# LETTERS

## Opportunities for Preceptor Development in Literature Evaluation Skills

Preceptors play an important role in the education of pharmacy students. According to the Accreditation Council for Pharmacy Education (ACPE) accreditation standards effective in 2007, approximately one third of the curriculum should be devoted to experiential education (5% to introductory experiences and 25% to advanced experiences).[1] To meet this demand, colleges of pharmacy must depend on a large number of volunteer preceptors who have had a wide variation in knowledge and practice experience. Since preceptors serve as the primary link between students' didactic education and their entrance into the practice of pharmacy, it is vital that preceptors are aware of the many outcomes that are expected of students, including components of their curriculum.

Skills necessary to the practice of evidence-based pharmacy such as research design and literature evaluation are required components of the doctor of pharmacy curriculum. According to both the ACPE accreditation standards and the Center for Advancement of Pharmacy Education (CAPE) outcomes statements, students are expected to be exposed to practical applications of primary literature in both the classroom and in practice.[1,2] Furthermore, experiential education must "integrate, apply, reinforce, and advance the knowledge, skills, attitudes, and values developed through the other components of the curriculum."[1] Since literature evaluation skills are necessary components of the curriculum, preceptors should be able to provide supervision of the student's development in these areas while on any rotation.

In 2003, a cross-sectional survey instrument was mailed to randomly selected pharmacists in Illinois.[3] Pharmacists were asked to report their level of training in drug literature evaluation and their use of computerized bibliographic databases (eg, *MEDLINE*/*PubMed*). Of the 322 respondents, 131 (41%) indicated that they served as preceptors for pharmacy students. Of these preceptors, only 59% (n = 77) reported receiving any formal training in literature search strategy, and only 66% (n = 86) reported any formal training in drug literature evaluation. Less than two thirds (61%, n = 80) of preceptors indicated that they had performed a primary literature search with a database such as *PubMed* within the last year. Preceptors who had received formal training in literature search strategy were much more likely to have performed a primary literature search than those without formal training (81% v. 34%, $p < 0.001$). While 75% (n = 98) of preceptors indicated having access to the Internet at work, only two thirds (66%, n = 86) reported having access to *PubMed* at work, despite availability of *PubMed* to the public on the Internet. Access to the Internet varied based on practice site. Community preceptors were much less likely to have access to the Internet at work than preceptors in other practice settings (52% v. 90%, $p < 0.001$).

Since more than a third of preceptors have received no formal training in literature search strategy and drug literature evaluation, it is imperative that colleges take steps necessary to prepare all of their preceptors to effectively supervise student development in this area. ACPE accreditation guidelines call for colleges to provide for the ongoing training and development of their preceptors (Guideline 14.1).[1] In the design of such training programs, colleges should consider literature search strategy and drug literature evaluation skills as a priority.

While training programs may help to close this gap, the integration of these skills into evidence-based pharmacy across practice settings is a multifaceted problem. There are barriers to the implementation of evidence-based practice in pharmacy, including resource constraints that keep schools from delivering and preceptors from attending training programs. Pharmacy practice settings vary in their support for access to resources necessary to apply evidence-based skills to patient care. ACPE standards and guidelines call for colleges to establish minimum quality criteria for pharmacy practice experiences.[3] In the development of these quality criteria, colleges should consider access to the Internet and *PubMed* in selection of experiential education sites. To address our shared vision for the future of pharmacy, colleges and the practice community must work together in an effort to expand evidence-based practice.

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## Pakistan's National University of Pharmaceutical Sciences

Pharmacist's role in the healthcare system is rising with the development of new drugs, emergence of new resistant microbes, and the changes in healthcare delivery systems. With increasing healthcare costs, pharmacists' role in providing cost effective medicines is becoming vital. Pharmacists are the third largest healthcare professional group in the world[1] but they still have a long way to contribute a significant role in the healthcare milieu of Pakistan.

With the current reforms in higher education in Pakistan (refer to http://www.jang.com.pk/thenews/apr2006-daily/18-04-2006/metro/i14.htm for details) the number of pharmacy educational institutions has reached 21 and the list is still expanding. The World Health Organization's (WHO's) Eastern Mediterranean Regional Office (EMRO) web site shows the expanding number of pharmacy schools, ranging from remote areas in the north such as Malakand to the university colleges in Lahore and Islamabad.[2] According to an estimate, there are 6000 pharmacists in the country while the WHO recommends a pharmacist/population ratio of 1:2000 for optimal healthcare delivery.[3]

The country needs 75,000 pharmacists for a population of 150,000,000; a target that is still far from being reached. Perhaps building new pharmacy institutes is the need of the hour; however, they face the serious challenges posed by the country's infrastructure and a shortage of trained staff, but above all they suffer from the lack of a comprehensive pharmaceutical education policy and clear objectives to aim for. Historically, pharmacists have been produced in the country for the pharmaceutical industry; a few have worked in regulatory authorities, while a considerable number has gone overseas for work. The foreign segment has been so strong that this has been termed perhaps the sole reason of turning a bachelor of pharmacy degree program (4 years) into the 5-year PharmD program.[4] However, how beneficial it would be to use taxpayers' money to produce pharmacists for other countries is still controversial. Although developed countries benefit from the immigration of highly skilled personnel, evidence of reverse benefits flowing back to source nations is far from convincing.[5] While producing more pharmacists is equally important, it is also imperative that, with the increasing number, one expects a change in the medicine use situation in the country. There must be some improvements in how drugs are manufactured, distributed, sold, and used. There are also some questions that need answers before embarking upon the zealous task of producing more pharmacists. Will this increment be useful to improve the rational drug use and pharmacy practice in the country? Will they be able to document and analyze statistics of medicine use? Will they be able to suggest reforms for the financing and supply management system of pharmaceuticals? Can they be enthusiastic researchers aiming to unearth empirical data for the problems such as counterfeit drugs and the issues of safety and efficacy? Other than just producing ''me-too'' drugs, are we going to produce pharmacists of such caliber that they can make full use of the country's flora and fauna and turn them into biotechnological discoveries? Can these pharmacists be envisioned to analyze the issues such as separating roles of pharmacists and physicians in the country? Will they be able to suggest reforms for the country's existing drug policy laws and work for the country's proposed new drug regulatory authority? With the increasing growth of the pharmaceutical industry, will they be able to analyze the conflicting interests between drug policy and industrial policy of Pakistan? The list goes on and perhaps the answers to many of these questions are vital to the future of the healthcare system in Pakistan. However, neither the current curriculum nor the healthcare environment and laws permit pharmacists to achieve these objectives.[4]

The problems of pharmacy education and practice are interwoven and multifaceted, and some are embedded in policymakers' perceptions of pharmacists and the pharmacy profession as a whole. Pharmacists are considered similar to chemists; someone who is only involved in laboratory work or in the pharmaceutical industry. A large number of the pharmacists who work in the marketing facet of the pharmaceutical industry are also considered a replica of medical representatives. They are never seen as healthcare professionals but as paramedical staff instead. A WHO's EMRO report also supports this view: it describes that in Pakistan, health human resources planning is highly biased towards the production of high-quality medical graduates, with an inadequate number of paramedical personnel being produced.[6] Though it does not discuss the shortcomings of allied healthcare professionals such as pharmacists, in view of the current and past situation, the same can be assumed for this cadre. Furthermore, it is pathetic that a recent health policy document ''The Gateway Paper'' also defines pharmacists as paramedical staff.[7]

It is also noteworthy how ''pharmaceuticals'' are viewed in scientific circles. ''Pharmaceuticals'' are considered one of the focal areas for development under the vision of the Higher Education Commission (HEC). It states, ''Pakistan has a rich and diverse environment,

suitable for growth of many types of medicinal plants whose products may be synthesized for the production of pharmaceuticals."[8] The Ministry of Science and Technology shares the same view; Pakistan's report, presented during the ninth session of the Commission on Science & Technology for Development (CSTD) in Geneva named pharmaceuticals as one of the priority areas for achieving National Development Goals. Definitely turning indigenous natural resources into modern medicines must be applauded and that can be a marker of scientific and industrial achievement. However, it is very obvious that in these policies "Pharmaceuticals" are just seen as isolated chemical entities and their human consumption segment has been ignored, as a result, the research on their use, distribution, and regulation has not even been mentioned in policy documents.

So the question of how to discuss, debate and resolve these issues at the macro level arises. Hence, this is the time for the Ministry of Health (MoH), along with the Higher Education Commission (HEC), to commission a working group that can work on pharmaceutical education, research, practice and policy reforms. If the government is keen on developing the pharmaceutical sector then it has to come up with something more comprehensive and viable in nature. Developing new pharmacy departments across the country with the same academic mindset will do little to improve the situation at the ground level. There is a need for a referral and resource center in the form of a national university, which can guide and interlink all important players on pharmaceuticals such as government bodies, pharmaceutical industry, pharmacy and healthcare institutions, and civil society organizations. As the government is keen to establish new universities in the field of engineering, Internet technology, and medicine, the situation demands the same for a full-fledge national university in the pharmaceutical sector. It is the patient's right to receive, and perhaps, demand safe medicines and drugs.

An overall plan to build new resources is also inevitable as the Higher Education Commission under its Foreign Faculty Hiring Programme has not been very successful in recruiting experts in the field of pharmaceutical sciences.[10] Since its inception, it has only attracted a few pharmacologists and one pharmacokineticist from overseas.[10]

Another compelling reason for training new researchers is perhaps the dismal performance of pharmaceutical institutions in terms of publishing and documenting research. A literature review of pharmacy and science databases shows very few active pharmaceutical researchers in the country. Much of the best work on pharmacology, pharmaceutical chemistry, public health pharmacy, and pharmaceutical policy has been done primarily by The Aga Khan University, Karachi, Hussain Ebrahim Jamal (HEJ) Institute of Chemistry, Karachi, and The Network for Consumer Protection, Islamabad.[11-13]

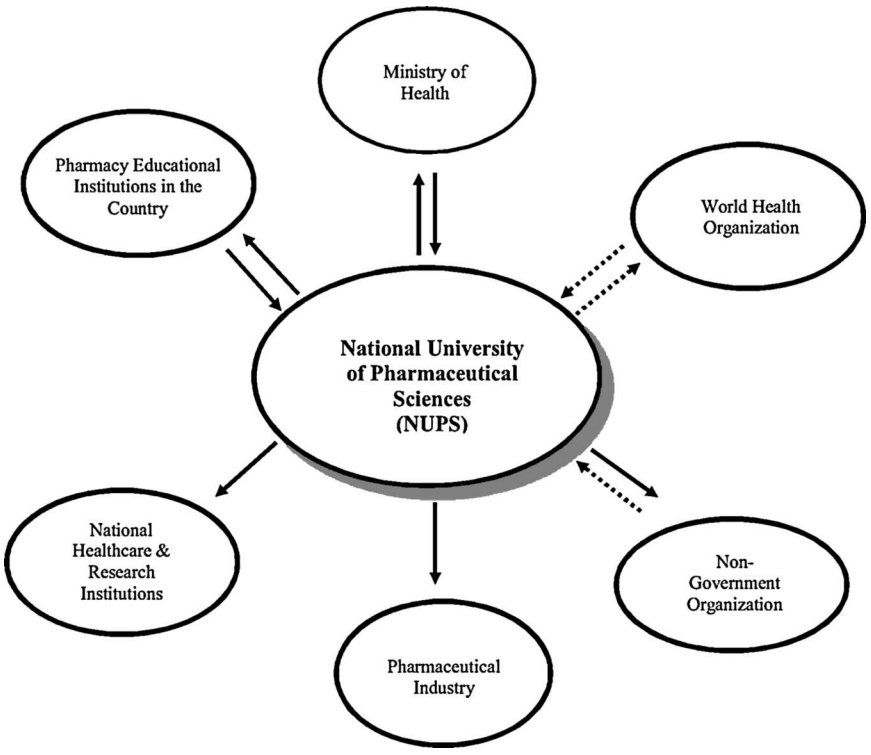


Figure 1. National University of Pharmaceutical Sciences.

With severe shortages of human resources in almost all areas of pharmaceutical sciences, The National University of Pharmaceutical Sciences (NUPS) can determine priority areas for sustainable research. Some of these issues could be the evaluation of current PharmD programmes, assessment of the differences between the practice of pharmacists and pharmacy assistants, and also the implementation of pharmaceutical care. Very little or no research has been done on issues such as medicine pricing, medicine registration and pharmaceutical promotion. This strongly hints that some work should or can be done. Little has also been documented in the country in terms of impact of bilateral trade agreements and access and affordability of medicines. In short, the training of new pharmacists and healthcare professionals is the last hope to change the crippling pharmaceutical situation in the country.

## Developing Such a University

Development of such a university is a task in itself, which could not be done overnight and the chances are remote that the traditional academia has the capacity to do this kind of work. A long-term commitment, planning, and dedication are needed from policy makers (Figure 1). A working group can be convened from a pool of national and international experts to establish the mission of the university. To establish a world-class faculty, the government must select a whole new batch of graduate pharmacists for overseas training. They, in turn, can bring back their expertise to their home country. Such a university, if formed, could pool scarce resources and those could be shared among different universities. The specialized university in the sector is important because it can also act as a role model and guide to other spin offs. Different think tanks and centers, which can focus on the various areas of pharmaceutical sciences, could also be established. The knowledge resources and manpower could flow in an inter-university and intra-organizational basis. NUPS could produce a new set of graduates, who hopefully, could tackle the upcoming challenges in health care. In the future, it could also be developed as a regional hub and resource centre for the other South Asian Nations. With the coming moves of an independent drug regulatory authority in the country and the changing healthcare systems in the region, it is now time for the policymakers to look at this proposal in detail.

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