

## Clinical Pharmacy in India: Recent Advances and Perspective

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### ABSTRACT

In lieu of the fact that without adequate supervision, the assurance of quality of any system is not possible; clinical pharmacy has emerged as one of the latest and unmapped discipline of pharmacy in the 21st century. The existence of clinical pharmacists in medical rounds could support physicians in optimizing pharmacotherapy. This novel profession in India extends its diversions to good manufacturing practices, procurement/preparation/distribution of medication, reporting ADRs/ ADEs and on the whole to a very promising aspect of patient healthcare service. The state of clinical pharmacy in India is in the transformational state showing serious positive promising changes in the past couple of years. Even hospitals have started distinguishing the importance of clinical pharmacy and have taken initiatives for making it possible although at a budding stage. The clinical pharmacy branch of pharmacy is surely attaining new heights in regard to patient care services which have certainly increased the services and satisfaction to the patients.

**Keywords:** Clinical Pharmacy, pharmacotherapy, Pharmacist, Health Care Team

### INTRODUCTION

Clinical pharmacy has emerged as one of the latest branches of pharmacy in 21<sup>st</sup> Century. <sup>[1]</sup> It is where pharmacists deal with various aspects of patient care, dispensing of drugs and advising patients on the safe and rational use of drugs. It can also be explained as a part of pharmacy in which the clinical pharmacist provides patient care that optimizes the use of medication and promotes health, wellness, and disease prevention. To elaborate the story we can say that clinical pharmacy is to use drug control and the effective application of the knowledge. Professional skills and ethics assure the optimal safety in the distribution and use of medicine. The purpose of the Professional Education in Clinical Pharmacy and Public Health is to qualify each pharmaconomist (expert in pharmaceuticals) to practice clinical pharmacy

at a higher and more professional level. <sup>[2,3]</sup> Hence, ensures the patient's maximum well-being during the drug therapy.

Clinical pharmacy describes the new role of the 21<sup>st</sup> Century's pharmacists. It doesn't restrict the role of a pharmacist merely to good manufacture practices, easy procurement, proper preparation, distribution and control of drug products. In addition, it also comprises functions necessary to discharge a particular set of social responsibilities related to proper therapeutic use of drugs in the aspects like prescribing, dispensing and administrating drugs, documenting professional services, direct patient involvement, Reviewing drug use, Education, Consultation and Counseling. The aim of clinical pharmacy practice is to ensure the patient's maximum well-being and to play a

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meaningful role in the safe and rational use of the drugs. These goals are to enable the physician do a better job of prescribing and monitor the drug therapy for patient. Further, to help the medical and para-medical staff to enable effective drug therapy. Clinical pharmacy practice also deals with proper maintenance of the documentation regarding the medication incidents effectively to maximize the patient's compliance in drug use process.

#### **BUILDING UP A CLINICAL PHARMACIST**

Internationally, particularly in the countries like the US, Canada, Australia etc clinical pharmacists have extensive education in the biomedical, pharmaceutical, socio-behavioural and clinical sciences.<sup>[4]</sup> Most clinical pharmacists have a Doctor of Pharmacy (Pharm.D.) degree and many have completed one or more years of post-graduate training (e.g. a general and/or specialty pharmacy residency). Many clinical pharmacists also choose to become Board Certified through the Board of Pharmacy Specialties (BPS) which was organized in 1976 as an independent certification agency of APhA (American Pharmacists Association). A pharmacist may become a Board Certified Pharmacotherapy Specialist (BCPS), a Board Certified Oncology Pharmacist (BCOP), Board Certified Nuclear Pharmacist (BCNP), Board Certified Nutrition Support Pharmacist (BCNSP), or a Board Certified Infectious Disease.<sup>[5]</sup> It is denoted as an "Added Qualification" or AQ. In order to obtain one of these specialties you must first be a Board Certified Pharmacotherapy Specialist and then submit a portfolio to the Board of Pharmacy Specialties for review to determine if they will grant you the added qualifications.

In India, M. Pharm (Clinical Pharmacy) is a two-year post graduate Psychiatric Pharmacist (BCPP) through the Board of Pharmacy Specialties (BPS). There are also subspecialties within the Pharmacotherapy specialty: Cardiology and degree course, after B.Pharm. In

this course, the Graduates of Pharmacy are provided with the opportunity to acquire knowledge about all the tasks performed by a pharmacist in hospitals, nursing homes, clinics or any other such places. The course focuses on the study of the patterns of use and effects of drugs on patients and deal with the correct and appropriate use of medicinal products and devices. In order to seek admission into the course, one has to appear for GATE/GPAT Entrance examination or any other State or University entrance examination.

#### **QUALITIES OF CLINICAL PHARMACIST**

Clinical pharmacists care for patients in all health care settings but the clinical pharmacy movement initially began inside hospitals and clinics. Often collaborate with physicians and other healthcare professionals. Pharmacists should be well-versed with the common language used by the people in order to communicate with the patient and co-professionals easily and effectively. Pharmacists are also expected to have thorough knowledge of the etiology of the disease, its signs, symptoms, pathophysiology, diagnostic tests, pharmacokinetics, etc. Proper clinical training should be given to the clinical pharmacist to provide information regarding rational drug use, drug therapy and drug doses.<sup>[6]</sup>

Condition for a clinical pharmacy -A clinical pharmacy professional should appreciate the role of medical and para-medical staff. There should be enough bondage between the physician and the pharmacist to visit the patients together. All of the medical staff should develop an inter-professional relationship to enhance the quality of patient care. Further, there should be a deep sense of responsibility in the clinical pharmacist with respect to medical care. It helps in maintaining proper patient history and gaining confidence. As drug therapy is an ongoing process it needs to be checked by the clinical pharmacist timely.

It may be changed according to the patient's condition and requirement.

#### HEALTH CARE TEAM AND A CLINICAL PHARMACIST

There are certain laid roles and responsibilities of a clinical pharmacist in a health care team that consists of several medical and para-medical professionals. These responsibilities should be executed by the clinical pharmacist with immense care. The clinical pharmacist should interact with the patients and maintain their complete and exhaustible medical history. The clinical pharmacist should also do proper documentation of the hypersensitivities or allergy to certain drugs, food habits, drug dependence or intoxications to certain chemical substances, side effects of some drugs, incorrect drug administration, etc about the patient.<sup>[7]</sup> The prescribed drugs may interact with certain OTC drugs; therefore, after receiving the prescription the clinical pharmacist should check the patient's medical history for drug related interactions and patient's habits. This helps in effective and accurate medical therapy.

In the selection of a proper drug product/generic formulation (depending on the bio-availability and equivalence of such products) the clinical pharmacist can help the physician. Clinical pharmacist can help in monitoring of drug therapy to ensure safety and efficacy. Monitoring of the drug therapy is very important particularly for those drugs that have narrow therapeutic index or administered chronically.<sup>[8]</sup> Various pharmacokinetic parameters can also be checked by the clinical pharmacist based on: plasma concentration of drug, enzymes and measurement of glucose quantity in blood, etc.

Patients with kidney impairment or hepatic disorders are more prone to adverse drug reactions. Clinical pharmacist can help in

detection, prevention and reporting of adverse drug reactions. He may advice the physician for alternate drug therapy for the concerned patients. Clinical pharmacists may play a major role in designing health and drug policies, and assist as a source of information for the health care professionals and to the public. The drug management greatly relies on the clinical pharmacist to check the selection, requirement, procurement, distribution and use of the drugs. Also, Research and development in the field of biological availability of active ingredients requires active participation by the clinical pharmacists. The clinical pharmacist can help in executing clinical trials and based on standard principles and bio-statistical evaluation. A clinical pharmacist is an expert to provide detailed information to the health professionals and the general public. Effective selection, utilization and retrieval of drug literature by the clinical pharmacist can enable in the proper understanding of the facts by the medical team. He can also abstract information from periodic bulletins, newsletters or other pharmacy literature.

#### SCOPE OF CLINICAL PHARMACY IN INDIA

In hospitals the services regarding clinical pharmacy are of considerable value because the concerned clinical pharmacist serves as a guide to the physician for safe and rational use of drugs.<sup>[9]</sup> He also assists to achieve economy in the hospital by planning safe drug policies, suggestive means of reduction of waste, by preventing misuse or pilferage of drugs. In addition to it the preparation of preventing forecasting future drug requirements of the hospital, based upon their drug utilization patterns. Therefore, scope of clinical pharmacy covers areas to foster innovation, improve public health and provide a knowledge exchange. Clinical pharmacist enables rational drug use by providing correct drug information including the proper utilization of the drugs utilized as drug therapy, along with all the

precautions to be taken as indicated or asked by the pharmacist or the physician.<sup>[10]</sup> It discourages any irrational or reckless use of drugs and also, concerns with the procurement of the drugs into the market from the industry and their channelization to the patient for use. Clinical pharmacy also deals with ensuring safety and efficacy of the drugs after marketing. Safety can be evaluated by means of non-experimental research, whereas evaluation of efficacy in a variety of settings representing normal medical practice generally requires experiments, randomized and blinded. National or International markets are flooded with tens of drug combinations, low therapeutic value products or duplicate brand names<sup>[11]</sup>. Thus, under this study it is clarified how to choose the correct drug for administration or treatment.

Medication Therapy Management (MTM) involves partnership of the pharmacist, the patient or their caregiver, and other health professionals that promote the safe and effective use of medications and helps patients achieve the targeted outcomes from medication therapy. Therefore, it also deals with the formal education about the rational drug use. Through this it is desired to educate and train the people regarding health care practices. In Disease State Management (DSM) process of organizing care for a specific high-cost and/or high volume diagnosis, with the intention of improving outcomes and, when possible, lowering overall costs is involved. DSM is a multi-step process which involves evidence-based clinical policies, an explicit implementation strategy and a data-driven feedback mechanism to objectively measure those aspects of care the program is designed to impact (e.g., clinical outcomes, patient satisfaction, cost, etc.). This may involve Electronic Data Processing (EDP) that can be referred to the use of automated methods to process commercial data. Typically, this uses relatively simple, repetitive activities to process

large volumes of similar information. For example: stock updates applied to an inventory, banking transactions applied to account and customer master files, booking and ticketing transactions to an airline's reservation system, billing for utility services.

Clinical pharmacists practicing in the hospitals and the community pharmacies may obtain medication histories, counsel patients, review treatment regimens, monitor drug therapy, give drug information, report ADRs, conduct drug-use evaluations, and provide poison control services. Many of the advances in clinical pharmacy in India were initiated in hospitals only. However, clinical pharmacy practice is not well established in the community setting in India, because most pharmacists practicing have minimum qualifications, principally only a two-year Diploma (D.Pharm) program. Students are now beginning to realize the excitingly bright opportunities available in patient counseling and disease management. In the pharmaceutical industry, clinical trial coordination, medical information, and medical writing are the arenas where clinical pharmacists are suited to work. More clinical trials are being conducted within the pharmaceutical industry and clinical research organizations. Medical writing and education in the area of marketing allow pharmacists to apply their background in drug information and literature evaluation. Training clinical pharmacists requires well-qualified faculty.

In India, Clinical pharmacy services were initiated in 1992, when 2 Indian hospital pharmacists, B. Suresh and B.G. Nagavi, of Ooty and Mysore, respectively, sought out clinical pharmacist Frank May in Australia. That same year, May visited their schools of pharmacy in India. Clinical pharmacy education programs have been launched in India but much work will be required to expand and improve these programs to bring the benefits of

clinical pharmacy practice to the huge swath of the Indian society. During 1997, the hospitals in Mysore and Ooty were the sites of clinical pharmacy practice programs developed in collaboration with a senior clinical pharmacist from RGH. The target approaches for the programs were developing competencies through academic curricula and establishing practice centers in hospitals. Curricular changes were targeted in undergraduate curriculum development, and a new branch in postgraduate courses was introduced. Two model centers for the practice of clinical pharmacy were developed: the government sector model and the private sector model. There are several Institutes for the study of Clinical Pharmacy in India like- Shri Sarvajanik Pharmacy College in Gujarat, R.C. Patel College of Pharmacy in Maharashtra, Bharath Institute of Technology in Andhra Pradesh, School of Pharmacy And Technology Management, NMIMS University in Maharashtra, Shri Guru Ram Rai Academy of Pharmaceutical Sciences in Uttarakhand and University Department of Pharmaceutical Sciences in Orissa. Along with these several institutes are also established in New Delhi- Delhi Institute of Pharmaceutical Sciences & Research (DIPSAR), Jamia Hamdard (Hamdard University), ICRI and CREMA. Several institutes are providing industrial training and placement as well. The introduction of clinical pharmacy practices is now spreading to other parts of India. It is seen that because of the success of the clinical pharmacy activities in Mysore and Ooty, activities have begun to occur in other Indian cities as well, including

Bangalore, Belgaum, Chennai, Cochin, Coimbatore, Manipal, and Trichur.

#### FUTURE SCOPE

Future scope of Clinical pharmacy seems to be bright in India. Since many companies, including MNCs, are investing in Clinical Trials/Research, Pharmacovigilance and Drug Information. However, in order to understand the need for implementation and career growth in the field of clinical pharmacy in India, one must also understand the current state of pharmacy education and practice here. For the most part, these focal areas still exist according to the traditional Indian model. Therefore, it's clear, in order to achieve excellence in our Clinical Pharmacy education we need to reframe our content and duration of the degree courses and arrange adequate training for our upcoming generations of clinical pharmacists rather than implementation of traditional knowledge of pharmacy, and also, a good investment by related companies or business giants.

#### CONCLUSION

Clinical pharmacy will emphasize to raise the standard of health care delivery to human life. It will promote the rationale use of medicine including allopathy and traditional medicine. In order to achieve specificity to vulnerable disease as well to assess the pathological condition accurately and this will drastically reduce the financial burden. Clinical pharmacist will focus to ensure to achieve the well-being health of human by pharmacotherapy with minimal adverse effects.

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