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*Full Length Research Paper*

# Relevance of library and information resource centre in pharmaceutical research development in context of the new digital era

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**Future library profession has many challenges, and schools of library and information science need to build wide range of information related careers to library science graduate. In implementing an automated system in an advanced pharmaceutical library, it is essential to recruit the library staff and professionals having skills in computer operation. Professionals engaged in the information transfer process require up-to-date knowledge and skills for which continuous education and training facilities are required. Computer and information literacy undoubtedly will result in a huge demand for fast, flexible and easily accessible information services.**

**Key words:** Library, pharmaceutical library, information services, computer.

## INTRODUCTION

In the digital era, library and information professionals are still to be fully engaged in the provision of information services to organizations communities and to society at large. Many other knowledge workers deal with information in one way or another, but this is different from information professionals. For library and information professionals, having their core skills in information service, see their practice as primary activity. In the digital age, the creation of quality-filtered collections of information is more important than ever, and librarians have a key role to play.

The future library profession has many challenges and schools of library and information sciences need to build wide range of information-related careers to library science graduates. The partnerships of all kinds are essentials and we need to continue to build better colla-boration with libraries for building our knowledge base. In the information age, library/information science profess-sionals have better opportunity to move ahead than ever before.

It is an accepted fact that now the web is a tool, new technologies and new ideas with fresh/young minds having the craze of IT help to evolve libraries and information centers to meet user's ever changing needs. Libraries need to assess, plan and balance long-term goals and services with the promises and draw-backs of new emerging technologies. The professionals from the schools of library and information science have to realize that the next generation of users expects new type of partnership in approaching the information.

The human element is a very important aspect in implementing an automated system in the library. The library and its staff are the focal point and play a very important role in the library automation. During the course of the automation project, it is crucial for the library to assure a coordinating role and to be aware of what is going on at all times. Staff awareness and participation before installation are crucial to the success of the new system or service. It is also equally necessary that the library staff should have computer knowledge and professional experience. Their involvement in the development of a new system/service is essential for its successful implementation.

It is now recognized that information plays a vital role in national development and that an adequate library and information infrastructure is therefore essential. Such infrastructure requires professional information personnel. Furthermore, information systems and services should be able to draw upon a theoretical foundation established by fundamental research in information science.

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For this purpose, skilled research employees are required. The field of library and information science studies is a dynamic area of study. In the present era, it is trying to achieve its goal by using different technologies like reprographic technologies, library technologies and technical communications.

A library is no longer considered as a trinity of books, readers and staff or a storehouse of knowledge. In the age of information, libraries are changed into information centers or learning resource centers in which the library professionals perform as information professionals. Their primary responsibility is to collect, organize, store and disseminate information to the large community of users. Today information has been considered as a strategic or economic resource, a marketable commodity and a social wealth. Considering the importance of information, the employees of libraries and information centers need to update their knowledge and skills. This is a creative process in which education and training become strong foundations.

A library being an information collection, organization and dissemination agency has implications both for the workforce, their professional education and training. Professionals engaged in the information transfer process require up-to-date knowledge and skills for which continuous education and training facilities are required. Developing skills of the information professionals depends on a mixture of formal education training on the job.

## MANAGEMENT OF DIGITAL CONTENT

The social and economic expectations of a professional depend on the image, service and participation level of library and information professionals in the organization of society at large. In web dominated environment, it is essential to work more on taxonomies and context management, look at metadata and controlled vocabularies.

Therefore, library and information professionals need to build sustainable, long-term open system and frameworks around the terms associated with managing digital context (Bhattacharya, 1953). The traditional library and digital library world do not have a well-articulated, well-developed consensus reference. The cultural contexts of education are not well understood, yet have deep implications for more technical design choices in pedagogical development. It is observed that there is distrust among teachers and their lack of understanding of pedagogical approach. These, together with the faculty operational plans, are the drivers of the library's strategies to support the teaching, research and community programs of any institution. One must have some strategies before establishing a digital pharmaceutical Library. These strategies include: Liaising and planning with the scholarly community to develop collections and related services; organizing and maintaining the collections for effective use; providing access to scholarly information in all formats to users wherever they are located: ensuring long term access to scholarly information resources in all formats by preserving and archiving these information wherever appropriate resources are available; participating in cooperative and collaborative activities to improve the range of resources available to scholars and students.

## ROLE OF HRD IN DEVELOPING PHARMACEUTICAL LIBRARY

A resource is a means or supply of ability. According to the concise oxford dictionary, resource means supplying what is needed, the stock that can be drawn, available assets which a person or country can use. A resource is an asset. It can be a material, finance, real estate, forest wealth, water wealth, power or any machinery.

Bronowski, 1976 in his book 'The Ascent of Man' stated that man has achieved ascendancy over other mammals. Behavior, discipline and character are all ingredients of a human being. Human beings are therefore, the primary and most important resource. They create other resources through their ability. The human sources, therefore, should be developed as a resource so that the other resources multiply.

Jayagopal, 1990 in his book "Human Resource Development: Conceptual Analysis and Strategies" defined human resource development as a process of measurement and reporting of the need value of people which is an organizational resource. It involves accounting for investment in people and their replacement cost, in addition to accounting for the economic value to an organization. Human resource development is a set of structured and integrated social programs whose scope and thrust are so defined as to put it into one of the following relations with other developmental strategies:
(a) as an adjustment (b) as a complementary or (c) as an alternative strategy. The benefits of HRD are varied:

1. It motivates the professionals and employees and creates a favorable psychological climate and environment.
2. It helps in the long run to reduce the costs of production in various industries and institutions.
3. It inculcates team spirit and reduces tensions between individual and professional groups in society and strikes in organizations.
4. It reveals the educational or training needs of the workforce with the result, where training and development programs become more effective.
5. It brings out the best talent of employees, which contributes to the socio-economic and cultural growth and development of the country.
6. It develops intelligent and committed leadership on different professional workforce.

7. It enables employees and professionals to update themselves and their knowledge.

## SYSTEMATIC APPROACH TO HRD IN PHARMACEUTICAL LIBRARIES

The human resource development in pharmaceutical libraries would require a systematic approach. First of all, need analysis is essential to identify the specific job performance skill required for analyzing the skills and needs of the prospective trainee and to develop specific measurable knowledge and performance objectives. The second step is designing of training program, development of course contents and practical teaching techniques, etc. Third step would be implementation of the training programme by presenting to the target group. Further step relates to evaluation and follow up step in which the institute and users assess the programmes success or failures. It is very much essential to know how well its goals have been met and whether it is the best method for reaching the goals.

Against the technological changes in every field, rapid and vast changes in the field of library and information are also taking place. And for this purpose, development of human resources is essential. The delivery of information is becoming increasingly entwined with the information itself and librarians and information professsionals are increasingly involved in the management of networks, E-mail and Internet provision in their work places. Information professionals should strive for professional excellence by maintaining and enhancing their knowledge and skills. Continuing education and training have always played a significant role in the development of the profession.

## DIGITAL PHARMACEUTICAL LIBRARY

The sophistication of computer technology and information transmission on internet has made various cyber information repositories available to information consumers. In the era of information super -highway, the digital library which can be accessed from remote sites at any time is considered the prototype of information repository. Using object-oriented Data-based Management System (DBMS), the very first model of digital library for pharmaceutical researchers and related professionals in Korea has been developed. The published research papers and researchers' personal information was included in the database. In every digital pharmaceutical laboratory, different types of object oriented database would definitely help the users.

One of the important reasons for under utilization of electronic information is lack of requisite level of working knowledge and consumption skills among customers and information intermediaries. Even those professionals who are already on the job are severely handicapped if they do not have enough scope, opportunities and self-initiation to absorb and update the necessary skills, expertise and knowledge relating to IT.

## PHARMWEB VIRTUAL LIBRARY

PharmWeb is the first structured pharmaceutical information server on the internet established in 1994. It is the first specialist Internet provider for pharmaceutical and health related organizations, managed and operated by pharmacists and medical communications specialists. PharmWeb is accessible at sites all over the world ensuring fast local access to information and has a large readership composed of patients, health professionals and scientists in over 177 countries.

It enables you to deliver information to your target audience and also to profile your site. PharmWeb has a fast state-of-the-art secure server dedicated to PharmWeb with a 100Mb/s port connected to one of the most advanced networks on the internet (Super JANET) and provides a wide range of services such as web space, page design and authoring, graphics design, domain registration, and programming.

The PharmWeb (http://www.pharmwb.net) virtual library is designed to be a repository of pharmaceutical information for educational and research purposes. The aim is to make available a database of valuable information for the use of the readers. One can contribute to the PharmWeb virtual library and can share the work with the pharmaceutical and healthcare community. Whilst providing editorial control over the content of the virtual library, PharmWeb accept no responsibility for the accuracy/reliability of information stored in the PharmWeb virtual library.

Information stored on the PharmWeb virtual library may be used free of charge, however, it may not be reproduced or made available on any other server or in any electronic format without the express permission from.

## OTHER INFORMATION RESOURCES IN PHARMACEUTICAL SCIENCE

The pharmaceutical and medical areas are well represented on the Internet with an enormous wealth of material. Most of the major drug manufacturers have web sites which include annual reports and information on their products; also many of the special interest groups for sufferers of various complaints have an active Internet presence. Some of the important sites have been given below:

1. http://www.pslgroup.com/: This is the doctors guide to the Internet (Patient version), organized by disease; this source is aimed at the intelligent layman, it contains good

general articles, drug information, discussion groups and related site lists.

2. http://www.centerwatch.com/: This site includes a listing of drug therapies which are newly approved by the US food and drink administration; there is a short article on each of the drugs listed. It also has lists of clinical trials currently running.

3. http://www.phrma.org/webdb/help.htm: Produced by PhRMA the association of America's pharmaceutical companies; this lists drugs currently under development, searchable by disease, indication or drug.

4. http://www.nicl.com/: Home page of NICL Laboratories, this is a US hospital services company and their page contains clinical laboratories information and links.

5. http://www.medscape.com/: This site gives access to Medline which contains abstracts for 8 million medical references, subscription is currently free and requires no time lag for setup. Once you have subscribed you can search Medline or the full text sections of the site and you also get emailed with up-date news. The searching is obviously much more primitive than is available with paid services but for a light or occasional user, this is a very useful service.

6. http://www.ccm.lsumc.edu/bugbytes/: A biweekly online journal containing articles about infectious diseases, this is produced by the Infectious Disease Section of the Louisiana State University Medical Center.

7. http://www.asge.org/: This is the site of the American Society for Gastrointestinal Endoscopy.

8. http://www.bhia.org/: The British Healthcare Internet Association has been set up to promote the use of the Internet in the UK to assist patient's access to information sources.

9. http://cancernet.nci.nih.gov/: Site which contains masses of information and links relating to cancer and its treatment.

10. http://www.gretmar.com/webdoctor/home.html: Webdoctor, this site is US based and offers a medical virtual library, it is aimed at physicians and produced by them also.

11. http://www.biomednet.com: Site containing good data and links in the biomedical area.

12. http://www.interpharma.co.uk: It assists pharmaceutical companies search for support service companies.

**Pharmacognosy and herbal products**

Pharmacognosy is the branch of pharmacology which deals with the biological, biochemical and economic features of natural drugs and their constituents. Pharmacognosy is the scientific study of drugs that are derived from nature. There are an increasing number of resources to help pharmacists and the public find out about new and experimental herbal treatments.

In addition, there is an organization named “National Centre for Complementary and Alternative Medicine (NCCAM) who is conducting a number of studies. These studies will provide the kind of evidence that we depend upon for FDA-regulated medications. Apart from this there are a number of online resources which provide information on various aspects of drug and drug usage.

The International Bibliographic Information on Dietary Supplements (IBIDS) is an online database of published, international, scientific literature on dietary supplements, including vitamins, minerals and botanicals. No full text is available, but a journal list provides links to online journal web sites.

**HRD STRATEGY FOR LIBRARY PROFESSIONALS**

In most professional organizations, the role of the human resources department is not sidelined or eclipsed by other departments. In fact, it is recognised by all that the human capital plays vital and dynamic role in all sectors of societal development (Poell et al., 2003). As we all know that information plays a very important role in national development and that an adequate library and information infrastructure is therefore essential. Such infrastructure requires professional information personnel of sufficient quality and insufficient numbers to plan, design, organise, manage and operate a wide range of information systems and services.

For this purpose skilled research workers are required. HRD is about providing people with the knowledge, understanding, skills and training that enables them to perform effectively. HRD encompasses staff development and training, continuing professional development/ continuing professional education and workplace learning. HRD motivates the existing professional and employees and create a favorable psychological climate and environment. It also helps in the long run to reduce the costs of production in various industries and institution.

Library being an information collection, organization and dissemination agency, this has implications both for the work force, their professional educations and training. Professionals engaged in the information transfer process require up to date knowledge and skills for which the provision of basic professional and continuing education should be considered as a whole since they complement each other. Both forms of education should be considered in relation to periodical training, especially in continuing education, since often to be effective, it has to include elements of training developing skills of these information professional depend on a mixture of formal education and training on the job. HRD being professional associations emphasizes and facilitate continuing professional education for their members.

A quick Internet search of the Web sites of the world’s library and information associations reveals many professional associations actively promoting and facilitating continuing professional development programs for their

members. Some of them are listed below:

1. The Community Library Training Program (CLTP): is a Web based distance education program offered by the Public Library Services Branch of the British Columbia Ministry of Education (http://www.bcpl.gov.bc.ca/lsb/cltp/).
2. The online library assistant training program is an online, on-the-job training program that offers you the opportunity to explore some of the issues in libraries beyond the specific tasks of every day's job. The program currently addresses issues found in: Academic and research libraries, school libraries and public libraries. http://comminfo.rutgers.edu/professional-development/online-library-assistant-training-program.html
3. NLM's university-based biomedical informatics research training programs (http://www.nlm.nih.gov/ep/GrantTrainInstitute.html).
4. Safety info–your online safety library for osha training and compliance resources (http://www.safetyinfo.com/index.htm).
5. STN library and information science (LIS) training program: STN is the premier online scientific and technical information service dedicated to meeting the needs of information professionals worldwide (http://www.cas.org/support/academic/stnlis/index. html).

6. Developing and implementing training and education programs (http://www.uflib.ufl.edu/pers/training/training.htm).
7. A staff training program for professional and para-professionals working with people who have mental retardation/developmental disabilities with implications for training staff who work with other differently abled people (http://gateway.nlm.nih.gov/MeetingAbstracts/ma?f=102192092.html).
8. Usenet newsgroups: Usenet newsgroups are text based discussion groups on every topic imaginable - a more public form of mailing lists. This is technically not a part of the internet because they use the UNIX-to-UNIX copy protocol (UUCP) rather than the TCP/IP of the internet.

It is better understood now that to access all this available information, there is always a need for an efficient information scientist well versed in IT Technology. Apart from the above methods, the following factors should also be considered in case of Human Resource Development in pharmaceutical LIS:
1. The present curriculum of library and information science needs to be revised to include new technologies.
2. Upgrading skills of employees/library staff to ensure quality services to its readers is essential.
3. Professional library staff should be accorded full academic and management status. This needs to be linked to a proper plan of professional human resource development, to ensure that librarians are able to cope with the new technologies.
4. HRD programme for the training of in-service personnel should be organized on a regular basis.
5. LIS being an apex institution for library professionals can perform many important jobs essential for library professionals. In many countries and even at the state level there is no strong organization/association of this profession. LIS should take some immediate action for knowledge development:

i. They can start coaching classes for Blib and Mlib through distance education options.
ii. Also Internship like other technical courses for 6 months.
iii. Can organize workshops for new technologies in reservation and retrieval.
iv. Can develop a platform for library professionals to open themselves on problem discussions.
v. Can make a strong recommendation of apex institution for job allocation in corporate/public libraries as well as academic libraries.
vi. Can develop centers at all country/state levels with transparent committees.

In this way, LIS can develop Global+Local developmental integration among Librarians all over the world. LIS professional associations and groups should organize national and international seminars/conferences for updating/sharing knowledge. A developmental plan and policy at the national level is essential for a planned growth of LIS professionals.

Presently, there are 256 Universities including institutes of national importance, 46 deemed universities, 34 agri-cultural universities and 8 open universities. University libraries are expected to support teaching, research and extension activities. These libraries at present are at various stages of development. Most of them are not fully automated or modernized. The role of university libraries, being at the apex of the academic libraries sys-tem have been changing over the years. These libraries need to be on the information super highway which would connect the entire world for dissemination and exchange of information in the near future. After the financial aid from UGC for the automation of libraries very few central and state university libraries have been able to spend the funds/money and no remarkable progress is seen in this direction. This is due to the following reasons:

1. The professionals working in the libraries do not have much practical knowledge in computerization.
2. There is a lack of standards bibliographical format for data entry in the automated system (retrospective conversion of data).
3. Most of the libraries have a large stock of documents with varying cataloguing practice.
4. There is a lack of will and commitment among the staff.

There are various factors which compel the institutions to have a well-defined and designed training policy, plans

and programmes for the pharmaceutical library staff. Some of these factors include:

1. Impact of information technology.
2. Demands for specialized services.
3. R and D activities of their institutions.
4. Growing knowledge of exploitation.
5. Increasing number of users.
6. Proliferation of subjects.
7. Management of problems.

## Continuing education programmes for development of professionals

Continuing Education Programmes (CEP) provide opportunities to the professionals to develop managerial skills, problem solving skills, etc. The present day profession demands new skills, methods and approaches. Information providers, information specialists, information intermediaries and end-users have become increasingly significant. The radical changes make it imperative for a good system of continuing education. Education and training of professionals and converting them into information professionals need changes at three levels, viz (I) Library and Information Science Education (LISE) curriculum, (II) Continuing Education Programmes (CEP) and (III) Specialized training. Computer-based learning such as multimedia technologies, artificial intelligences, expert system, networking hypermedia, etc. will change the working environment of information professionals as well as pattern of education and learning. In the modern times, the library and information science personnel have to acquire and cultivate knowledge and skills for communicating the sought information to a variety of users in efficient and effective manners.

## CONCLUSION

The importance of library, information and information science manpower in India has risen considerably. Since the modern library movement the importance of the contribution of library personnel has been gaining strength steadily all over the world, maintaining currency in the information professionals has become increasingly difficult in the light of fast paced societal and technological changes. Professionals in these fields have started realizing the type of education and training they believe is needed to practice. Developments in educational technology and the changing pattern of education and learning indicate serious challenges for the library and information community to upgrade their information technology (IT) skills.

An organization can achieve its goal, if sufficient opportunities are provided to its employees to enrich their potential by proper policies and programmes in the area of their interest. Professional competencies are further identified by knowledge in the area of information, resources, technology, management and research. The ability to use these areas of knowledge for providing library and information services can be enhanced by the organizations HRD policies.

Research is part of human resource management. Further, it is important for human resource professionals to be up to date on the latest trends in staffing, performance appraisals, compensation and benefits, training and development, employee and labor relations, and safety and health issues, especially for the global market.

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