

## Editorial

# Transforming pharmacy education and practice for the new century

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Pharmacy education has evolved from the outdated changing 5 to 4 year dispensing pharmacy program that focus on the medicines value the compounding and dispensing to patient-oriented pharmacy program (Pharm D) that focus on patient, experiential learning (practicum courses), evidence-based program that does foster critical thinking, and clinical reasoning skills [1] and improving patient care.

Due to the ongoing progression of the profession, the only program now is accredited by the recognized

accreditation body in North America is the patient-focused pharmacy program (Pharm D) [2].

The main pillars of pharmacy education and practice (**Figure 1**) rely on establishing non-profit national pharmacy accreditation authority or council, such as the one in Canada (Canadian Council for Accreditation of Pharmacy Programs) [3] or in the United States of America which is called Accreditation Council for Pharmacy Education (Accreditation Council for Pharmacy Education, “n.d.” [4].

## Four pillars of relevant pharmacy education



**Figure 1:** Four pillars of pharmacy education (EAFP, 2018)

The role of this accreditation framework in pharmacy is the recognition of pharmacy program meeting certain standards [5]. Therefore, to satisfy the accrediting agency standards or competencies, the pharmacy institutions modify their pharmacy curricula or will lose the accreditation award hence the quality of pharmacy education and practice. This accreditation body is composed of representatives appointed by the association of faculties of pharmacy, association of pharmacists and association of technicians etc. What is the importance of this authority? Without such authority one can hardly find high quality pharmacy program that graduate competent (knowledgeable, skilled with good ability to perform assigned tasks). What is the role(s) of this authority? Based on certain standards (or competencies), this authority can approve or accredit any pharmacy programs, secondly it can assess pharmacist's knowledge and skills through examination like clinical skills examinations with multiple choice questions. The accrediting pharmacy council ensures the high quality of pharmacy education and practice. Therefore, pharmacists exhibit pharmaceutical knowledge, skills and abilities in accordance with standards set by the accrediting agency. *"We teach a subject not to produce little living librarians on the subject, but rather to get a student to think... for himself, to consider matters... to take parts in the process of knowledge getting. Knowing is a process not a product", Jerome Bruner, American psychologist.*

Over the past 30 years, the profession of pharmacy has evolved from a dispensing model in which the pharmacy characterized as a medication trade [6] to more patient-focus model [7]. The traditional pharmacy curricula have been industrial and product oriented. The pharmacy education was meeting the need and expectation of the society, the society needed a pharmacist who was in a medication trade just reading and dispensing medications. Therefore, the mission or objective of the undergraduate pharmacy institution is not to graduate a researcher or clinical practice pharmacist but dispensing pharmacists, serving the needs and expectations of the society at that time [8]. Accordingly, the pharmacy curriculum emphasized on issuing prescriptions and delivering drugs. The instructor uses chalkboards as an instructional technology and standing at the front of classroom imparting knowledge to learners [4]. This type of education does not depend on active learning but in passive learning which may lead in part to low classroom attendance and poor student academic achievement and does not satisfy the new century patients and society needs. The lecture, and the laboratory are the most widely

used teaching techniques provide student with pharmaceutical knowledge in a passive approach while the assessment strategy is the essay or multiple-choice questions which rely on memorization, resulting in high level of student absenteeism, low exam performance and low student academic achievement [4]. So, the pharmacy education was heavily based on passive learning and rote memorization. Student memorizes information which then in final assessment student can retrieve what he or she memorizes. In short, this traditional pharmacy education where the instructor imparts the knowledge through passive learning and then the student assessed on memorization is no longer meets the needs and expectations of the society. Pharmacy education and pharmacy practice focus more on medications while put no emphasis on clinically oriented or patient focus pharmacy graduate that promotes patient care [4].

Patient focus pharmacy curriculum (Pharm D) in the light of evolving pharmacy education and practice to meet the needs and expectations of the society, the accreditation authority facilitates the pharmacy curriculum reconstruction to graduate competent pharmacists [4]. Which came first pharmacy education or pharmacy practice? The needs and expectations of the patient or the society determines the knowledge, skills and the ability of the pharmacists to provide patient care. Consequently, the accreditation authority emphasizes that pharmacy program provides students with pharmaceutical knowledge and critical thinking, problem solving and decision making skills to improve patient care [4]. For that reason, education always addresses the gap in pharmacy practice; the skills and knowledge and research ability, the pharmacist's needs to meeting health needs of the population [9]. Therefore, to hone student with the pharmaceutical and medical knowledge, and research skills, the pharmacy institution utilizes different active teaching methods and multiple assessment methods to ensure the student acquired the target learning outcomes. The teaching approach, in many patient-oriented pharmacy programs the experiential learning (i.e., 42 weeks of experiential learning) is incorporated in pharmacy curriculum. The practice experiences is the best way to prepare student with knowledge, skills and abilities to deal with patient needs. To prepare student for real life scenarios, practice training utilizes case-based scenarios [10], role playing, mannequin, or simulation of actual patient-focus pharmacy job. In addition, to improve student asking questions and answering, developing critical thinking and problem solving, Socratic Method of teaching (cooperative argumentative dialogue) is

employed in innovative curriculum [10]. For short, incorporating experiential learning in pharmacy curriculum improves quality of pharmacy education and practice. Pharmacist equipped with knowledge and skills can be in communication with health team (team-based education) to participate in patient counselling, diseases prevention and health promotion. Methods of assessment, pharmacy education and practice becomes more patient focused profession, with more emphasis on problem-based teaching and competency [11]. The traditional testing tools, such as short essay or multiple choices are no longer valid or reliable to assess the skills (communication, research or clinical skills) and abilities of the patient-focused pharmacist. Oral tests, multiple choice questions, short essay and the Objective Structured Clinical Examination (OSCE) are testing tool used to evaluate not only the clinical skills but also the facts memorization, application, analysis and monitoring of narrow therapeutic window medications [11].

Knowledge, student uses evidence-based sources. To improve communication and-counselling on patient care, student know how to use evidence-based medical literature and clinical trial. Pharmacist can use this evidence-based knowledge to improve patient care. In training, student are asked to use evidence knowledge to answer questions posed by the patient (e.g., how long does it take to see the effect of the medication? how effective is the drug on my disease state?). Therefore, nobody will challenge the applied knowledge gained either from evidence based medical literature or clinical trials in individual patient care [10]. Other skills, with acquiring the pharmaceutical knowledge, critical thinking and problem solving in developing new medication or designing clinical trials [12], clinical pharmacist looks at specific problem surrounding administration of medications to patient. For example, clinical or hospital pharmacist should be trained to identify and differentiate sounds related to heart or lung, perform cardiopulmonary resuscitation (CPR) and safely and effectively operate equipment, i.e., glucose monitoring, blood pressure measurement, peak flow meter. In addition to the pharmaceutical knowledge and skills, in patient focused curriculum the pharmacist should be competent researcher. So, what is research? Research is a creative way of inquiry that done in a systemic basis in order to increase the knowledge and use this knowledge to devise new applications [9]. As researchers, many pharmacists are not trained to conduct research. Pharmacist faces challenge in conducting pharmacy practice research to improve patient care, for example it is important that

pharmacist understands how to design pharmacy practice research questions (or problems), methodology (qualitative or quantitative research), collect and analyze data and to present and discuss the result [13]. The student should be trained to conduct quantitative research called intervention (experiment) and qualitative research (non-intervention) such as survey and questionnaires [9]. To sum up, to meet the demands of the new millennium, pharmacy programs should incorporate courses that sharpen research skills of the pharmacists.

**In conclusion**, traditional pharmacy programs (schools) are no longer considered to build future pharmacy graduate. Pharmacy education and practice continue to evolve from traditional to recent advancement. To catch up with recent advance in pharmacy education and practice and to provide quality patient care, it is very imperative that countries have accreditation pharmacy council. The accreditation pharmacy council ensures that pharmacy programs restructuring the pharmacy curriculum to clinically focused curriculum that provides students with knowledge, research skills and abilities through active learning (i.e., experiential learning) and real-life clinical scenarios. These are assessed using recent assessment strategies such as multiple-choice questions, oral interviews, short essay and Objective Structured Clinical Examinations which is timed simulation of clinical scenarios.

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### Competing interests

The author declares no competing interest.

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### Ethical issues

Including plagiarism, Informed Consent, data fabrication or falsification and double publication or submission have completely been observed by author.

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