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## Clinical Pharmacy Clerkship in Pakistan: A leap from paper to practice

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**Key Words:** Pakistan, clinical pharmacy, clerkship, Karachi, Pharm.D

### Abstract:

*This is the first article of its type to describe the advances taking place in clinical pharmacy education in Pakistan. The Pharmacy Council of Pakistan has developed a five-year Pharm.D program to replace the four-year B.Pharm degree. Completing clinical pharmacy clerkships is a prerequisite for receiving the Pharm.D degree. To meet this requirement, Ziauddin College of Pharmacy has developed a specialized clerkship program for its 4<sup>th</sup> and 5<sup>th</sup> year students. The College is fortunate to be linked with well developed tertiary care hospitals at three prime locations in the metropolitan city of Karachi, which provides opportunity for the students to gain exposure to real life situations and work with patients. The article presents an account of the efforts taken for development of the clinical pharmacy clerkship program, the problems encountered during its development, and the main outcomes of a clerkship program.*

### Introducing Pharm.D in Pakistan

Health care cannot be adequately provided without medicines and a competent pharmacy workforce to supply them [1-3]. All over the world efforts are being made to change the scope of hospital pharmacy by moving the hospital pharmacists from dispensing counters into the wards and clinics. Relatedly, there is an increasing trend in developing countries such as Pakistan, India, and Bangladesh towards Doctor of Pharmacy (Pharm.D) level education. In Pakistan, approximately 2587 pharmacists graduate every year. More than 50% work in the pharmaceutical industry and less than 25% actually work in a hospital or community pharmacy [4-7]. This number is not sufficient to provide optimal health care delivery to the population in hospital and community settings.

Focusing mainly on clinical pharmacy, the Pharmacy Council and Higher Education Commission of Pakistan permitted few universities to start a five year Pharm.D program in 2003. There are a number of reasons for changing to a more clinical degree, including more complex drugs coming to market, an increasing aging population with more diseases and conditions requiring more complex therapies, and the growth in tertiary care and hospital-based care. There is also a greater threat of litigation for the inappropriate use of medicine. In addition, much more attention has been given to the magnitude of medication-related problems, highlighting the need for interventions to improve patient outcomes and

safety and to improve cost effectiveness. Since 2003 there has been a shift in education from the traditional role of pharmacist in industry and marketing, which have been Pakistan's strengths, towards community and clinical pharmacy.

### Pharm. D Program at Ziauddin College of Pharmacy (ZCP)

Ziauddin College of Pharmacy (a constituent of Ziauddin University) started its Pharm.D program in 2005 and is now one of the recognized pharmacy institutions in Pakistan. With the help of this report, we would like to inform readers about the efforts made to increase drug knowledge in Pharm.D students of Ziauddin College of Pharmacy. ZCP has many new educational activities as part of the curriculum. These educational activities include lectures, problem based learning (PBL), case studies, training and clerkships in hospital and community pharmacy and undergraduate research projects in the final year. The aim and objectives of these activities are to prepare our students as lifelong self learners, increase their drug knowledge, develop the skills to work in hospital setting, and emphasize a problem solving approach in real life scenarios.

### Clinical Pharmacy Clerkship Program at Ziauddin College of Pharmacy (ZCP)

Since 2005, ZCP has been connected with well established tertiary health care hospitals with coverage of various socio-economic backgrounds at three different and prime locations in the metropolitan city of Karachi. Dr. Asim Hussain, the chancellor of Ziauddin University and the chairman of Dr. Ziauddin group of hospitals, has been the main driving force for the development of pharmacy services in Ziauddin hospitals and also for the development of clinical pharmacy

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clerkships for the ZCP students. As a medical doctor, Dr. Hussain realizes the importance of pharmacists in health care delivery.

We started developing the clinical pharmacy clerkship program in the 2007. By the end of 2007, we had established the first organized and developed clinical pharmacy clerkship program in Karachi and even in Pakistan. This clerkship program was approved by all the concerned authorities at the three campuses of the hospital and at the university. Like other developing countries, the hospital pharmacy department at Dr. Ziauddin hospitals had a deficit of trained practicing clinical pharmacists which could facilitate the students. This problem was initially overcome by assigning different academic staff having hospital and clinical pharmacy experience within the country or abroad and afterwards by hiring trained staff in the pharmacy departments of a hospital.

As a requirement for the fulfillment of the Pharm.D degree, students have to complete their clinical pharmacy clerkships during the 4<sup>th</sup> and 5<sup>th</sup> year Pharm. D. The students of the first Pharm. D cohort started their clerkship in February 2008. We are very thankful to the chief pharmacist, manager pharmacies, medical superintendent, chief operating officer, and deputy medical director of the three campuses of Dr. Ziauddin Hospital for providing our students with a detailed orientation about the hospital, location of different wards, and sections of pharmacy at the College before commencement of clerkship program. A detailed protocol of the program was established including code of conduct, program objectives, and schedule of the clerkships.

The students were divided into three groups and placed at three campuses. Every student had an opportunity to work at all three campuses during the two years. Each student had to complete 75 credit hours of clerkship in each semester and 300 credit hours by the end of the final year. For this purpose, each student had to go to one of the three campuses on 15 Saturdays during 17 weeks of semester. The first week was scheduled for the orientation and introduction of the clerkship protocols to the students and in the last week of the semester, the students had to submit their log book and clerkship report.

Every student had to maintain a log book with 15-20 case studies with an emphasis on discussion of the rational use of drugs. We provided a patient profile format to the students to collect all the information which would be needed in maintaining the log book.

### Challenges

During their stay in the wards and during the collection of patient profiles, students faced difficulty in interpretation of the abbreviations used by the physicians. To resolve this problem, they were provided a brief list of abbreviations prepared specially for them by the hospital clinical pharmacist.

A detailed check list of pharmacy services was also provided to the students to observe different activities performed in pharmacy. Since the clerkships were carried out during the academic period, the first semester was more like an introductory session for the students where they could observe the hospital setting and system, working environment, and wards' and pharmacy's activities. In the first semester, the students were given lectures by the chief pharmacist, hospital clinical pharmacist, purchase officer, the intravenous additives personnel, and the pharmacist in charge. These lectures were of great value for the students in upcoming semesters.

By the end of first semester, these students had developed a familiarity with the medical staff, doctors, and consultants, they could interpret the medical abbreviations, and they had gained knowledge about the medication order system for inpatients and the dispensing of medicines from the pharmacy. In the second semester, the students were more enthusiastic and confident in their hospital clerkships. In this semester, they were involved in clinical rounds with the senior pharmacy staff and clinical pharmacist at the hospital and the on-round consultants at each campus. In this regard, we had to pay more attention to these students to improve their knowledge about disease, drugs, and drug related problems such as side effects, adverse drug reactions, contraindications, and drug-drug interactions. For this purpose, one-hour tutorial sessions were scheduled to discuss different case studies with them during each academic week along with the regular lectures on clinical pharmacy. The students were also taught how to utilize different sources of drug information such as reference books, drug manuals, and different journals and websites. We received feedback from the hospital pharmacy staff, physicians, and medical staff. All of them were of the opinion that this clerkship was increasing interaction between pharmacists, physicians, and nurses and that it was producing qualified and trained pharmacists whose presence in wards was assisting the prescribing physicians and helping increase the rational use of drugs.

In the final professional year, students were given research projects to be completed in groups of three. Each group was

supervised by academic staff at of Ziauddin College of Pharmacy (ZCP) and pharmacy staff at Ziauddin Hospital Pharmacy (ZHP). Students were assisted in the use of scientific methods and in presentation in the form of a short dissertation. At the end of final semester, each group of students gave a brief presentation of their research work and this presentation was examined by their research supervisor and course director. Finally they completed an oral examination given by internal (i.e. course director and project supervisor) and external examiners with expertise in the field of clinical pharmacy.

### **Main Outcomes of Clinical Pharmacy Clerkship**

The first clinical pharmacy clerkships were started in 2008 and successfully completed in 2009. During these two years (2008-2009), we learned many lessons. There were some disciplinary problems among students in the initial weeks of clerkship because they were not familiar with the hospital environment and did not realize its sensitivity. But, with the passage of time, students started taking it more seriously and sensibly. The students learned to counsel patients, specifically when working at the ambulatory care pharmacy. They learned about dispensing of drugs on the basis of cost effectiveness using information from a course on Pharmacoeconomics from their 5<sup>th</sup> year. As an assignment, students developed a form to report adverse drug events for Ziauddin Hospital. The aim of Ziauddin University is to prepare its students as self and lifelong learners. Through this clerkship the students learned to utilize different sources of drug information and to disseminate this information to either physicians or nurses in a professional manner. The experience also enabled students to look into disease and drug related problems more critically and find strategies to resolve these problems.

This clerkship enabled our students to compete with the students of other universities and institutions in the field of hospital and clinical pharmacy and in helping students get jobs outside Pakistan, such as in the Middle East. A pharmacy practice residency program was designed and developed after successful completion of the first course of clerkships. Many of these graduates joined different campuses of Ziauddin Hospital as resident pharmacists, receiving a

permanent job after. Some of the students received admission to masters programs in clinical pharmacy in different countries on the basis of this clerkship and their undergraduate thesis reports.

This clerkship has also increased the awareness in the society about pharmacy practice and services provided at Dr. Ziauddin Hospitals. Many Pharmacy institutes of Karachi are now collaborating with Ziauddin College of Pharmacy for the conduct of clinical pharmacy clerkships for their students at Dr. Ziauddin Hospitals.

### **Context and Importance**

Pharmacists in Pakistan are undergoing an "identity crisis" with almost 90% of pharmacy graduates leaving Pakistan soon after getting their degree. Reasons contributing to the exit, include a shortage of established hospital pharmacy services in the country, barriers to effective pharmacy practice, lack of dispensing separation, and lack of standard practice guidelines [5, 9]. A difficulty in continued growth of these clerkship programs is the lack of academic and clinical training capacity in many institutions. The shortage of preceptors is a global problem. Even in the United States, there are difficulties in providing adequate numbers of hospital-based preceptors [9]. In order for practitioners to be successful and effective preceptors, they need time to receive appropriate training and preparation, which then becomes a staffing and human resources issue [4]. Many times the students' placement is dependent on the number of hospital pharmacists who can play a role as preceptors.

### **Conclusion**

Although the pharmacy profession in Pakistan is evolving after the introduction of the Pharm. D in this country, the health care system of Pakistan has yet to recognize the pharmacist's role in health care provision. Their role should be focused more towards management of drug therapy than dispensing of drugs. We wish that clerkship programs may not remain confined with ZCP, but that other institutions will also develop clerkship programs to provide the society with competent health care providers, especially in a time when hospital patient volumes and related pharmacy service demands are continuing to grow.

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