisted antimicrobial control program demonstrated optimum antimicrobial therapy with reduction in hospital mortality, length of stay (LOS) and better pharmacoeconomics outcome [28].

The clinical pharmacy services are at grass root level in South Asian countries due to lack of skilled faculty, poor pharmacy practice setups, lack of awareness, absence of proper governance, presence of multiple courses without clear roles and responsibilities [29]. Delivery of EPS is practiced in the developed world but such system is lacking in developing countries, however, pharmacists have positive attitude towards EPS provided that health and community based agencies support and facilitate them [30].

The Current Scenario in Nepal

Clinical pharmacy practice is in embryonic stage in Nepal, though efforts have been made by experts at different institutions to enhance the pharmacy profession. Some hospitals have started drug and therapeutic committee (DTC) formation, hospital formulary development, drug related policies formulation services, pharmacovigilance and drug information center services. Some specific clinical pharmacy services are carried out on pharmacists’ own initiative such as pharmacists working in some hospitals have started patient centric services like patient counseling, solo ward round, drug information services, consultation on prescription writing, drug therapy management services.

Pharmacy education in Nepal started with the commencement of proficiency certificate-level pharmacy program at the Institute of Medicine, Tribhuvan University in 1972 and subsequently the establishment of Bachelor of Pharmacy (BPharm) program in Kathmandu University (KU) in 2000 added up more bricks to the foundation. The same institution initiated Master of Pharmacy (MPharm) and Doctor of Philosophy (PhD) in Pharmaceutical Sciences programs in 2000 and 2004, respectively. BPharm and MPharm programs were later started at Pokhara University and Purbanchal University too. KU also started a Post-Baccalaureate PharmD program in 2010 with the objective to train graduate pharmacist in the area of patient care [31].

In the year 2015, Hospital Pharmacy Service Directive was published by Department of Drug Administration, Ministry of Health, Nepal which states that every hospital should have its own pharmacy. It also recommends the ADRs

monitoring, hospital formulary development and formation of DTC for better therapeutic outcome. The directive also recommends the presence of at least one clinical pharmacist for the hospital with capacity of more than fifty bed [32,33]. Proper implementation of the directive would provide solid platform for the development of clinical pharmacy practice in Nepal.

Pharmacist's active involvement in practice, enforcement of legislation and revising pharmacy curriculum are the factors to standardize pharmacy practice [34]. However, getting a well-trained faculty member with clinical pharmacy exposure is very difficult in a country like Nepal. In addition, creating a well-structured curriculum emphasizing the clinical and patient care approach and getting proper facilities for student to train in this area is a big challenge. The *Nepal Pharmacy Council Act* led to the formation of the Nepal Pharmacy Council, which is responsible for the registration of pharmacists and pharmacy assistants in Nepal. In 2015, the Nepal Pharmacy Council introduced a licensure examination for pharmacists and pharmacy assistants.

Few pharmacists who are working as clinical pharmacists have acquired qualifications like PharmD with specialized training from other countries and some also have acquired clinical pharmacy degrees like MPharm in Pharmaceutical care and Post Baccalaureate PharmD degree from different universities. Pharmacists' role in health care setting is basically focused in traditional role like dispensing, purchasing and managerial role rather than clinical oriented role.

The terms clinical pharmacy and hospital pharmacy are most misunderstood and used synonymously pertaining to the lack of understanding of these fields. Though some institutions have approved clinical pharmacy practice, the work and responsibilities are not clear, hence the pharmacists are more involved in drug management than in disease management. Most of the hospitals further lack DTC, drug information centre (DIC), pharmacovigilance centre. In practice, the established DTC, DIC and pharmacovigilance centre are functioning at sub-optimal level. For the development of clinical pharmacy practice in Nepal, the foremost thing to start with is to establish hospital pharmacy and appoint clinical pharmacist, develop guidelines of clinical pharmacy practice and provide specialized trainings in related field.

The Way Forward

Though clinical pharmacy practice is in evolutionary phase, there is high scope for the development. Globalization and development of new dimensions in clinical pharmacy practice in developed world influence our health system

and pharmacists soon will be included in a health care team. Advance and specialized training acquired by pharmacists will receive required appreciation which will be strengthened by stringent rules and regulations. With increasing burden of disease, advancement in technologies and high public expectations more avenues for practicing clinical pharmacy emerges but one shouldn't hesitate to explore more dimensions in the existing scenario.

In order to achieve excellence in pharmacy profession, the foremost thing to do is to revamp the pharmacy curriculum emphasizing the clinical and patient care approach and to train the future generations of clinical pharmacists. Pharmacists should be abreast of current and emerging trends in clinical pharmacy and should undertake research to develop innovative results. In addition, they should become trained to undertake institutional as well as clinical activities, including, but not limited to, establishment of DTCs, provision of drug information, promotion of rational prescribing, establishment of a formulary system, and teaching of health care professionals.

Clinical pharmacy practice is yet to take a quantum leap. Acquiring knowledge and competence as a pharmacy practitioner and developing professional attitudes and behavior is just as critical to delivering quality patient care for pharmacists. Pharmacy students do not become professional clinical pharmacists merely by graduating from pharmacy colleges. Instead, being a professional requires a lifelong commitment to the patients and the societies one serves.

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