

# Pharmacy Education system in India: Time to revisit teaching and training modules to meet global expectation

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## ABSTRACT

The focus of higher education has witnessed a paradigm shift from mere addressing the needs of literacy to cater to wider global challenges. With success of opportunity based learning, it is clear that higher education should prepare an individual with outcome based learning, focusing on cognitive, affective and psychomotor skills. In this regard, the present article addresses some of the key components that need to be revised in the pharmacy education in line with development of Pharmaceuticals and Health care system across the globe. Based on my personal experience, I have made an attempt to shed some light on important issues that needs to be revised specifically in research and academic streams. I am certain that many of my fellow professionals share this view and are optimistic about the future.

**Keywords:** Pharmacy Education, Outcome based learning, Research based teaching, Quality Education.

It is indeed a great pride for all of us to declare ourselves as pharmacists, which is considered as one of the noble professions and a part of the health care system. This profession provide knowledge and training in understanding the human health and how to provide solution to various ailments through art and science of discovering, preparing, formulating and dispensing medication. In addition, responsibility of creating awareness to public, educating public on communicable disease, community based programs and social service is also expected from a qualified pharmacists (QP's). Great respect to the profession comes with huge responsibility. Depending on the system or country of practice, pharmacists will have legal and moral responsibilities in medical negligence, misuse of drugs and medico legal cases. These are the roles, responsibility and significance of pharmacy professionals in society. With my petite experience

in the area of pharmacy and research in India and USA, I personally identified some issues based on the discussions with my fellow professionals engaged in academics, industry, and research. In light of those comments, I felt it is appropriate to share opinion on the current system.

Recently we have been hearing a lot of negative remarks on the opportunity and scope of the profession in our country. It's more often on lesser or no admissions to colleges, fading scope and opportunity for the professionals. Some of the specific comments include,

- Pharmacy profession is losing its value.
- There is no scope for the profession.
- There are no admissions for Undergraduate courses and Institutions are at the verge of closing.
- They are likely to close my department.
- Quality of education is going bad

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- There are no challenging projects in Industry.
- No recruitments in industry or other Pharma sectors.

All these comments really puzzled me and kind of disturbing as it was against the progress of profession. Pharmacy profession was choice for me and we completed the course with lots of dream in late 1990's and was wondering what is responsible for change in the scenario in 15 years. This made me think on what is that has led to such a negative notion regarding the profession.

Based on the available information from India brand equity foundation ([www.ibef.org](http://www.ibef.org)), Indian Pharma sector is named as one of the fastest growing industrial sectors, accounts for 1.4% of the total global Pharma industry with 10% of volume. This industry is expected to grow with CAGR of 17.8% from 2008 to 2016 and expected to reach total of 36 billion USD. More than 70% of Indian revenue is expected from generic market, 19% from OTC and around 10% from patented drugs. Indian Pharma industries are investing 2% of their total turnover in R&D, which is likely to increase in coming years. Pharmaceutical industries from western and other foreign nations are joining hands with Indian industries for research and the same is expected to increase both invention and overall growth of the sector. With all these positive development in commerce of pharmaceutical industries and demand for the professionals in both government and private health care sectors there are issues of declined scope for the profession. Based on the existing situations, the gap existing between education/training and opportunity are as follows.

As far as opportunity and avenues in pharmaceutical industry is considered, I cannot make comments, as that is not my expertise. I can make an educated guess and link the situation to recession at both national and global economics. Other important observation is that there is no breakthrough discovery of any new drug molecule since several years and most of the industries in India are focused on modifying existing drugs and enhancing productivity than discovery. Industrial and research experts should throw more light on this aspect.

With respect to academics, it is my opinion that we are not providing the training to the professionals as required by the current system of opportunities. The patterns of education and training we are currently following is very old and most of it does not hold water for current day's practice and requirements. There is a huge gap between the training we provide and what the current employers are looking for. This is not only my experience; I have been listening and seeing the mismatch when we discuss with industrialists, heads of

organizations or some senior faculty from academics or research organizations.

One of the examples we have been listening for quite some time is that post graduates from the department of Pharmacognosy and Phytochemistry are at the verge of closing in most of the reputed institutions. Paradoxically, nature cure and its related areas like, naturopathy, herbal drug therapy and natural drugs utilization is gaining significance of paramount in health care sector across the globe. Research in the last decade has largely demonstrated that natural molecules and ingredients have had a significant benefit in prevention of chronic diseases like metabolic disorders, auto-immune disease, cancer, cardiovascular disease etc., Additionally, herbs are vastly utilized for cosmetics and nutraceuticals/health foods, which have stirred a huge demand globally. This speaks about the opportunity we are really missing out. This is due to failure of current educational model to provide the required skills and knowledge to take-up challenges in discovery, formulation and development of herbal drugs. Some of the areas that needs to be considered for training in Phytochemistry are combinatorial chemistry, high throughput screening and challenges in herbal drugs research and development. Similar upgradation of training module is required in other specializations also.

Same is the situation with undergraduate training, pharmacy being a research based course, there are no sufficient training, exposure and opportunities to create awareness among students. Additionally, exposure to educational and professional ethics is very less and nil to a large extent. This is a huge disadvantage to students aspiring for higher education abroad and put them behind in initial screening. Most of the students joining for Masters or Ph. D will not be aware of the concepts like plagiarism, expression of research interest, formulation of concepts, small proposal writing, experimental design etc., In spite of our strong foundation in basic sciences, our students will have a tougher time in scoring on above mentioned concepts. Additionally, emphasis on development of self-confidence, ability to express concepts and creative learning is also limited in our undergraduate and to some extent in Post graduate education system also.

Research and pharmacy education: It surprises me when some of academicians claim that we also undertake/ involved in research along with teaching. This is because of the fact that the profession of pharmacy as it is designed to focus on research and development. This is evident from most of our professional roles such as drug discovery, formulation development, clinical research, pharmaceutical marketing services etc.,. Therefore, I personally consider performing research

as an integral part of pharmacy profession. Hence, the pharmacy education system should give more emphasis to research in undergraduate and post graduate training. The next important aspect with respect to research is maintenance of highest integrity, ethics and novelty. We should stop thinking and planning of research which often involves replicating, taking up non practicable and irrelevant research works. Research should focus on aspects like, addressing local issues of health care needs, should be innovative and of globally acceptable quality.

Although it may sound unrealistic, it is a fact that our post graduates need to compete with masters students of other basic science stream in both industrial and research sectors. Pharmacologists, unless the degree is a regulatory mandate, need to compete with zoologist, pharmacognosy experts with botanist, pharmacemist with organic or synthetic chemists so on. This may be due to two major reasons; for an institute or industry its money versus skill, it is always choice for more economical individual who can be trained as per their requirements. The other strongest reason could be the employer may not find substantial skill and knowledge to prefer the pharmacy professional over others. This speaks about lack of exclusive skills required by the industry or research sectors and warns the need for change in the existing system of training and education. This is not to declare that existing system is completely inoperable, as we certainly have many good components that have evolved over many decades in our current system. However, considering revisiting some of the components as per today's requirement will strengthen the pharmacy profession and justify its magnanimity. Some of this include,

- More emphasis on personality development, professional ethics, roles and responsibility at undergraduate level.
- Providing an opportunity to select suitable area with in pharmacy towards end of undergraduate studies.

- Involving experts from industry, research and other branches of profession in framing the syllabus for all levels will help to a great extent. To understand the global needs from professionals, international experts or people having international experience will be an advantage.
- Encouraging students to undertake research activities as there is a huge support from both state and central government to such programs already.
- Providing need/ current opportunity based training for postgraduates and involving experts from industry for training/ teaching.
- Training postgraduates on aspects like 'team work', 'planning and execution of projects', 'creative concept development', 'trouble shooting', 'decision making' along with their specialization subjects will prepare them for current market challenges.
- Research projects should be designed for postgraduates keeping factors like, current health care and industry needs, global standards of science, interest and future of student, rather than fitting it to available resources or duplication of existing work/ others idea.

All of us agree that more than 60 % of the current syllabus in postgraduate will not be useful either in industry/ research. Hence, we need to revise such components with more meaningfulness.

Research at doctoral studies in pharmacy should have more of innovation and industry or society relevant components. Course work on scientific writing, ethics in publication and research, research design and execution will prepare them to compete better with their global counterparts.

Considering some of the above mentioned facts for suitable revision of the existing education system may provide more opportunity to the profession in both local and international platform. If not, the efforts to provide quality education in pharmacy profession would be more of a political oddity than reality in future.