

Introduction to the Profession of Pharmacy

Introduction

Pharmacy is an important branch of healthcare that deals with the identification, preparation, formulation, storage, dispensing, and proper use of drugs. It plays a crucial role in ensuring that medicines are safe, effective, and used appropriately for the treatment and prevention of diseases. The profession of pharmacy has evolved over thousands of years, beginning from simple traditional herbal practices to a highly advanced scientific and industrial discipline. In the early stages, medicines were mainly derived from natural sources such as plants, minerals, and animal products, and their preparation was largely based on empirical knowledge and experience. However, with the advancement of science and technology, pharmacy has developed into a specialized field involving pharmaceutical sciences, drug development, clinical research, and patient care.

In India, the development of pharmacy has been influenced by several important factors. Ancient medical systems like Ayurveda laid the foundation of drug therapy and formulation practices. The contributions of global scientists introduced scientific principles and systematic approaches to medicine and pharmacy. During British rule, the introduction of allopathic medicine and modern healthcare systems brought significant changes in drug use and medical practices. After independence, various reforms were introduced to regulate and improve pharmacy education and practice. Additionally, the growth of pharmaceutical industries and the establishment of regulatory bodies played a major role in shaping the profession into its present form. Therefore, the study of the history of pharmacy in India provides a comprehensive understanding of how the profession has evolved in relation to education, industry, and organizations.

Origin and Development of Pharmacy

The origin of pharmacy is closely associated with the concept of medicines and healing, which has been an essential part of human civilization since ancient times. In India, the term 'Bheshaj' has been used for more than four thousand years to refer to medicines or therapeutic substances used for curing diseases and maintaining health. Similarly, the Greek term '*Pharmacon*' means a drug or remedy, and it is from this term that the modern word 'Pharmacy' has been derived. These terms highlight the universal importance of drugs in healthcare systems across different cultures and civilizations. Pharmacy, therefore, can be defined as the branch of science that deals with the identification, procurement, formulation, and dispensing of drugs for therapeutic use.

In ancient times, the role of the pharmacist was quite different from what it is today. The pharmacist was primarily responsible for preparing medicines in suitable dosage forms that were acceptable to patients. This involved collecting raw materials from natural sources such as plants, minerals, and animals, and converting them into usable medicinal forms. Pharmacists also ensured that the medicines were properly stored and administered. At that time, there was a strong belief that individuals associated with healing professions possessed spiritual or divine powers. As a result, pharmacists and physicians were highly respected members of society, and their work was often considered sacred. Throughout history, many individuals have contributed to the advancement of the health sciences. Notable among those whose genius and creativeness had a revolutionary influence on the development of pharmacy and medicine were **Hippocrates** (ca. 460–377 BC), **Dioscorides** (1st Century AD), **Galen** (ca. 130–200 AD), and **Paracelsus** (1793–1541 AD).

Hippocrates, a Greek physician, is recognized for the introduction of scientific pharmacy and medicine. He streamlined medicine, systematized medical knowledge and put the practice of medicine on a high ethical place. His thinking on the ethics and sciences of medicine dominated the medical writings of his and successive generations. His works included the descriptions of hundreds of drugs, and it was during this period that the term '*Pharmakon*' came into existence which means a purifying remedy for good only, unlike the previous association of a charm or drug for good or for evil purposes, because of his revolutionary work in medical science and his motivational teachings and advanced philosophies that have

become a part of modern medicine, Hippocrates is called the **Father of Medicine**.

Dioscorides, a Greek physician and botanist, was the first to use botany as an applied science of pharmacy. His work, *De Materia Medica*, is considered a landmark in the development of pharmaceutical botany and in the study of naturally occurring medicinal materials. This area of study is today known as pharmacognosy, a term formed from two Greek words, "pharmakon" meaning drug and "gnosis" means knowledge. Some of the drugs Dioscorides described, including opium, ergot, and hyoscyamus, continue to have use in medicine. His descriptions of the art of identifying and collecting natural drug products, the methods of their proper storage, and the means of detecting adulterants or contaminants were the standards of that period, established the need for additional work, and set guidelines for future investigators.

Claudius Galen, a Greek pharmacist-physician, created a perfect system of physiology, pathology, and treatment. Galen prepared doctrines that were followed for 1500 years. He was one of the most creative authors of his time or any other era, having been credited with 500 treatises on medicine and some 250 others on philosophy, law, and grammar. His medical writings include descriptions of numerous drugs of natural origin with a large amount of drug formulas and methods of compounding. He originated so many preparations of vegetable drugs by mixing or melting the individual ingredients that the field of pharmaceutical preparations was commonly referred to as 'Galenic pharmacy' at that time.

Pharmacy always remained associated with medicine. Pharmacy was officially separated from medicine for the first time in 1240 AD, when a declaration of **Emperor Frederick II** of Germany regulated the practice of pharmacy within the part of his kingdom called the two Sicilies. His announcement separating the two professions acknowledged that pharmacy required special knowledge, skill, initiative, and responsibility. Pharmacists were obligated by oath to prepare reliable drugs of uniform quality according to their art. Any exploitation of the patient through business relations between the pharmacist and the physician was strictly prohibited.

Perhaps no person in history exercised such a revolutionary influence on pharmacy and medicine as did **Aureolus**

Theophrastus Bomstus von Hohenheim (1493–1541), a Swiss physician and chemist who called himself **Paracelsus**. He shifted the focus of pharmacy from botanical science to chemical science and introduced the use of chemical substances in medicine. Paracelsus emphasized that each disease requires a specific drug for its treatment, which was a revolutionary idea at that time. His contributions laid the foundation for modern pharmaceutical chemistry and opened new avenues for drug development. He was the first person who changes the pharmacy from a profession based primarily on botanical science to the one based on chemical science.

In India, the ayurvedic medicine were used as per the ancient books written by **Charak**, a physician, which nowadays replaced by allopathic medicine during the British rule. In India, the development of pharmacy has passed through several stages. In ancient times, medicines were primarily based on Ayurvedic texts such as the *Charaka Samhita*, which provided detailed information on drug preparation and therapeutic practices. During British rule, the introduction of allopathic medicine gradually replaced traditional systems in many parts of the country. This brought about significant changes in the way medicines were prepared, prescribed, and used. After independence, India entered a new phase of development, with rapid growth in pharmacy education, pharmaceutical industries, and regulatory frameworks. This led to the modernization of the pharmacy profession and its recognition as an important component of the healthcare system.

Development of Pharmacy in India

In India, the development of pharmacy has passed through several stages. In ancient times, medicines were primarily based on ayurvedic texts such as the *Charaka Samhita*, which provided detailed information on drug preparation and therapeutic practices. During British rule, the introduction of allopathic medicine gradually replaced traditional systems in many parts of the country. This brought about significant changes in the way medicines were prepared, prescribed, and used. After independence, India entered a new phase of development, with rapid growth in pharmacy education, pharmaceutical industries, and regulatory frameworks. This led to the modernization of the pharmacy profession and its recognition as an important component of the healthcare system. The foundation of pharmacy in India lies in Ayurveda, which is

one of the oldest systems of medicine in the world. Ayurveda is based on a holistic approach to health and emphasizes the balance between body, mind, and environment. It primarily uses natural substances for the prevention and treatment of diseases. In ancient India, physicians themselves prepared medicines using various natural ingredients and methods.

Different types of dosage forms were used in ancient times, including powders (*churna*), decoctions (*kwatha*), oils (*taila*), and semi-solid preparations (*avaleha*). These formulations were designed to suit different types of diseases and patient needs. However, there was no separate profession of pharmacy, as the roles of physician and pharmacist were combined. There was also no formal system of education, and knowledge was passed down through generations by oral tradition or apprenticeship.

Pharmacy During British Rule

The British period marked the beginning of modern pharmacy in India. The introduction of the allopathic system of medicine led to the establishment of hospitals, dispensaries, and medical colleges. Medicines were largely imported from foreign countries, and there was very little local manufacturing. One of the major challenges during this period was the lack of trained pharmacists, which resulted in improper handling and dispensing of medicines. This situation created a strong need for formal pharmacy education in India. As a result, efforts were made to develop structured training programs for pharmacists. A major breakthrough occurred when Mahadeva Lal Schroff started the first pharmacy course in 1932 at Banaras Hindu University. This marked the beginning of professional pharmacy education in India.

Development of Pharmacy Education in India

After independence, the Government of India took several steps to regulate and improve pharmacy education. One of the most important developments was the enactment of the Pharmacy Act, 1948 by the Parliament of India. This Act led to the establishment of the Pharmacy Council of India, which is responsible for regulating pharmacy education and the profession in India. The Act ensured that pharmacists are properly trained and registered before practicing.

Development of Pharmaceutical Industry

The pharmaceutical industry in India has witnessed remarkable growth after independence. Initially, India depended on imported medicines, but over time, it became self-reliant in drug production. The establishment of major pharmaceutical companies such as Cipla, Dr. Reddy's Laboratories, and Sun Pharmaceutical Industries played a significant role in this transformation. The Indian Patent Act of 1970 further boosted the growth of the pharmaceutical industry by encouraging the production of generic drugs, making medicines more affordable and accessible.

Today, India is known as the "Pharmacy of the World" due to its large-scale production and export of high-quality generic medicines. India is "Pharmacy of the World". India today plays a major role in global healthcare through pharmacy.

Conclusion

The history of pharmacy in India reflects a continuous process of growth and transformation. From ancient herbal practices to modern scientific advancements, the profession has evolved significantly over time. The contributions of early scientists, the influence of traditional and modern systems of medicine, and the development of education, industry, and regulatory frameworks have all played important roles in shaping the profession. Today, pharmacy in India is a well-established and rapidly growing field that contributes not only to national healthcare but also to global medical needs.

SCOPE OF PHARMACY

From ancient times pharmacy is known as a branch associated with healthcare services. The word pharmacy has been derived from the Greek word '*Pharmakon*', meaning drug. Pharmacy is involved in all the stages related to a drug, from its discovery, development, action, safety, formulation, use, quality control, packaging, storage, marketing, etc. Thus, today's pharmacy professional is a 'drug expert' in the real sense. The profession of pharmacy has transformed into a hub for the "Global Healthcare" and evolved as a multidisciplinary, versatile prospectus.

The drugs and pharma industry is a multibillion-dollar business. In the rapidly changing global scenario and the implementation of GATT & TRIPS in India, now a matter of only a couple of years,

the pharmaceutical industry and professionals will play a vital role in shaping up our national economy.

After 12th Science of State Board one can opt for any of the two courses, namely Diploma (DPharm) and Degree (BPharm). However, the Diploma students can also be included in Degree course directly in Second Year BPharm. However, in the coming years the Government & Pharmacy Council of India is planning to abolish the DPharm course and make BPharm the minimum qualification for any individual to become a registered pharmacist.

CAREER OPPORTUNITIES

A career in pharmacy, open out a view full of opportunities leading to a golden future for a young career aspirant. The job opportunities, working conditions, job satisfaction and monetary benefits are excellent.

The various career options, a pharmacy professional can opt for, are discussed below.

Production and manufacturing: Pharmacy professionals play an important role in the manufacturing of medicines and pharmaceutical products. They work in the production of:

- i. Tablets, capsules, syrups, injections, and other dosage forms
- ii. Bulk drugs and pharmaceutical intermediates
- iii. Cosmetics and personal care products
- iv. Herbal and ayurvedic medicines
- v. Nutraceuticals and food supplements
- vi. Medical devices and surgical products

They may work as:

- i. Production Chemist
- ii. Production Officer
- iii. Executive
- iv. Production Manager

Research and Development

This forms the heart of any industry, as it is the key to growth and nutrition. Mainly MPharm and PhDs are in great demand in the various areas of Pharmaceutical R&D. Other areas where professionals are required are:

- New Drug Discovery Research (NDDR): Discovering a new drug has assumed prime importance in the post-GATT era.

- Clinical trials, bioequivalence studies, toxicological studies: These are some of the areas of clinical research which are in high demand as they are involved in the systematic evaluation of potential drug substances prior to getting them approved by the authorities.

Analysis and Testing

Any drug or dosage form for human use has to be of excellent quality and purity, free from any impurities. The permitted limits of impurities, which either occurs through the manufacturing process, equipment, raw materials, handling or storage, are very strict. Therefore, quality control (QC) and quality assurance (QA) are the most integral areas of the drug and pharmaceutical industry. Highly specialized and trained staff is required to handle sensitive analytical procedures and sophisticated equipment. MPharm and PhDs in Pharmaceutical Analysis/QA are highly preferred for this job.

Marketing

Any business is incomplete without the marketing and sales aspect, as the universal fact is that any thing produced has to be sold. The pharmaceutical sales and marketing is a highly technical field and offers excellent opportunities for the pharmacy graduates. Additional qualification like MBA adds to their arsenal. An aspirant of a highly bright future can enter through various openings like starting his own retail or wholesale drug store or becoming a professional sales representative (known as medical sales representative or MR) to the levels of international marketing and exports. The financial rewards and perks are the best.

Hospital Pharmacy

Another opening for a pharmacy professional is as a 'Registered Pharmacist' in the hospitals or drug stores. This is a very sought after professional especially in countries like the USA and Canada. The trend is already set in many hospitals in the country. This is a key position, and the pharmacist plays an important role from preparing prescription to the patient's medical history after the medical doctor has diagnosed the disease. The pharmacist is the best-informed qualified drug expert whose advice is sought by every body regarding the dosage, incompatibilities and side effects of drugs.

Community Pharmacy

This concept, which is already very old in developed Western countries, is rapidly catching up the healthcare service in our country. Through the services of community pharmacy a pharmacist becomes a vital link between the patients and the products, i.e. drugs. The pharmacist also serves a vital link between the patients and other healthcare professionals, especially the medical experts.

- Counseling the patients regarding the use of the drugs and dosage forms
- Providing up-to-date information on drugs/dosage forms to the patients, as well as, medical staff.
- Maintaining patient records and history
- Involved in the usage of self-diagnostic kits by the patients for disorders like diabetes, hypertension, etc.
- Providing a supply of home care dosage forms.

Academics

Excellent opportunities for the professionals are available in teaching profession also. This is a profession associated with job satisfaction and social status as teaching is considered to be noble profession. The higher posts in the hierarchy and Sr. Lecturer, Reader, Assistant Professor, Professor, Principal, etc. The emoluments are satisfactory.

Regulatory Affairs

Locally, the FDA (Food & Drug Administration) is the main regulatory body governing and implementing the rules and regulations for the Drug and Pharmaceutical Industry Regulatory Affairs deals with rules and regulations related to medicines and pharmaceutical products.

Pharmacy professionals work with organizations such as:

- CDSCO
- State Drug Control Departments
- FDA and other regulatory agencies

Job positions include:

- Drug Inspector
- Regulatory Affairs Officer
- Drug Controller

Their work involves:

- Drug approval and registration
- Preparation of regulatory documents
- Ensuring compliance with pharmaceutical laws.

Consultancy

This is an ideal opportunity for highly technical and experienced pharmacy professionals to earn handsomely as self-employed entrepreneurs, even after the age of retirement. Consultancy services in pharmacy are offered in various fields against very attractive financial fees:

- i. Documentation
- ii. Approvals
- iii. Manufacturing processes
- iv. Analytical series
- v. Research
- vi. Market surveys and sales promotion
- vii. Information retrieval
- viii. Data management

Opportunities Abroad

Golden opportunities galore for qualified pharmacy professionals in various countries including the USA, Canada, European countries like UK, France, Germany, African countries like South Africa, Nigeria, Yemen, Gulf countries like Saudi Arabia, Kuwait, South East Asian countries like Singapore, Korea, Japan, etc. and the Australian Continent including New Zealand.

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 these countries.

The monetary job benefits abroad are highly exciting, job profiles in African countries like, South Africa and Nigeria, Yemen and Gulf countries like Saudi Arabia, Kuwait mainly as pharmacists in drug stores and hospitals.

In developed Western countries the job opportunities are manifold and almost in any one of the ten vocations discussed above.

ISOLATED KEY POINTS

- ‘**Bheshaj**’ is the term used in India from the last four thousand years which is equivalent to Greek term ‘*Pharmacon*’ meaning drug from which the term pharmacy has been derived. Contributor for development of pharmacy and medicine were **Hippocrates** (ca. 460–377 BC), **Dioscorides** (1st Century AD), **Galen** (ca. 130–200 AD), and **Paracelsus** (1793–1541 AD).
- **Hippocrates**, a Greek physician, is recognized for the introduction of scientific pharmacy and medicine. Hippocrates is called the **Father of Medicine**.
- **Dioscorides**, a Greek physician and botanist, was the first to use botany as an applied science of pharmacy, wrote *De Materia Medica*.
- **Claudius Galen**, a Greek pharmacist-physician, created a perfect system of physiology, pathology, and treatment. Pharmaceutical preparations were commonly referred to as “Galenic pharmacy” at that time.
- **Emperor Frederick II** of Germany regulated the practice of pharmacy within the part of his kingdom called the two Sicilies.
- **Aureolus Theophrastus Bomstus von Hohenheim** (1493–1541), a Swiss physician and chemist, who called himself **Paracelsus**. He was the first person who changes the pharmacy from a profession based primarily on botanical science to the one based on chemical science.
- In India, the ayurvedic medicine were used as per the ancient books written by **Charak**, a physician, which nowadays replaced by allopathic medicine during the British rule.
- Various career options for pharmacy graduates are: production and manufacturing, research and development, analysis and testing, marketing, hospital pharmacy, community pharmacy, academics, regulatory affairs, documentation, library information services, pharmaceutical journalism, consultancy and opportunities abroad.

PRACTICE QUESTIONS**Long Answer Type Questions**

1. Discuss briefly the scope of pharmacy.

2. Write in detail about the origin and development of pharmacy.

Short Answer Type Questions

1. What does the term 'Pharmacon' means?
2. Name the scientist who made major contribution in the development of pharmacy profession.

Fill in the Blanks

1. "*De Materia Medica*" was written by
2. is the father of medicine.
3. made major contribution for "*Galenic Pharmacy*"
4. Father of Ayurveda is
5. FDA stands for
6. AICTE stands for
7. PCI stands for
8. TRIPS stands for
9. DI stands for
10. ICH stands for

Matching Type Question

11. Match the following

Name of the scientist

Time period

- | | |
|----------------|---------------------|
| a. Hipocrates | i. First century AD |
| b. Dioscorides | ii. ca. 130–200 AD |
| c. Galen | iii. 1793–1541 AD |
| d. Paracelus | iv. ca. 460–377 BC |

Answers

1. Dioscorides
2. Hippocrates
3. Claudius Galen
4. Charak
5. Food & Drug Administration Act
6. All India Council for Technical Education
7. Pharmacy Council of India
8. Trade-related Intellectual Property and Rights
9. Drug Inspector
10. International Conference on Harmonisation
11. a. iv, b. i, c. ii, d iii