CHAPTER III
PHARMACY EDUCATION AND ROLE OF LIBRARIES

3.1 INTRODUCTION:
This work is an attempt to study the information sources and services of pharmacy college libraries affiliated to Pune University in Maharashtra. In term of collection of various sources, facilities and services as per AICTE and PCI norms. The study also considered libraries of pharmacy college affiliated to university of Pune and students and teacher as a users for data collection.

Therefore in the present chapter pharmacy education in India, technical education, various council of pharmacy education, library and its important objectives, functions and role of libraries in pharmacy education, information sources and services rendered by the college library and mostly important databases of pharmacy college library these points are discussed for improving the pharmacy college library.

3.2 PHARMACY EDUCATION IN INDIA:
For pharmacy education following points are given detail information about germination of pharmacy education, Current Scenario, pharmacy Education Standards at Present.

3.2.1 A FLASHBACK: GERMINATION OF PHARMACY EDUCATION
The history of Pharmacy education In India is as old when the country was being gravitated towards British Emperorship. A wind of revolution had been started to innovate something different in the education system of Indian medical services. Up to the middle of the nineteenth century, the pharmaceutical education and training.

Remained in a state of neglect. The scenario of pharmacy practice was pathetic. The dispensing of prescriptions continued to be carried out by commoners, who had a low level of preliminary training and education. The commoners were lowly paid professionals. There were a few European trained pharmacists who were employed by private firms. The seed of the pharmacy education in India was sown first by medical college, madras in 1860. Steps were taken to start pharmacy classes to
import pharmaceutical skills for the students qualifying for medical degrees or
diploma or hospital assistance ship. Steps proved to be useful for the students
intending to qualify as chemist and druggists. Broadly it was copying the practice as it
prevailed at the time in Britain. The classes continued with increase of the duration of
study to 2 years and entry qualification being made matriculation in due course.

The Materia Medica proved supportive to boost up the pharmacy education.
The students were taught material medica and instructed in the mode of preparing the
principle compounds of the pharmacopoeia and materia medica. In the middle of the
nineteenth century these professionals got scientifically educated and trained. Initially
the chemist and druggist class at madras medical college didn’t get popular and
attracted less than half dozen students per annum. The reasons could have been the
limited prospects of employment for the so qualified personnel. Voices were raised
favoring.

The view that the present chemist and druggist course be washed out.

However the class remained in operation and received Government sanction
for continuance in the Madras Medical College as a permanent arrangement. The
curriculum of studies was revised with inclusion of study of organic chemistry also.
After that the course underwent various revolutions at many times and also started in
some other universities like medical college Visakhapatnam.

The pharmacy evolution in India was going to pass through a mutation when
the founder of Banaras Hindu University Mahamana pt. Madan Mohan Malviya met
prof. M.L. Schroff and Mahamana offered him to join. B.H.U. By the untiring efforts
of Prof. Schroff in July 1973 "Pharmaceutical Chemistry" and Pharmacognosy" were
introduced as the subjects for B.Sc. degree. Since then there has been no looking
back. Pharmacy came to be recognized as a well-established course with fruitful
outcomes.

3.2.2 CURRENT SCENARIO:

Pharmaceutical education plays a very prominent role in attaining sustainable
and equitable development of a country. The curriculum of the degree in some
developed countries (B. Pharmacy) usually requires 5 academic years of study. In
most of the European countries successful completion of a university degree leads to a
one year internship. The formal pharmacy education in India (3 year degree in BHU)
dates back 1932, and since then, there has been a continuous growth in number of
such institutions. As per PCI 2005 diary calendar, the total numbers of recognized
degree institutions are 220 with intake of 1256 students. And as per AICTE, the total
numbers of degree colleges are 445 with the intake of 24672 students as well 30
institutions for the post graduation in various fields.

The number of accredited institutions like the National Institute of Pharmacy
Education Research (NIPER) is very few. Faculty strength and its quality is a
problem. The education system is not geared for the WTO era. Management is not
proactive in providing facilities and necessary educational environment. National pay
scales are not fully implemented and hence good academia is missing. There are a few
centers of excellence where students get all the facilities and are well placed after
their graduation. In the next decade, pharmaceutical industries will scout for
pharmacy graduates who are inclined to research. Therefore, Pharmacy College must
appoint the right faculty.

3.2.3 EDUCATION STANDARDS AT PRESENT:

There is no doubt that currently there is enormous gap existing between
education and practice of pharmacy. Most of the academic institutions providing
education in pharmacy are away from practice environment. The overall basis of
pharmacy education is still extra biological synthesis, physicochemical studies,
analysis, and manufacturing aspects of drug. It is a common feeling that the medical
practitioner is better placed for pharmacists’ job than the pharmacists themselves. The
dispensing services are poor. The syllabus and duration of the two year diploma
course in pharmacy education in India is completely outdated and irrelevant in the
present industry context. It is a heterogeneous mixture of clinical and industrial
subjects. Since clinical subjects are there PCI comes into the picture and AICTE came
in because of industrial orientation of pharmacy syllabus. Pharmacy as a nascent
science developed like this in the last century. During 1940s and 50s. hospitals and
industries were established in large numbers in India. Consequently, pharmacists and
pharmaceutical chemists were required in huge numbers. Hence pharmacy education
was developed in such a way to satisfy the requirement of industry and hospital.
Short-term compounders and or D.Phars. Course to satisfy the need of hospital and
medical shops and B.Pharm. course for the industry were started. This is proved by
the fact that in the last few decades D.Pharm. Holders are not employed by the
industry and B.Pharmacy. Holders are not in many numbers in hospitals or medical
shops. In the west, pharmacy education is patient oriented and is responsible for healthcare management, while in India pharmacy education is industry oriented.

Nearly 55 percent of the jobs are available in the industry sector while 30 percent in education. There are only three percent jobs in healthcare. There must revolutionary changes in the healthcare system e.g. making laws for appointing pharmacists at each primary health Centre and government hospitals.

There should be adequate staff in the state drugs control departments for better control of drug distribution system. It is crystal clear that separation and improvement of clinical and industrial subjects in the pharmacy syllabus is a compulsion of the time. But is yet to be completed, that is why there is such a situation and a lot of infighting among government authorities. Present B.Pharm. syllabus can be divided into 2 major courses like B.Pharm. (Clinical) and B.Pharm (Industrial) as it has been already decided to abolish D. Pharm. Course. Such an arrangement will increase the confidence and competitive skills of pharmacy graduates among health care team and technocrats and some sort of specialization during under graduation itself. If two B.Pharm. courses are created as above, needless to say clinical course can be controlled by PCI and industrial course by AICTE. Private college managements can opt for any one of the course. Of any college wants to run both the courses they should accept both masters, there is no other go. Existing D.Pharm. colleges who are in the verge of closure can adopt B.Pharm. (Clinical) and continue to serve the profession. This stunted growth of professional pharmacy in our country is the result of misplaced belief that profession is same as vocation. This belief has kept Indian pharmacy academics completely focused on industrial pharmacy at the cost of real-community pharmacy. While the justification for focusing pharmacy education on industrial Pharmacy after attaining national freedom was valid, its review to make it relevant in contemporary scenario is already too late.

Our present system has produced half a million "qualified" pharmacists but not many "trained" professionals. This has effectively led to a situation where neither there is a need felt by the society nor is there anyone available to fulfill that "professed" need. This situation feeds on itself to such an extent that any attempt to keep one's knowledge updated and work professionally has strong economic disincentives in Indian retail pharmacy practice. Gravity of the situation dawns upon us when we think about petitions filed in High courts that propose scrapping of the Pharmacy Act because the pharmacists. According to petitioners do not play any role
other than selling the drugs like all other commodities. There is virtually a complete lack of any training or incentive to professionalize as a result of which even the most enthusiastic pharmacists gradually convert into mere traders. The uninspiring implementation of statutory provisions has led to a cancerous proliferation of retail drug shops and the situation now threatens the profession itself. The retail pharmacist shall be relevant to the society "only" if he can make a difference to the patient-by providing him information about drug usages to achieve better outcome than the patient obtains by uninformed usage of drugs.

The president of this IPC-Prof. Kulkarni-himself conceded in his inaugural address of IPC 2001 that talking about community Pharmacy has become a pass-time lately. A lot of credit for this new fascination about community pharmacy goes to the community pharmacy Division of IPA, which launched a persistent campaign to nudge the retail pharmacists, the academicians, professional association managers and lately the society itself. Apart from whatever else is taught in pharmacy colleges under the garb of "Pharmacy Practice". I feel the following are mandatory subjects: Pharmaco-therapeutics, Communication skills and Hands down training on computer operations. He must be trained and experienced in working as health-care team member and this factory is not to be underestimated in the formal education design.

Driving an automobile can be learnt only in a automobile- On a road or you at least need a simulator to learn driving-similarly, pharmacy practice cannot be taught in an institution that has no affiliation with a patient care set up. This fundamental principle must be kept in mind before a pharmacy Practice course is conceived. The pharmacy teacher's community should take notice of this critical and important issue and involve a cross section of practicing pharmacists to review and suggest a relevant curriculum. Any further delay will diminish whatever slim chances we believe we have today of projecting Pharmacy as a socially relevant profession.

3.2.4 FUTURE: AN OVERVIEW

In the future, drug treatment will be increasingly and confidently tailored to the individual through the help of specific diagnostics. Many new drugs will be given parent rally and targeted for specific diseases. The pharmacists will need to adapt to this changing pattern in order to be seen by the patient as part of health care team. However in spite of many lacunae in pharmacy education system, the fact cannot be overlooked that tremendous development in the field of new drug discovery and
research activities, has taken place. Research centers attached with pharmaceutical institutions have played a major role in this regard. Notable among them are BRNCRC, Mandsaur, TIFAC CORE in JSS college of Pharmacy, Ooty; TIFAC CORE and ACCUNOVA in Manipal College of Pharmaceutical Sciences, Manipal and many more. These steps taken at present to upgrade the pharmacy education must be maintained for proper development and utilization of the course. Apart from these, emphasis should be given on fields like biotechnology, Bioinformatics, Clinical Trials, Drug Regulatory Affairs (National and international).

3.3 AIMS AND OBJECTIVE OF PHARMACY EDUCATION -

AIMS

The pharmacy graduates are required to learn and acquire adequate knowledge, necessary skills to practice the profession of pharmacy. The graduate should have thorough knowledge of synthesis & analysis of medicinal agents, their mode and mechanism of action, drug interactions, patient counseling and adequate technical information to be exchanged with the physician and other health professionals. The graduate are required to acquire in depth knowledge of formulation, quality assurance and storage of various pharmaceutical dosage forms including herbal medicines. The graduates should also understand the concept of community pharmacy and be able to participate in health care programmers of Government and private sector. They are also required to detail the physicians and market the medicinal agents for diagnosis, prevention and therapeutic purposes. The graduate pharmacist should also act as bridge between the physician and patients for achieving better health of community.

OBJECTIVES -

The following objectives of the course should be achieved by acquiring an in-depth knowledge & thorough understanding, necessary skills and developing the right attitude. Therefore they are categorized into following heads.

a. Knowledge and Understanding -

The graduates should acquire the following during their B. Pharm. Course.

1. Adequate knowledge and scientific information regarding basic principles of pharmaceutical & Medicinal Chemistry, pharmaceutics including Cosmetic logy, pharmacology, pharmacognosy including herbal medicines.
2. Adequate knowledge of practical aspects of
   • Synthesis of APIs & its intermediates and analysis of various pharmaceutical dosage forms
   • Formulation developments & quality assurance of various pharmaceutical dosage forms
   • Formulation development & quality assurance of various pharmaceutical dosage forms including those of herbal origin as per standards of official books, WHO and other regulatory agencies like USFDA, MHRA, UK etc.
   • Pharmacological screening and biological standardization and in-vivo drug interactions.
   • Preparation & analysis of suitable plants material extracts of medicinal importance for various herbal formulations.
   • Clinical studies for patient counseling leading to physical and social well being of the patients.
   • Product detailing, marketing, distribution and selling of pharmaceutical products.

B. skills -
   A graduate should be able to demonstrate following skills necessary for practice of a pharmacy
   • Able to synthesize, purify, identify and analyze medicinal agents.
   • Able to formulate, store, dispense, analyze the prescriptions and manufacture the pharmaceutical products.
   • Able to learn and apply the quality assurance principles in regulatory and ethical aspects
   • Able to extract, purify, identify and understand the therapeutic value of herbal crude natural products
   • Able to screen various medicinal agents using animal models for pharmacological activity.

C. Attitudes -
   A graduate should develop the following attitudes during the course.
   • Willing to apply the current knowledge of pharmacy in the best interest of the patients and the community.
• Maintain high standards of professional ethics in discharging professional obligations.
• Continuously upgrade professional information and be conversant with latest advances in the field of pharmacy to serve community better.
• Willing to participate in continuing education programmes PCI / AICTE / University of Pune to upgrade the knowledge and professional skills.

To help and participate in the implementation of National Health programmes.

3.4 TECHNICAL EDUCATION

In a highly competitive age of today, the vast applications of across all sector of society has become highly indispensable, which promotes and encourages us to move ahead in 21st century. It is both a beautiful dream as well as challenge. Technical manpower is required to exploit the natural resources to solve the problems of the basic necessities of life and providing better standards of life for the vast majority of these people who live today below poverty line.

Technical education has a key role to play in this scenario. In a bid to achieve this goal, we have to equip our technocrats with required skill in emerging technologies and their applications to take up the challenges of tomorrow. This is possible only if we build and maintain high standards in technical education college through a vision and total commitment to achieve excellence in technical education. we have no dearth of talent and lack of competence in our country.

Technical education has made a significant contribution to India's economic development. The programmes which have changed the country and diversified and augmented its production science independence have been possible largely because of the institutions for technical education.

Technical education is helpful for the around development of a country. If the manpower demands of the industry cannot be met with by the existing technical institutions, additional technical facilities must be provided at any cost. The government cannot provide funds for this expansion. The private sector should be involved in this programme of expansion of technical education. The private sector has made significant contribution to the development of our country in the fields of industry, commerce and trade. Educational societies, industries and religious trusts will come forward to undertake the responsibility of establishing technical
3.4.1 AIMS OF TECHNICAL EDUCATION

Aims of technical education are as follows:

- To support industry and business for strong national economy.
- To impart the trainee fundamental and scientific knowledge and skill pertaining to the latest technology.
- To give to the trainee a correlated knowledge of general, scientific and special subjects.
- To support students to use their technological knowledge and skills for the common good.
- To encourage a worthwhile use of leisure by helping students to widen their horizons.
- To make the student well trained in a particular field.
- To make student well trained in a particular field.
- To create in the trainee a sense of respect for manual work.
- To help students to become fully effective in the practice of their careers.

Sharama, (2001)

3.4.2 OBJECTIVES OF TECHNICAL EDUCATION

- Development of innovative and creative mind.
- Development of technical expertise and competency
- Development of professional skills.
- Infusion of self confidence and self reliance.
- Promotion of analytical mind and administrative capability.
- Entrepreneurship development.
- Promotion of inherent talents Shamuganathan, (1992)

This technical education should be available to all those who need it. It should be of latest nature, comprehensive and useful to life.
3.4.3 IMPORTANCE OF TECHNICAL EDUCATION

Education is important to each person in our country. It plays a vital role to change the state of a country. No country could bring a revolution in it unless its everybody are educated enough to meet the challenges. Education makes a man realize about himself and his goals and how to achieve that goals.

Basically, Education is divided into three groups. The Education which teaches the concerns of a society is called Social Education which a personality inside a man himself is called Spiritual Education. The Education that concerns with the professionalism is called vocational Education. The Technical Education comes under the branch of vocational Education which deals practically in the field of trade, commerce, agriculture, medicine & Engineering.

We are living in the modern age of science where we found Technologies in every aspect of life. What makes life so brain friendly for us simply; these are the Technologies which we use for our ease and comforts. Not only in our daily life but also in the research centre, in defensive measured of a country, biological aspects etc. No nation could generate the progress unless it promotes technical aspects in its fields. The technical education produces technicians for all type of industries and it is true that the progress of a country much depend upon its Industrialization without which a handsome economy would not be possible.

Using a technology is far easier than to develop it. For developing a technology it needed high skill teams which have a high data for the theme. It also needed a high amount of time and also money. To fulfill all these, there must be technical institutes which must cover all the faculties of technological studies and also the support of government to support financially & to contract it at international level. If it would be at international level than it would be easier to students to grab data in their won state so that they could do something for their own country.

Technical education plays a vital role in the socio economic development of the country in the present age of knowledge based economy. It plays an important role in human resource development of the country in general, emancipation and empowerment of poor and disadvantages group’s population in particular. It provides various types of manpower. It is backbone of the country for its infrastructural, industrial and economic development. It provides the practical education to students so as to grow up their personalities to such a level that they create a mark not only in the growth and development of our own country but also
make a remarkable and positive dent in developed knowledge economics of the world. During the past years, many initiatives have been taken to improve the quality of technical education.

India's Scientific policy Resolution of 1958 emphasized that the key to national prosperity lays in the effective contribution of three factors; technology, raw materials and capital of which the first was the most important. Hence, the supreme importance to predication of preparing those who would discover new technologies through research and those who would introduce them into production processes. Besides, the importance of production, technical education is important for variegating educational processes to cater to those who, by natural aptitude, can industry a large amount of talent, which would have been otherwise condemned to mediocrity and unemployment. **Nayar, (1989)**

Increased professionalism on the part of managers of technical education, the areas of administration, planning, decision making and organizational development have become vital. The decision making system will have to be sensitized the world needs to be deeply realized. In the Indian context, the role of technical education has been clearly spelt out in the scientific policy Resolution (1958) of India.

It clearly states. The wealth and prosperity of a nation depends on the prosperity of a nation depends on the effective utilization of its human and material resources through industrialization. Industry opens up possibilities p job opportunities for the individual. India’s enormous resources of manpower can become an asset in the modern world”.

### 3.5 COUNCIL OF PHARMACY & TECHNICAL EDUCATION

#### 3.5.1 ROLE OF AICTE

The quality of management education was supervised by the board of Pharmacy Studies of the All India Council for Technical education (AICTE) was set-up in November 1945 as a national level Apex Advisory Body to conduct survey on the facilities on technical education and to promote development in the country in a coordinated and integrated manner by Government of India.

It prescribes what standards to be maintained, acts as a authority for planning, formulation and maintenance of norms and standards, quality assurance through accreditation, funding in priority areas, monitoring and evaluation, maintaining parity
of certification and awards and ensuring coordinated and integrated development and management of technical education in the country. It has the responsibility for the approval of courses, and takes appropriate steps to promote pharmacy education.

The AICTE Bill was introduced in both the House of Parliament and passed as the AICTE Act No. 52 of 1987. The Act came into force with effect from March 28, 1988. The statutory All India Council for Technical Education was established on May 12, 1988 with a view to proper planning and coordinated development of technical education system throughout the country, the promotion of qualitative improvement of such education in relation to planned quantitative growth and the regulation and proper maintenance of norms and standards in the technical education system and for matters connected therewith.

The purview of AICTE (the council) covers program of technical education including training and research in Engineering, Technology, Architecture, Town Planning, Management, Pharmacy, Applied Arts and Crafts, Hotel Management and Catering Technology etc. at different levels. It approves new courses, new institutions and regularly monitors their operations.

The University of Pune bring all the Pharmacy Institutes in 3 districts under one umbrella and streamline their curriculum.

AICTE Vision:-

Be a World-class organization leading technological and socioeconomic development of the country by enhancing the global competitiveness of technical manpower, by ensuring high quality technical education to all sections of the society.

AICTE Mission :

- Transparent governance and accountability in approach towards society.
- Planned and coordinated development of Technical Education in the country by ensuring world-class standards of Institutions through accreditation.
- Facilitating world-class Technical Education through:
  1. Development of high quality Institutions, academic excellence and innovative research and development programs;
  2. Networking of Institutions for optimum resource utilization;
  3. Dissemination of knowledge;
  4. Technology forecasting and global manpower planning;
5. Promotion of industry-Institution interaction for developing new products, services, and patents;
6. Inculcating entrepreneurship;
7. Encouraging indigenous technology;
8. Focusing on non-formal education;
9. Providing affordable education to all.
10. Making Indian Technical Education globally acceptable.
11. A vision of a forward-looking organization that has an efficient, flexible and empowered manpower, sensitive to stakeholder’s expectations.

**AICTE Objectives:**
- Promotion of Quality in Technical Education.
- Planning and coordinated Development of Technical Education System.
- Provide Regulations and maintenance of Norms and Standards.

**AICTE responsibilities:**
- Promotion of Quality in Technical Education.
- Policy Directions.
- Review of Norms and Standards.
- Assessment of manpower requirement.
- Liaison with Central Government, State Governments, Universities and other statutory Bodies.
- Others as provided in the Act.

**AICTE Norms for Pharmacy College Library:**
- Addition of 500 volumes and 100 titles must be added every year.
- Hard copy of International journals is desirable to procure.
- The minimum 24 national journals subscribed for the Institute per year.
- BENTHAM, ELSEVIER Journal subscribed.
- Digital Library facility with multimedia facility is essential.
- Reprographic facility in the library is essential.
- Document scanning facility in the library is essential.
- Library Books/non-Book classification per standard classification method is essential.
- Library area as per requirement as per norms 150 Sq.mts
• Computerized indexing with bar coded /RFID tagged Book Handling is desired.

3.5.2 PHARMACY COUNCIL OF INDIA:-

The pharmacy council of India is statutory body constituted under the pharmacy act, 1948. It is responsible for regulation of Pharmacy Education and practice of profession in the country for registration as a pharmacist. At present there are 523 approved Institutions imparting Degree in pharmacy to 19125 students per annum. At present about 5.59 Lakh pharmacists are registered with various state of pharmacy councils.

Control of Pharmacy Education by the PCI:-

The PCI controls and regulates the standards for a better pharmacy education in India. The main Aim of PCI is:

• To prescribe minimum standard of Education required for qualifying as a pharmacist i.e. forming of Education Regulations prescribing the conditions to be fulfilled by the institutions seeking approval of the PCI for imparting education pharmacy.

• To ensure uniform implementation of the educational standards throughout the country.

• To approve the courses of study and examination for pharmacists i.e. approval of the academic training institutions providing pharmacy courses. The curriculum of pharmacy education has been designed to produce the following professional categories of pharmacists.

• Community and hospital pharmacist who will work as an important link between doctor and patient and will counsel the patient on various facets of drugs like usage, side effects, indication, contra-indications, compatibilities, in-compatibilities, storage, dosage etc.

• Specialist in research and development i.e. research of new drug molecules, biotechnical research etc.

• Occupational specialist (industrial pharmacist engaged in pharmaceutical technology) i.e. manufacture of various dosage forms, analysis and quality
control, clinical trials, post-marketing surveillance, patent application and drug registration, sales and marketing.

- Academicians i.e. Teachers of Pharmacy education.
- Manager and Administrators of Pharmaceutical Services working for various regulatory authorities and pharmaceutical systems.
- Chemists and Druggists engaged in selling of medicines.

PCI Norms for Pharmacy College Library:

- Library area should be as per requirement as per norms 150 Sq.mts
- 150 title and 1500 volumes adequate coverage of a large number of standard text books and titles in all disciplines of pharmacy.
- Addition of 100 to 150 books must be added every year.
- Hard copy or online of 05 International and 10 National periodicals is essential.
- Adequate CDs No’s are essential the minimum 24 national journals subscribed for the Institute per year.
- Minimum 10 computers are essential to internet browsing facility.
- Reprographic facilities: Photo copier, Fax, scanner is essential.
- Library Automation and computerized System is essential.
- One Librarian, One Library Assistant, Two Library Attenders Staff is essential.

3.5.3 DTE: (DIRECTORATE OF TECHNICAL EDUCATION)

The role of the Directorate is to maintain, Enhance the standard, Quality of technical education by laying the polices, establishing developing Government Institutions, guiding coordinating with other departments of State Government. Government of India statutory organizations and to contribute to the development of Industry society at large.

Vision:

To become a world-class globally competitive, flexible and learning higher education institutions responsive to the individual, institutional and social developmental needs of the people of Maharashtra and India.

Mission:

To integrate in a self sustainable manner IT education and IT enabled education with the basic teaching, learning process and its management. The goal is to
prepare the graduates for the knowledge-based economy, champion the cause of life long learning and stimulate the creation of world-class resources through information technology.

3.6 COLLEGE OF PHARMACY AND PUNE UNIVERSITY

3.6.1 PHARMACY COLLEGES IN INDIA

Ties and 26 colleges offering Prior to mid 1980s, the growth of publicly funded institutions of higher education (including pharmacy institutions) was very slow. Until early 1980s, there were 11 universities there were and 26 colleges offering pharmacy education at the bachelors and Master levels. Addition, there was at least one government school in every Indian state offering the D.Pharma program. Science the late 1980s due to rapid industrialization in the pharmaceutical sector, privatization and economic growth, pharmacy education has been developing faster in India than anywhere in the world. In 2007, there were 854 institutions that admitted more than 52,000 students to the Bpharm degree program and 583 institutions that trained more than 34000 students in the Dpharm degree program. Most of the institutions however, are privately funded colleges or privately funded universities. The private sector, which accounted for about 10% of the students admitted in the 1980s now accounts for 91% of all pharmacy students admitted (Singh, 1994).

While there are a large number of D.Pharm and B.Pharm graduates each year, the number of students that has graduated in any state varies widely. A large number of privately funded institutions are located in states like TamilNadu, Karnataka, Andhra Pradesh, Maharashtra, and Gujarat. In TamilNadu, around 45 colleges and universities educate approximately 2960 Dpharm and 2590 Bpharm graduates per year (within a total state population of about 64 million) (Singh, 1994).

3.6.2 PHARMACY EDUCATION IN UNIVERSITY OF PUNE

University of Pune, took a pioneering lead long back, introduced pharmacy education in 1982. The first pharmacy college established at NDMVP Nasik and today, there are 42 pharmacy colleges affiliated to University of Pune.

Contribution of pharmacy education under the auspices of university of Pune-

The purpose of pharmacy education is to learn and acquire knowledge, necessary skills to practice profession of pharmacy i.e. product detailing, marketing,
distribution and selling of pharmaceutical products to become self employed and small entrepreneurs. It emphasizes personality development and communication skill and enabled to develop long range relations.

The contribution made by professional pharmacy education under the auspices of Pune University has been most valuable and significant. University of Pune has provided professional pharmacy education, and provided various employment opportunities to the students.

3.7 LIBRARY AND ROLE OF COLLEGE LIBRARIES IN TECHNICAL EDUCATION:

In every formal as well as informal education systems library is the important and indistinguishable part. The next section deals with concept and definition of library.

3.7.1 LIBRARY:

The Latin word ‘liber’ means ‘book’ whereas in French word ‘Librairie’ means ‘bookseller or to copy’. The word ‘library’ is derived from the latin word liber. The meaning of word 'Library' given in the Random House Dictionary of the English Language (1987), as "A place set apart to contain books, periodicals, and other material for reading, viewing, listening, study or reference, as a room, set of rooms or building where books may be read or borrowed".

According to Dr. S.R. Ranganathan (1989), father of library science described "A library is a public institution or establishment charged with care and collection of books and the duty of making them accessible to those who require to use them"

The word 'library' can be referred as collection or books. Clean, attractive, beautiful, knowledge centre is also referred to as library. With the change in time library became cultural centres. In the 21st century, it is treated as an information centre.

3.7.2 COLLEGE LIBRARY

The name of college is given to an institution imparting higher education leading to bachelor degree. Every college must have a good library and it occupies a
prominent position in the college campus. The library is the heart of every college campus. The importance of college library is inevitable in every teaching and academic programme. Now-a-days college education is becoming more and more student centre and thereby it encourages students to pay a vital and creative role in their own education. They college library provides ample opportunity for self education to the students, apart from supplementing the class lectures.

3.7.2.1 IMPORTANCE OF COLLEGE LIBRARY

College education is the first stage of higher education, which provides completely different environment for students aspiring higher studies. Usually in colleges size of class is very big a result, individual attention by a teacher is limited. Therefore, college library help students to meet the challenges which they are facing at colleges. College library extends opportunity for self-education to the deserving and enthusiastic students without any distinction. College library is the workshop of the students where students are stimulated to obtain, evaluate and recognize knowledge and to familiarize themselves with the trends of knowledge for further education and learning new discipline.

3.7.2.2 OBJECTIVES OF THE COLLEGE LIBRARY

To achieve the academic excellence the objectives of the college library are as follows.

1. To keep up to date record of knowledge according to growing needs and requirements of present and future period.
2. To provide necessary resources for staff and students.
3. To help faculty member regarding availability of various opportunity for using library resources in teaching.
4. To extend practical demonstration about seeking of the information.
5. To assist faculty in organizing systematic method of teaching.
6. To display time to time the documents to the notice of students.
7. To carry out all though activities which stimulate reading habit with pleasure, self realization, personal growth and development, cultivation of intellectual excellence for entertainment.
3.7.2.3 FUNCTIONS OF THE COLLEGE LIBRARY:

The main function of a college library is the collection and preservation of knowledge for its dissemination to the users. It has to perform the functions like acquisition of reading material, processing of reading material, reference and other reader services, training the student in the use of libraries and certain administrative and managerial functions. In particular, college library performs two dimensional functions viz; teaching and research. The function related to teaching, is reference and information services. The function related to research are classification, subject area and language specialization, documentation and bibliographical.

In general the function of college libraries are to serve college community, to serve alumni, to create positive influence in society for the expansion of knowledge.

3.7.3 ROLE OF LIBRARIES IN PHARMACY EDUCATION:-

Education is the acquisition of the art of utilization of knowledge. The main aim of education is to build character, increase strength of mind and expand intellect. Mahatma Gandhi, Ravindranath Tagore and Pandit Jawaharlal Nehru have also laid the stress on the same objectives. In order to achieve these objectives, library plays multi dimensional role. Following discussion elaborates on the role of library.

Library plays an important role to educate the literate, dispel their ignorance and to provide opportunities for continuing education to the educated. Another media role played by library is the communicator between the teacher and students. Library is a media centre with learning environment artfully designed to have stimulating and enriching effect upon students. In formal education system, teaching is supplemented by classroom, taking the maximum help of teacher. During the stage of higher education the focal point of learning should gradually shift from classroom to the library. In the non formal education the help of teacher is minimal. The students by and large have to acquire knowledge through self study. In non formal education the main responsibility of supporting the education rests with libraries. Provision of suitable library facilities, leads to divert the great potential energy of young men for reading, constructive thinking and making them disciplined, respectful and senior citizens of the country.

Library centered teaching will promote mutual respect between the teachers and the taught and they will appreciate books and library. Education is a continuing process in self education starts at the end of formal education. There are great
personalities who on the basis of self-education, attempt highest place of perfection in knowledge. Libraries are appropriate agencies which provide suitable ground for self education. According to Mahatma Gandhi the concept of adult education is to make men and women better citizens with the idea of individual development to community development. The term adult education has been changed to social education and therefore library services are now extended to the community even outside the library building. Academic library also offers effective library services to the community.

The successful propagation of research activity needs past information. Due to multidisciplinary research and seepage of literature into a variety or fields there is an increasing demand for libraries to support and encourage research. Library also plays the role by preserving the cultural heritage of human race. The representative and selective collection of books on spiritual and religious. Ideological theme as well as permanent value may inspire people to have high ideal life and inculcate values in them.

In the changing scenario of higher education and research, the ease of availability of information to the required use has also changed the role of librarian and information professionals from knowledge custodians to knowledge facilitators. Now a days the invite of new technologies have provided access to vast volume of information in a competitive spirit. It improves both quality and quantity of higher education.

Library can also be characterized as social institution. Society has decided what library should be in the past what is should be in future. Even though library is an archival collection, it is essential for cultural survival. Library is not only centre of culture it served but it is also a form of insurance against social disintegration and decay.

3.8 INFORMATION SERVICES RENDERED BY THE COLLEGE LIBRARY:

The college library is expected to provide reader services and auxiliary services. The exhaustive list of all these services is as follows.

The reader services includes circulation, home lending services, reservation of books, use of union catalogue, inter library loan service and display of current edition.

The service related to reference books are reference collection, reference service in action to meet the information need, to advice the users about what to read,
tracing books and periodicals, to assist in preparation of bibliographies, to arrange exhibition, to arrange lectures and cultural programme and to play a role of information mediator.

The auxiliary services includes documentation services like current awareness list, selective dissemination of information, indexing and abstracting services, translation services, reprographic services, micro recording, microfilm, micro card, microfiche, filmstrip, to work as a documentation centers and to work as a information centre’s.

3.9 INFORMATION SOURCES OF THE COLLEGE LIBRARY:

The expected resources in the college libraries are broadly classified as printed and non printed material. Printed resources includes textbook, reference book encyclopedia, dictionary, handbook, year book, manuals, bibliographic and geographical tools, gazetteers, atlases and journals. Non printed resources includes microfilms, microfiche, micro card, filmstrips and recordings. And electronics database from digital library.

3.10 DATABASES OF THE PHARMACY LIBRARY

Database is a collection of information in electronic format organized in a logical fashion. Database gives primary information for all leading business schools and universities in the world some examples of databases you may encounter in your daily life the World Wide Web, a collection of resources on the Internet.

A: BENTHEM:

Bentham Science publishers is a major journal publisher of 91 titles, which answers the information needs of the pharmaceutical, bio-medical and medical research community. Bentham Science publishers launched 200 plus peer- reviewed open access journals during 2008, under the banner of "Bentham OPEN" and This database provides full-text coverage of more than 29 journal title and back issues for specially pharmacy education knowledge. This journal titles covers various subjects Anti-infective/infectious diseases, Bioinformatics, Biotechnology, Cardiology and cardiovascular science, Drug delivery, Drug design and discovery, Drug metabolism, Drug therapy, Genomics, Immunology & endocrinology, Inflammation and allergy, Medicine, Molecular Medicine, Nan science, Neuroscience, Oncology and cancer
research, Organic chemistry, pharmacology, protein and peptide science, patents review journal this database also provide Table of contents, abstracts and alerting service for all users and all titles, Clean interface and excellent navigation and for users information user statistics available. Users can Access by IP address recognition with username and password access for remote users. www.bentham.org22.3.2013

B: Elsevier

Elsevier is a world leading provider of pharmacy education information it is a specially one containing scholarly articles or disseminating current information on research and development in a particular subject fields. Elsevier is a partner with a global community of 7000 journal editors and provide specially 70 e-journals to pharmacy education to help users advance science and health by providing world-class information and innovative tools that help them make critical decision, enhance productivity and improve outcomes.

Elsevier provide free or low-cost access pharmacy science and health information in the developing world. Elsevier’s roots are in journal and book publishing, and fostered the peer-review process for more than 130 years .today Elsevier driving innovation by delivering authoritative content with cutting-edge technology, allowing our customers to find the answer they need quickly.

For pharmacy science Elsevier deliver spans peer-reviewed published literature, conferences and patents, and covers the latest research information i.e. patent records, approved drugs, events and other news with the pharmacy science which is essential to pharmacy researcher, students and faculty. For this information in AICTE norms Elsevier database is essential for library to users use. All pharmacy college libraries subscribed Elsevier journal database to users use.

C: MIMS (Monthly index of Medical Specialties): 

Is a practical reference to all major ethical preparations available for prescription in India It is for use only by registered medical parishioners and pharmacists. Launched in 1980, MIMS has maintained its position as India's most widely used medical journal. MINS has proved to be a vital source of information for medical professionals who look for accuracy, consistency and up-to-date information. MINS maintain a large data base on practicing doctors with means to print out address
labels for mailers. It is very useful to student for reference section in library. MIMS published by A.E. Morgan publications (India) private Limited, New Delhi-110 919 it is very important sources for student reference in the library.

**D: British pharmacopoeia:**

The British pharmacopoeia is an annual published collection for quality standards for UK medicinal substances. It is used by individuals and organizations involved in pharmaceutical research, development, manufacture and testing. Pharmacopoeial standards are publicly available and legally enforceable standards of quality for medicinal products and their constituents. The pharmacopoeia is an important statutory component in the control of medicines which complements and assists the licensing and inspection processes of the Medicines and Healthcare products Regulatory Agency (MHRA) of the United Kingdom.

The British pharmacopoeia is published for the Health Ministers of the United kingdom on the recommendation of the Commission on Human Medicines in accordance with section 99 (6) of the Medicines Act 1968 and notified in draft to the European Commission in accordance with Directive 98/34 EEC.

**History -**

The first edition of the British pharmacopoeia was published in 1864 and was one of the first attempts to harmonize pharmaceutical standards, through the merger of the London, Edinburgh and Dublin pharmacopoeias

**Content -**

The current edition of the British pharmacopoeia comprises six volumes which contain nearly 3,000 monographs for drug substances, recipients and formulated preparation, together with supporting General Notices, Appendices (test methods reagents etc.) and reference Spectra used in the practice of medicine, all comprehensively indexed and cross-referenced for easy reference.

**Volume 1 to 6 covers -**

Medicinal Substances, Formulated preparations, Blood related preparations, Immunological products, Radiopharmaceutical preparations, Surgical Materials, Homeopathic preparations, Infrared Reference Spectra

The BP is available as a printed volume and electronically in both on line and CD-ROM versions; it is very important sources in pharmacy college library in reference section.
E: INDIAN PHARMACOPIA -

Indian pharmacopeia is a guide to formats of content. Indian pharmacopeia commission published the publication the Indian pharmacopoeia is a compilation of official standards for drugs manufactured in India. The full name or title of the book is Indian pharmacopoeia. Standards in the IP are expressed in the form of specification and test methods for determining compliance with such standards. Specifications that are applicable to any pharmaceutical article are complied in a monograph. A monograph states the quality or test parameters, the acceptance criteria and details of the tests that are to be performed to determine compliance with the criteria. In other words, a pharmacopoeia monograph provides a reliable basis for making an independent and objective judgment as to the quality of a pharmaceutical substance.

The actual process of publishing the first pharmacopoeia started in the year 1944 under the chairmanship of Col. R. N. Chopra. The I.P. list was first published in the year 1946 and was the put forth for approval. The titles are suffixed with the respective years of publication, e.g. 1996. The technical part of the pharmacopoeia shall be broadly divided in to the following sections: Introduction, 2 general Notices, 3 Monographs, 4. Test methods, 5. Reagents and Solutions 6. General Texts 7. Index It is very useful to the researcher, faculty and students.

F: International Pharmacopeia -

The international pharmacopoeia published by World Health Organization in Geneva, comprises a collection of recommended procedures for analysis and specifications for the determination of pharmaceutical substances, excipients, and dosage forms that is intended to serve as source material for reference or adaptation by any WHO Member State wishing to establish pharmaceutical requirements. The pharmacopoeia, or any part of it, shall have legal status only if a national authority expressly introduces it into appropriate legislature.

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