



**PRACTICING HOSPITAL PHARMACISTS MENTORING PHARMACY STUDENTS
IN CLINICAL PHARMACY: AN EXPERIENCE FROM
DOW UNIVERSITY OF HEALTH SCIENCES (DUHS) PAKISTAN**

Shah Syed Shaukat Ali Muttaqi*, Sumbul Shamim, Mustapha Omer
Dow College of Pharmacy, Dow University of Health Sciences, Karachi, Pakistan

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*Email: shaukat_muttaqi@yahoo.com

ABSTRACT

Pharmacy education has been an important and integral part of the education system of a country. Pharmacy education in Pakistan has grown significantly through the ages and there are quite a few number of pharmacy schools providing education to the students. The academia and practice had always been disjointed in the country. Dow College of Pharmacy (DCOP) at DUHS was established in the year 2008, with the vision to provide exemplary pharmacy education to the students and bridging the gap between education and practice. The intervention was made by the college through appointing practicing faculty members, working at Dow University Hospital as clinical pharmacists and teaching clinical pharmacy to the students at DCOP. Since no other pharmacy school in the country had jointly appointed faculty of pharmacy, this intervention provided opportunity to DCOP to produce quality clinical pharmacists for the country.

Under the supervision of clinical pharmacist pharmacy students were regularly rotated to hospital and were trained to take medication history, review patient profiles, gather & interpret laboratory data, and identifying potential drug related problems. Students were required to present their findings and interventions in patient profile as case studies to clinical pharmacists and interactive discussions were carried out by the mentors to enhance their clinical skills. The experiment of mentoring pharmacy students through practicing clinical pharmacist proved to be an efficient tool to develop and strengthen clinical skills of pharmacy graduates and could serve as a role model for other pharmacy schools in the country.

KEY WORDS Clinical pharmacist, pharmacy education, practicing faculty, Pharmacy students

INTRODUCTION

Healthcare education of the county plays a significant role in the development of efficient health care system and also imparts fundamental values and norms to the care providers leading to a healthy society. Health care education has developed a great deal in Pakistan over a period of time, starting from two medical colleges in 1947 leading to 68 medical and dental colleges currently operating in the country with a breakup of around 50% public and private sector colleges. Despite scarcity of health care professionals in the country the number of registered doctors has increased exponentially from 78 in 1947 to more than 113,700 doctors, 8700 dentists, 21,800 specialist doctors and 540 specialist dentists¹.

With this remarkable increment in the numbers of doctors, nursing professionals has also grown with around 109 schools of nursing (76 in public and 33 in private sector), 141 schools of midwifery, 26 public health schools and 7 colleges of nursing. More than 46,000 nurses and 4500 Lady Health Visitors (LHVs) are registered with Pakistan Nursing Council (PNC)². The nursing services are backed up with a workforce of around 95,000 lady health workers currently practicing in the country³. In addition to that, quite recently the program to deploy 12,000 community midwives (CMWs) in the rural areas has been initiated⁴.

Globally pharmacy education (under and post graduate) has been designed to equip pharmacists with the knowledge and skills to deal with the safe, effective and judicious use of drugs, and to provide primary & preventative medical care along with health promotion. Pharmacy education also focuses towards drug development and research in the field of pharmacy⁵.

Pharmacy education in Pakistan has grown significantly through the ages. In 1948 University of Punjab was the first institution to develop pharmacy department in Pakistan. Initially the degree program was a three years bachelor

degree, which was extended to four years B Pharm in 1980s. At that particular point main focus of pharmacy education in Pakistan was to fulfill the needs of pharmaceutical manufacturers in the country⁶.

Toward the end of year 2000 there were only ten public sector universities offering pharmacy education in the country, but with the increase in demand of pharmacists there was a significant increase in the number of pharmacy schools. Current statistics shows that there are around 28 pharmacy schools operating in Pakistan, producing over 2500 graduate pharmacists per annum and roughly around 8500 registered pharmacists are practicing in the country. The number of pharmacy schools and pharmacists are on rise due to demand-supply gap in the industry⁷.

Quite recently to fulfill the international standards, the four years B-Pharm Program was upgraded to five years Doctor of Pharmacy (Pharm-D) program. The main focus was to impart clinical knowledge and skills to the pharmacists and highlight the role and importance of clinical pharmacist to the society. With this recent transformation of B-Pharm to Pharm-D degree, students started inclining towards clinical pharmacy practice and patient care and the drift is under way from pharmaceutical industries as the main consumers to the hospitals and community pharmacies.

Pharmacy schools play a pivotal in providing clinical pharmacy education, and updating the pharmaceutical care concepts of the students and educating ways to integrate that knowledge to direct patient care, especially in hospital and community settings⁸.

Suitable teaching methods need to be designed and develop in order to enable pharmacy students learn clinical pharmacy and pharmaceutical care concepts effectively and exposure to practice sites is also necessary to teach application of these concepts.⁹ As opposed to the current class room teachings, sufficient credit hours of the pharmacy student needs to be spent at practice sites during there early studies in order to

empower them with the knowledge and skills necessary to interact with the patients and stakeholders. A survey of pharmacy school faculty suggested use of practice sites and real patients and practitioners to assist student teaching to get student oriented to the actual pharmacy practice.¹⁰

Pharmacy schools in Pakistan need to provide practice sites and trained practicing clinical pharmacists to provide high standard clinical education and practice exposure to the students in order to keep our pharmacists abreast to the changing needs of the market.

METHOD

The Dow College of Pharmacy (DCOP) at Dow University of Health Sciences (DUHS) was established in the year 2008, with the vision to provide exemplary pharmacy education to students, and bridge the gap between academia and practice existing in the country through integrating both. Dow College of Pharmacy focused its efforts towards producing pharmacists, meeting the current and forthcoming needs of the profession. The infrastructure, facilities, laboratories, libraries and learning centers provided sufficient support to teaching staff to impart quality education to the students.

The college was housed with 30 qualified and experienced teaching faculty members in various disciplines of pharmacy including clinical pharmacy practice. Unlike other schools of pharmacies, DCOP hired two practicing clinical pharmacists with joint appointment at hospital and pharmacy. Their primary responsibilities were divided into pharmacy related activities at hospital and teaching subjects related to clinical pharmacy and pharmaceutical care concepts. These practicing pharmacists were also made responsible to supervise and mentor the clinical rotation / placements of pharmacy students to a 500 bed Dow University Hospital located at the same campus.

This attachment of pharmacy school to the hospital, and mentoring of students by practicing clinical pharmacists moved DCOP to a strategic position where quality clinical pharmacists could be produced for the country.

The fourth and final year students of Pharm-D were regularly rotated to the hospital for clinical pharmacy practice exposure and students were mentored in the following areas;

- Taking patient medical and medication history based on the standardized formats
- Review of patient profiles and records including; review of medication charts, patient progress notes, observation charts, nursing charts etc
- Gathering and interpretation of patient laboratory information and justifying the therapy based on these parameters
- Identifying drug related problems and intervening medication orders based on; checking of allergies, previous drug reactions, dose adjustments, dosing interval modifications, dosage form changes, renal and hepatic dose adjustments, therapeutic substitutions etc.

The students were divided into groups of five, each group was tagged to an admitted patient to review patient profiles and identify possible drug related problems and propose possible resolutions and pharmacist interventions, which were then discussed and verified by the clinical pharmacist of

that area and interventions were proposed to the duty doctors and/or admitting physician with possible alterations to the therapy.

Every alternate week students were asked to present their cases in the class room where discussions were made related to pharmaceutical care of the patients, along with discussions on pharmacotherapy and management. During the discussions emphasis was made towards problem based learning and identification of drug related problems through relating patient history, laboratory data and current and previous medication profile. Pharmacist recommendations and interventions were also discussed with the students for each case.

Where needed, in addition to the class room discussions students were asked to gather more information and follow particular patient under the supervision of clinical pharmacist so that all the possible learning objectives are achieved.

RESULTS

The students were given the extensive training for a period of six months and were evaluated for their clinical pharmacy skills through practical examination and case studies. It was observed that students were able to demonstrate sufficient skills in, taking history of patient against structured format; reviewing medication charts and extracting relevant laboratory and radiological examination to correlate with patient current medical condition and therapy; prescription review for appropriate dose, route, frequency, duration, renal adjustments etc; identification of drug interactions and duplicate therapies etc.

CONCLUSION

The experiment of mentoring pharmacy students by the help of practicing clinical pharmacist, and placing pharmacy students to the hospital for practice exposure proved to be an efficient tool to develop and strengthen clinical skills of pharmacy graduates. It is recommended that pharmacy schools should aspire for practice sites and engage practicing faculty in the teaching of pharmacy graduates so that the students should be more equipped to cater the clinical needs of the society and cope with the changing demand of pharmacy profession in the country.

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