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Pharmacy Education in India and its Career Options

**Naresh Gorantla¹, Sambasiva Rao A², H. Abdul ahad*, Sanjay K Mishra¹,
 Rajesh Pavan¹, Chakrapani B**

¹Balaji College of Pharmacy, Ananthapuram, A.P, India

²Sree Indu College of Pharmacy, Ibrahimpatnam, A.P, India

Abstract

Pharmacy is the health profession that links the health sciences with the chemical sciences and it is charged with ensuring the safe and effective use of pharmaceutical drugs. To practice as a pharmacist in India, one needs at least a diploma in pharmacy. Traditionally a qualification in Pharmacy was associated with a lifetime career as a chemist. Knowledge and training in Pharmaceutics offers a wide array of career options to the students. The programme is no longer confined to the laboratories or classrooms and goes beyond the curriculum. The career options after the programme are also immense. Today's pharmacist enjoys more career options than ever before. But the precise role of a pharmacist in the health setting is altering and varies significantly from country to country. In contrast to the developed world, pharmacists in developing countries are not fully executing their potential role. They are still struggling for the recognition of their role that can help improve the health care system.

Key words: Pharmacy, Pharmacist, industry, abroad

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*Corresponding author

H. Abdul ahad

E-mail: abdulhindustan@rediffmail.com

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1. Introduction

The word pharmacy originated from the Greek word "PHARMAKON" which means medicine. Pharmacy is the health profession that links the health sciences with the chemical sciences and it is charged with ensuring the safe and effective use of pharmaceutical drugs. It was in 9th century in the civilized world around Baghdad that the profession of pharmacy started acquiring shape. It slowly spread to Europe as alchemy and finally developed into chemistry. However in the 19th century it completely sprouted out from medicine and started developing as a separate profession. This happened only when the role of pharmacist as a compounder of medicines were identified and differentiated from physician whose role was accepted as the therapist[1]. For almost half a century not much progress was noticed, until B. Pharm course was started in 1937 at Banaras Hindu University and in 1944 at the

Punjab University, Lahore now in Pakistan. The B. Pharm course at BHU was industry oriented while that at Punjab University was oriented towards Pharmacy practice. This bend led to the development of modern Indian pharmaceutical industry, which is now the 4th in terms of volume and 14th in terms of value. The future prediction for the Indian pharmaceutical industry is that it is expected to become the super power by the year 2020[2].

2. Description

Pharmacy Education in India:

The beginning of pharmaceutical education in India was initiated at the Banaras Hindu University (BHU) in 1932 by Professor M. L. Schroff. From there it has been a long journey of almost 80 years for this profession in this country. Currently, PCI and AICTE regulate pharmacy profession and education respectively in India. Both of these regulatory bodies have been doing a regulatory function without bothering to create a permanent mechanism of updating curriculum along with development in the field [2].

Today, the global institutes are moving towards excellence in research and capability building in order to better meet the requirements of 21st century. The following are the courses of pharmacy that are available in India[3].

- D.Pharmacy (Diploma in Pharmacy): This is a two year course of pharmacy and the students with science background in Intermediate are eligible.
- B.Pharmacy (Bachelor of Pharmacy): This is a four year Graduation course of pharmacy and the students with science background in Intermediate are eligible.
- M. Pharmacy (Master of Pharmacy): This is the Post Graduate programme of pharmacy with two years duration and the graduate students of pharmacy are eligible.
- Pharma D (Doctor of Pharmacy): This is a six years course of pharmacy and the students with science background in Intermediate are eligible.
- PB (Post Baccalaureate): This is the course in which the Lateral entry of Pharmacy Graduates into fourth year of Pharm D course with three years course duration.
- Ph.D (Doctor of Philosophy): Doctorate in pharmacy offered by the universities in India for the post graduates who are interested in research activities in their field of specialization.

To practice as a pharmacist in India, one needs at least a diploma in pharmacy, which is awarded after 2 years and 3 months of pharmacy studies and practical training. These diploma trained pharmacists are currently the mainstay of pharmacy practice in India. Every year nearly 20,000 D. Pharm., 30,000 B. Pharm., 6000 M. Pharm., and 700 Pharm. D. students graduate in the country [4].

Careers in Pharmacy:

Traditionally a qualification in Pharmacy was associated with a lifetime career as a chemist. Knowledge and training in Pharmaceutics offers a wide array of career options to the students. The programme is no longer confined to the laboratories or classrooms and goes beyond the curriculum. The career options after the programme are also immense. The career opportunities in pharmacy is illustrated in Fig.1 and the principle Roles of a Pharmacist is shown in Fig 2.

Career options after completing B Pharm or M Pharm:

1. Teaching: B Pharm - First Class students are eligible to teach as lecturers in the D Pharm programme, whereas M Pharm, First Class students can get a lecturer's job in pharmacy degree colleges. It takes about 5 years to reach the grade of Sr. lecturer and about 10 years to become Assistant Professor and about 12 years to become Professor or a Principal of a college. While teaching profession they can do research in pharmaceutical field and strive to become a well-known Research Scientist[1].

2. Pharmacist: Being in the health-related field, the B Pharm graduate can be Health-system Pharmacist or Hospital Pharmacist or Community Pharmacist [6].

3. Pharmaceutical industry: The pharmaceutical industry is a complex, multi-factorial environment, but with the overall aim of discovering, developing and marketing safe and efficacious medicines, and it demands high standards and quality from its employees. With the rich skill mix developed and applicable from the Pharmacy undergraduate degree, the industry provides an ideal environment for a career rich in variety, diversity and challenges.

4. Quality Assurance Health Manager:

The Pharmacy graduate can play an important role in the development of clinical care plans, can investigate adverse medication events and in some cases can suggest preventive measures. He can play a key role in spreading awareness amongst the people about AIDS and the preventive measures to be taken.

5. Clinical Research:

B Pharm/ M Pharm degree holders can take up career in clinical research. The human testing phase is called the clinical trial. A pharmacist can work as a clinical research associate or clinical pharmacist and can rise to the position of project manager. The clinical research associate plays an important role of monitoring and overseeing the conducts of clinical trials, which are conducted on healthy human volunteers. They have to see that the trials meet the international guidelines and the national regulatory requirements[4].

6. Analytical Chemist of Quality Control Manager:

The pharmacy graduate can play a crucial role in controlling product quality. The drug and the Cosmetics Act (1945), Rules 71(1) and 76(1) says that the manufacturing activity should be taken up under the supervision of a technical man whose qualification should be B Pharm, B.Sc, B Tech or medicine with Bio-Chemistry.

7. Sales and Marketing: Ambitious achievers with pleasant personality and good communication skills can opt for the job of Medical Sales Representative. The companies prefer pharmacy graduates for this job, as they have a good knowledge about the drug molecules, their therapeutic effects and the drug – drug interactions.

8. Medical Transcription: The B Pharm graduate can work with medical practitioners to maintain the patient treatment history, the drug to which he/she is allergic etc.

9. Data Manager: A pharmacist can seek employment as “Data Manager” to store the data in the computer and process it using software developed for the purpose [5].

10. Career in Regulatory bodies: A Pharmacist can be absorbed in the Regulatory bodies like Food and Drug Administration. Pharmacist having experience in clinical trial centers can also work as an inspector to inspect the clinical trial process. For these government jobs the student needs to appear and pass the MPSC examination [2].

11. Regulatory Manager: A pharmacy graduate can work as “Regulatory Manager” (RM) in companies and contract research organization. As an RM he has to oversee regulatory documentation such as Clinical trial approval permission, marketing approval permission etc.

12. Biotechnology: This is a fast growing branch and the B Pharm. graduates can opt for post graduate diploma program in Bioinformatics. They can handle the job of monitoring the conduct of clinical trials that are conducted on human volunteers. It is their responsibility to see that the clinical trials are carried out as per the international guidelines [3, 6].



Fig.1: Career opportunities in pharmacy

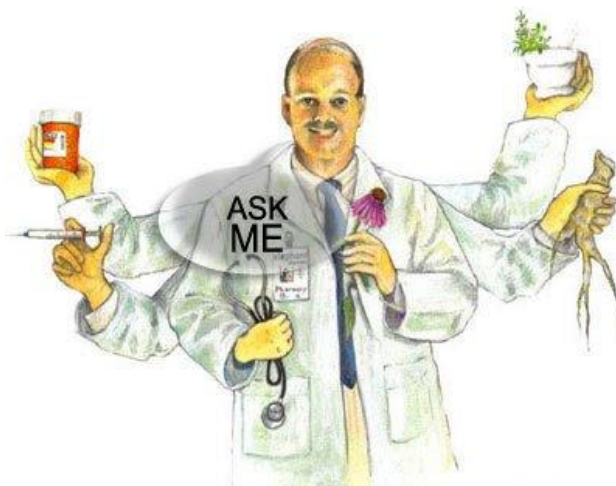


Fig.2: Principle Roles of a Pharmacist

3. Conclusion

Pharmacy is a well-respected profession for individuals with an aptitude in science and a desire to apply their knowledge of drug therapies to patient care in a variety of settings. Pharmacists are the "drug experts" among health professionals. They understand how a drug heals and how it can hurt, how it reacts with foods and other drugs. They know its desired effects and its side effects. Today's pharmacist enjoys more career options than ever before. Graduates from the Department of Pharmaceutical Sciences enjoy a wealth of exciting career opportunities in academia, industry and government. PhD graduates receive multiple offers from major research pharmaceutical companies. But the precise role of a pharmacist in the health setting is altering and varies significantly from country to country. In contrast to the developed world, pharmacists in developing countries are not fully executing their potential role. They are still struggling for the recognition of their role that can help improve the health care system.

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