



Review Article

Career Opportunities in Pharmacy Profession: An informative note

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Abstract

Pharmacy profession is always a choice of preference for the medical aspirants. There are many other medical or paramedical courses but from career opportunities point of view, the profession of pharmacy provides many job opportunities in this field. Now a day's pharma industry and profession are experiencing rapid changes due to advanced technological innovations and ideas sweeping across the world. Hence these changes give better opportunities to the pharmacy profession and it is imperative to evolve a Pharmacy academic programme that suits the basic thirst of the nation like providing medicines at affordable prices, community health care etc .

Keywords:

Pharmacy, Career opportunities, Pharmacist, NAPLEX.

Introduction

Pharmacy is the branch of science that links the **health science** with the **chemical science**, and it is well concerned with the discovery, development, production, and distribution of drugs. Pharmacy derives its name from the Greek root *pharmakon*, a drug. Drugs are substances used to diagnose, prevent, cure, or relieve the symptoms of a disease. They may be of plant, animal, marine or chemical origin. They can be obtained naturally from plants or prepared in the laboratory. Pharmacists are the medication experts on the health care team, offering information and advice to help patients successfully manage their medication therapy with minimum side effects. Pharmacists have the knowledge, skills and expertise to be trusted with a patient's health. Pharmacists are among the most accessible health care professionals.[1]

- Drug Therapist
- Drug Inspector, Analyst (Govt. services)
- Academicians (Teachers of Pharmacy)
- Chemical / Drug Technician
- Pathological Lab.
- R&D (Basic and Applied)
- Bio-tech. Industries
- Sales and Marketing
- Knowledge Process Outsourcing (Pharmaceutical and Biotech R&D segment)
- Pharmaceutical Industry (Production/ QA-QC/ Documentation)
- Clinical Research Organizations
- Member of regulatory organizations like FDA, WHO etc

General Job opportunities for a Pharmacy Professional:

- Pharmacist (Industry/Hospital/ Clinical/ Community)
- Pharmacoepidemiologist/data analyst (latest emerging field)
- Retail/ Wholesale Chemist/Druggist Business
- Preparing Prescription to Patients (not allowed in India)

Nature of the Work**Hospital Pharmacist**

The tasks are to procure stock, prepare and dispense medicines, drugs and other medical accessories. The person has to undertake responsibility for stock control, storage, placing orders, labeling and financial budgeting and account keeping for the dispensary. The pharmacists are expected to meet patients, doctors and nurses to discuss the supply of medicines and the appropriate form of drugs for administration.

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Retail Pharmacists

The task is in retail medical stores. The Pharmacist prepares and dispenses drugs on prescription to the general consumer. With the growing availability of pre-packaged doses, the pharmacist monitors the drug sale on the basis of prescriptions and dosages, and gives over the counter advice on how to use prescribed drugs. As medical/marketing representatives, they inform and educate the medical practitioners of the potential uses of the drug or health product and its administration along with side effects or precautions for its use. The job entails regular visits to medical practitioners, hospitals, clinics, nursing homes, health centers. There is usually a lot of touring to be done.

Industrial Pharmacists

While most firms are involved in the production of preformulated preparations, a growing number of firms are developing new formulations through autonomous research work. Industrial pharmacists carry out clinical trials, where drugs are tested for safety and effectiveness work in research and development to develop new formulations. In pharmaceutical production, the job entails management and supervision of the production process, packaging, storage and delivery work in marketing, sales and quality control.

Research Pharmacists

Research pharmacists are engaged in research activities in pharmaceutical firms, research organizations and laboratories for search of better drug molecule and formulations.[2]

Special Career Opportunities for Pharmacists

There are some more special career opportunities for Pharmacists which includes; [2]

- Nuclear Pharmacy
- Nutrition Support Pharmacy
- Oncology Pharmacy
- Psychiatric Pharmacy
- Forensic Pharmacy
- Poison Control
- Pharmaco Therapy
- Geriatric / Pediatric Pharmacy
- Nutrition Support Pharmacy

Skills of Pharmacist

Hard skills:

Pharmacists are trained in Pharmacology, Pharmacognosy, Chemistry, Pharmaceutical Chemistry, Microbiology, Pharmacy Practice (including drug interactions, medicine monitoring, medication management), Pharmaceutics, Pharmacy law, Anatomy & Physiology, Biochemistry, ki-

netics, nephrology, Hepatology, and compounding medications. Additional curriculum covers basic diagnosis with emphasis on disease state management and therapeutics.

Soft skills

These depend upon the area in which Pharmacist is working. For sales and marketing, Pharmacist should be an eloquent speaker, he should have good communication skills, also should be open to learning kind of person, good interpersonal skills, should be able to create an good impact on patients mind. [3]

Qualification

There are over 500 institutes in Pharmacy in India, which conducts different programmes at different levels. The main courses in Pharmacy are the 2 years Diploma in Pharmacy (D.Pharm), 4 years Bachelor of Pharmacy (B.Pharm), 2 years Master of Pharmacy (M.Pharm) and Ph.D programmes. Very recently, in order to facilitate admission of Pharmacy graduates in M.Pharm Course and also to award fellowships/scholarships to Pharmacy graduates, **All India Council for Technical Education (AICTE)** decided to organize and conduct an examination in the name of **Graduate Pharmacy Aptitude Test (GPAT)** with effect from academic year 2010-11. [4] Accordingly, a National Monitoring Committee (NMC) was constituted for monitoring the issues pertaining to the policy as well as conduct of GPAT examination. On the other hand the apex regulatory body of pharmacy profession, **Pharmacy Council of India (PCI)** has announced the commencement of a 3-years and 6-years course referred as Pharm. D. Post Baccalaureate programme and Pharm. D respectively. The main aim of this course is to cater the increasing demand of hospital and clinical pharmacists. The respective state governments conduct the admission for various courses through common entrance test (CET). [5, 6]

Career prospects in Pharmacy profession based on qualification:

1. Diploma in Pharmacy (**D. Pharm.**)
 - Retailer (Medicine Shop)
 - Dispensing Pharmacist
 - Graduation (B. Pharma)
 - Marketing (Medical Representative)
 - Can give their license on rent to establish medicine retail shop.
2. Bachelor in Pharmacy (**B. Pharm.**)
 - Pharmaceutical Industry- QA/QC Production/Manufacturing
 - Regulatory Affairs (filing new drug application etc)
 - Marketing (Medical Representative)

- Drug Inspectors
 - Post graduation Studies (M.Pharm / M.B.A)
 - Clinical Research
 - Insurance Sectors
 - Various certificate courses in Management, Industrial applications
 - Can establish own Pharmaceutical Company.
 - Can give their license on rent for establishing a manufacturing company.
 - Can become a member of Pharmacy Council of India.
3. Post-graduation (**M. Pharm.**)
- Academic
 - R & D scientist (Basic / Applied research)
 - CRO's (Clinical research organization)
 - Production
 - Knowledge Process Outsourcing (KPO)
4. Post-graduation (**Management studies, MBA**)
- MBA in pharmaceutical management is good option for students pursuing B. Pharma. To get admission, the candidate need to qualify the CET organized by the respective state Government followed by the GD/PI. Scope in the Pharmaceutical marketing is commencing. One who adopts this career, sky is the limit for him. A Pharmaceutical Marketing Executive is the key player in Pharmaceutical Marketing Sector. An individual may start his career as a Medical Representative/Research Executive/Product Executive/Business Development Executive and after 2 or 3 years he/she can be promoted to managerial level. M. Pharm (PG) is the two years course specially focused on research activities. Major branches in India include Pharmaceutics, Pharmacology, Pharmaceutical Chemistry, Pharmacognosy, Quality Assurance, Industrial Pharmacy, Pharma Management and Clinical Pharmacy.
5. Ph. D (**In Pharmacy branches**)
- Academics (Pharmacy colleges/University Deptt.)
 - Research & Development
 - Post-doctorate (Abroad)
6. Pharm. D
- Academics (Pharmacy colleges/University Deptt.)
 - Research & Development
 - Pharmacoepidemiologist

Pharmacists are also needed within the central and state government's health departments. As a drug inspector or government analyst, he/she has to make sure that the drugs manufactured and sold are of standard quality. There is also an employment opportunity within the food and cosmetic industries or within any other industry that requires the assurance that new products are as safe and effective as possible.

Indian Pharmacy Graduates' Association (IPGA)

It was established in the year 1973. The Association is registered as a society under the Societies Registration act 1860. The Association is affiliated to Indian Pharmaceutical Congress Association (IPCA), the Federal Body of the Five Associations Namely IPGA, IPA, IHPA, APTI and AIDCOC. IPGA Has Got the Income Tax Exemption under Section 80G (5) (VI) Of the Income Tax Act—1961. Students who are pursuing 4 years degree course in pharmacy can become associate Life member of Indian Pharmacy Graduates' Association by paying Rs. 2100/- as one time life membership fees by way of demand draft in favor of "IPGA, NEW DELHI".

Excellent opportunities for the professionals are available in teaching profession also. There are plenty of higher education and research opportunities in the developed western countries along with excellent job openings. The pharmaceutical career is one of the highest rewarding careers in those countries. To achieve higher education in few major western countries, some English language examinations are needed to be qualified by the student. Those mainly include:

The GRE (Graduate Record Examination)

It is a standardized examination conducted by the ETS (Educational Testing Services), United States of America. It measures the potential of a candidate which almost all the graduate schools and universities abroad demand for the purpose of admission in different streams like Graduate studies, Fellowships Programs and Research Programs etc.[7]

The NAPLEX (North American Pharmacist Licensure Examination)

The NAPLEX is developed by the National Association of Boards of Pharmacy (NABP) and is used by the boards of pharmacy as part of their evaluation of competence to practice pharmacy. The NAPLEX has been designed to assess how well candidates can apply their knowledge, learning, and skills to actual practice situations and to evaluate their ability to meet the responsibilities of the practice of pharmacy at entry-level competence.

NAPLEX is a computer-based examination that uses adaptive test technology to deliver a mixture of selected-response and constructed-response test questions. Out of 185 delivered questions, 150 are operational and are used to calculate your test score. The remaining 35 questions are pretest items and will not count towards your NAPLEX score. Pretest questions are included on all NAPLEX examinations and are administered to evaluate their appropriateness for possible inclusion in future examinations. The pretest questions are dispersed throughout the examination

and cannot be identified by the candidate. A majority of the questions on the NAPLEX are asked in a scenario-based format (i.e., patient profiles with accompanying test questions).

Multistate Pharmacy Jurisprudence Examination (MPJE)

The computer-adaptive MPJE combines federal- and state-specific law questions to serve as the state law examination in participating jurisdictions. The MPJE is based on a national blueprint of pharmacy jurisprudence competencies. It consists of 90 multiple-choice test questions. Out of these, 60 questions are used to calculate the test score. The remaining 30 items serve as pretest questions, and do not affect the MPJE score. Those pretest questions are dispersed throughout the examination and cannot be identified by the candidate. Effective from February 1, 2010, the number of questions used to calculate the test score for the MPJE will be increased to 75, while the number of pretest items will be decreased to 15. This redistribution of scored and pretest items will not change the total number of examination questions. [8]

Foreign Pharmacy Graduate Equivalency Examination (FPGEE) and Foreign Pharmacy Graduate Examination Committee (FPGEC Certification)

Candidates are required to pass the Foreign Pharmacy Graduate Equivalency Examination (FPGEE) as part of the FPGEC Certification process. The FPGEE is based on a nationally uniform content blueprint and is developed, administered, and scored under policies and procedures developed by the NABP Advisory Committee on Examinations and approved by the NABP Executive Committee. The content of the FPGEE is created by practitioners and educators from around the country through their service as Examination Review Committee members and item writers. The FPGEE is administered twice each year at Pearson VUE test sites throughout the continental United States. The FPGEC Certification Program is accepted by 50 state boards of pharmacy as a means of documenting the educational equivalency of a candidate's foreign pharmacy education and licensure and/or registration to practice pharmacy. Foreign-educated pharmacists awarded FPGEC Certification is considered to have partially fulfilled eligibility requirements for licensure in those states that accept the Certification.

Candidates who submit an application to the FPGEC Certification Program on or after April 1, 2010 must pass the Test of English as a Foreign Language (TOEFL) Internet-based Test (iBT) as the sole English language proficiency examination. Score reports from the paper-based TOEFL and the Test of Spoken English (TSE) will no longer be accepted for FPGEC Certification. [9]

The Test of English as a Foreign Language (TOEFL) or sometimes "toffle" evaluates the potential success of an individual to use and understand Standard American English at a college level.

IELTS is an English Language assessment

Test primarily used by those seeking international education, professional recognition, benchmarking to international standards and global mobility.

The Graduate Management Admission Test (GMAT)

It is a test for determining aptitude to succeed academically in graduate business studies. The test is used as one of the selection criteria by most respected business schools globally, most commonly for admission into an MBA program. [10]

Conclusion

Today's the pharmacy profession has strived hard to attract the young talent and in the country like India, it has become one of the best professional courses. Pharmacy offers the resources, opportunities and flexibility needed to balance a successful healthcare career with a satisfying personal life. Pharmacy offers lifelong learning continued education, gives its practitioners the opportunity to make professional development part of the job. Pharmacy graduates can expect to get on the fast track in one of the most dynamic industries in health care. Pharmacists enjoy a prestigious job in a field that increasingly relies upon their skills and expertise. Pharmacy graduates are offered many opportunities and learn wide variety of things, but educating patients about their medication therapy is always the most important. The discipline of pharmacy has a good future, offering wide range of employment opportunities with an excellent salary. Only with an undergraduate degree one may easily enter into pharmaceutical associated jobs. However, one can take up teaching/research as a career with M. Pharma and Ph. D degree.

Declaration of interest

The authors report no conflicts of interest. The authors alone are responsible for the content and writing of the paper.

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