

## USING TECHNOLOGY FOR DISSEMINATING INFORMATION IN PAKISTANI MEDICAL COLLEGES\*

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**Abstract:** In the developing world like Pakistan, academician, and researchers face problems in accessing the required information due to poor infrastructure or lack of library facilities for research in medical institutions. Health professionals are keen to know the latest information and state of the art technology on various topics advanced method of treatment or latest strategies for hospital management and related non-clinical health imperatives.

As communication technologies are beginning to have an impact on many information activities, INTERNET, INTRANET, List serve etc are providing access to an almost indescribable wealth of information. The Aga Khan University and such other private medical schools in Pakistan have the provision for these latest facilities besides traditional collections of books, sizable journal subscriptions to provide access. We are also out reaching those who may request/demand information in Public institutions and do not have these facilities available.

The Aga Khan University is developing linkages with national and regional institutions to enhance access and develop resource sharing through Inter-Library Loan agreements. These include besides document exchange, training and development of staff through journal club, library workshops, and in-house training programs for staff of all levels. This paper provides status of technology use in two private medical institutions of Pakistan and its impact on other health care institutions in the country.

### Overview

Pakistan has 76 libraries of different sizes and capacities. Of these 30 libraries have Medline on CD-ROM and some electronic access and capability. About 100 journals are published in the field of health and biomedical sciences but only one journal, the Journal of the Pakistan Medical Association is indexed in Index Medicus: 30 journals are covered in Index Medicus for WHO Eastern Mediterranean Region. There are several indexing and abstracting tools that have been developed, e.g. Medical Literature in Pakistan (MEDLIP) but there is a need for a coherent bibliographical control of local literature. There also exists formal and informal interlibrary collaboration but on a national level this is also disorganized in the absence of a National Library of Medicine in Pakistan. The

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Medical Library Association of Pakistan is at a premature stage of its formation. Problems encountered by most libraries are: lack of financial resources; lack of basic facilities; no provision for staff development and training, non-availability of trained people; and generally lack of vision and low priority for libraries.<sup>1</sup> In this scenario there are some foreign mission libraries such as British Council and American Center, which fulfill some biomedical information needs of health professionals, physicians, researchers and students.

This dearth of latest literature and falling standards of education and health care in public sector resulted into rapid expansion of universities and other institutions of educational excellence in private sector in the last two decades in Pakistan.

### **The Aga Khan University**

AKU was established in Karachi in 1983 as the first private, autonomous academic institution to respond to the needs of developing countries and the Muslim World. The University fosters a scientific and scholarly approach to the study and solution of the problems of under-development and strives to develop relevant human resources to respond effectively. AKU is governed by a Board of Trustees consisting of a number of distinguished individuals, from Pakistan and overseas, with extensive academic and administrative experience.

Spread over 84 acres of land gifted by the Government of Pakistan, is the faculty of Health Sciences (FHS), the first faculty of AKU. While FHS comprises of a school of Nursing (1980) and a Medical College (1983), students gain clinical experience at the 654-bed teaching Hospital (1985) situated on the same campus. The FHS and Hospital together form The Aga Khan University Medical Center.

The charter granted by Govt. of Pakistan in 1983 additionally envisages AKU as an international University with campuses located in various regions of the world and addressing different fields of knowledge.

By 1993, the 10<sup>th</sup> year of its establishment, The Aga Khan University had added teachers' education to its academic programs through the establishment of the Institute for Educational Development (IED). Future academic endeavours of the University under consideration include: Institutes of Islamic Civilizations; Human Development; Economic Growth and Society; Planning and Management of Human Settlements and a College of Arts and Sciences.

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<sup>1</sup> *Intercountry Meeting of Emlibnet Focal Points*. Egypt: Alexandria; WHOEMRO, 25-28 May, 1998 (Limited Distribution)

The FHS and the University Hospital serve as a focal point for The Aga Khan Health Services (AKHS), an international network comprising of over 200 health care units in South East Asia and East Africa. Such collaborations offer technical assistance, training and advanced referral facilities to five other AKHS hospitals while providing services to primary healthcare activities, which annually serve two million patients in these regions. The university also interacts with governments and international agencies in outreach. During this short period of time The Aga Khan University has earned recognition as a premier institution of higher learning in the country.<sup>2</sup>

### **Ziauddin Medical University**

Dr. Ziauddin an Ex-Vice Chancellor of Aligarh Muslim University and ardent supporter of M.A. Jinnah founder of Pakistan became one of the leading educationist of undivided India. The University and its groups of hospitals have been established in his memory. An undergraduate program started from 1996, and from its inception the university decided to focus on Community Oriented Medical Education (COME), and Problem Based Learning (PBL) curriculum and to introduce innovative methods of medical education. The university has five campuses in the city.

The ZMU libraries start supporting users in their studies and research pursuits from the very first day of academic program. The emphasis is to assist users by providing computer-based information e.g. CD-ROM databases, Medline, etc. along with the books, periodicals and other ephemeral literature. The library staff and the computer experts train the students and assist teachers in learning the sources of information and how to access them. At present the libraries are serving the needs of 300 students, 125 teachers<sup>3</sup> and research scholars. Around 26 Instructors and Senior Instructors are engaged in their research work for M.Phil or Ph.D. So far two physicians have completed M.Phil while one has received Ph.D degree from the University.

### **Finance**

As the AKU medical college was planned in consultation with Harvard, McGill and Case Western Reserve Universities, the library also benefited from their experience and was given due importance. It was realized very early on that library means a long term financial commitment. Two Philanthropist families KURJI and

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<sup>2</sup> The Aga Khan University (Brochure). RDPA, 1997

<sup>3</sup> *Ziauddin Medical University*. M.B.B.S. Prospectus, 1999-2000

JIVRAJ of Canada to ensure library's future development and smooth provision of funds established endowment for library. The University spends an appropriate percentage of University budget on library facility of international standard. The library subscribes to 500 journal titles, which make AKU a national resource as no other institution has that provision. ZMU is a much younger institution striving to achieve accepted norms and standards. It spends about Rs. 1.2 million on journals, and Medline on CD-ROM, plus 0.5 million on books which is comparatively better than many other local institutions.

While the existing Jivraj and Kurji endowments are contributing towards the physical facilities of the libraries and acquisition of a steady stream of books and journals, the need is much greater. To encourage international participation, a "Book Campaign" was launched between 1993 and 1994 while celebrating 10<sup>th</sup> year of its establishment. For \$50 (the average cost of a textbook), a donor could participate in this exciting and important endeavor to strengthen and enrich library resources of The Aga Khan University.<sup>4</sup>

Similarly, the AKU's first batch of medical graduates (1988) celebrating their 10<sup>th</sup> year in North America (1998) set a precedence by donating \$100 worth of book each in whichever field they have specialized in to AKU library as a gesture of love for their almatemat. Several good things have followed in cash and kind since by our Alumni. AKU's resource development department plays a key role in monitoring these resources for the maximum benefit of institution and library is a great beneficiary of their effort.

## **Human Resource Development**

HRD was identified as crucial area for the success of running the library. Realizing the shortage of trained manpower in the health sciences libraries and lack of training opportunities, as early as 1987, the library conducted the first national medical librarians workshop with the assistance of WHO (EMRO) and the British Council.<sup>5</sup> collaboration has continued, and the library has implemented training programs for librarians from Afghanistan, Islamic Republic of Iran and Pakistan.

The library is playing a major role in this area by taking several initiatives. A full-fledged librarianship-training program is on university's future agenda. But currently a 12-module in-house continuing education program for library assistants' is offered every year. Besides a 2-week state of the art technology

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<sup>4</sup> Staying Ahead of Tomorrow: The Aga Khan University Book Campaign\_ (Brochure). RDPA, 1994

<sup>5</sup> Morgan Peter B. *A Workshop for Medical Librarians in Pakistan*. Health Libr. Rev. 1988 5; 7-10

exposure is provided to novice librarians or working librarians who request a hands-on experience in electronic information retrieval due to availability of facilities at AKU.

Forming a Journal Club by AKU librarians to share latest developments published in library literature has proved very useful in providing a forum to medical librarians of Karachi. This is leading to formation of Medical Library Association of Pakistan (MELAP) and a lot of other resource sharing projects together.

Similarly, to overcome the dearth of trained librarians, ZMU instituted a three month internship for fresh library graduates. The purpose is to provide hands-on training in the field of medical librarianship, before they take up formal employment. They learn NLM classification system, use of CD-ROM databases, Internet and Email which library schools in Pakistan do not provide adequately.

The trainees during this period are offered a monthly stipend and a certificate at the completion of training. So far twelve students in three batches have been trained. Almost all of them have been employed while 60% of them were selected to work in medical libraries.

### **Information Access**

The acute shortage of scientific and technical literature in developing countries is a major handicap in the pursuit of higher education and research. The task of building strong academic centres, the postgraduate and research programs in particular, cannot be accomplished without strengthening library resources, and fulfilling growing needs and demands for information about new developments. The Aga Khan University library presently contains 24,000 books on various disciplines of health sciences, and subscribes annually to more than 500 international medical and nursing journals – the largest current collection of professional literature in Pakistan. In addition state of the art facilities for literature search on compact disks (CD-ROM) and INTERNET are also available.

The problems of collection building and acquisition in Pakistan have been narrated by Haider<sup>6</sup> and Khurshid<sup>7</sup> many times and are well known through library literature of sub-continent. It will serve no purpose to repeat those here. Suffice would be to say that AKU and ZMU exist within their environment and face those challenges. The pace of discovery of new knowledge is ever increasing and if

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<sup>6</sup> Haider SJ. *University Libraries in Pakistan*. Coll. & Res Libr 1975 Sept; 379-384

<sup>7</sup> Khurshid Anis. Library Development in Pakistan in the Mid – 1980s Int. Libr.Rev. 1987 18:61-71

these universities are to continue serving as Paksitan's premier libraries, they need to renew and augment their resources on an ongoing basis.

In its 10<sup>th</sup> year of establishment the AKU's Board of Trustees received the Report of the Medical Center Committee (MCC) on direction for development of University over 10-25 years.

The Task Force for strategic planning on Library and Learning Resource Center (LRC) appointed in October 1993 suggested in its report that "a growing university with an increasing commitment to research and new graduate programs will require a growing library over the next ten years."<sup>8</sup>

Throughout the world, libraries are increasingly providing access to information that is stored electronically. Books and journals are and will remain important but academic libraries are meeting the information needs of their users by establishing electronic links with databases and with each other.

The Committee for library proposed that AKU library first be connected via Internet to other Centers worldwide. Then an internal network to allow AKU users to be connected to the world's information sources from their desk must link with the library and with each other. Both these have been achieved in the first phase of development in five years. Both INTERNET and INTRANET facilities are available on AKU Campus to at least most senior faculty and staff members, in the library and LRC for common use.

### **Resource Sharing/ILL**

Libraries and librarians have always explored among themselves economic means of providing service, meeting information needs of their users. Resource sharing, cooperative acquisition schemes, inter-library loans have been the norms throughout the history of librarianship. In the information society "inter-library loan services are being replaced by the almost instant acquisition of articles on demand. Other materials (handbooks, textbooks in areas such as anatomy, and monographs) are being supplemented by electronic works that have been more fundamentally reconceptualized for the digital environment. Acquisition of published literature by libraries has transformed into the negotiation of site license for network access to material."<sup>9</sup>

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<sup>8</sup> The Task Force for Strategic Planning on Library and Audio Visual. (Unpublished Report). 1994

<sup>9</sup> Lynch C. Medical Libraries, Bioinformatics, and Networked Information: a Coming Convergence. Bull Med Libr Assoc 1999 Oct; **87** (4): 408-414

The Journal Club of Karachi Medical Libraries has done a great service in this regard by pursuing the member libraries of the city to prepare the holding list of periodicals. The rising costs of periodicals combined with galloping inflation, devaluation of Pakistani Rupee and curtailment of library funds have made it practically impossible for the libraries to make more subscriptions. ZMU subscribes to 50 periodicals since 1996 and has been able to maintain it so far. College of Physicians and Surgeons Pakistan (CPSP) is subscribing around 59 journals. The Aga Khan University is subscribing more than 500 journals playing the pivotal role in supplying the documents to most of the medical institutions in Pakistan. It has also joined the Arabian Gulf Cooperative Council (AGCC) comprising of 24 academic medical libraries of the Gulf subscribing around 3000 titles together. This has cut costs in term of time and money around 70%. Now we approach British Library Lending Division (BLLD) only for 30% of our requests. If WHO's initiative to develop EMLIBNET (Emro Library Network) becomes a reality soon our problems of acquiring journal articles will be further eased of in terms of costs. Pakistan Scientific and Technical Information Center (PASTIC) is another source assisting all academic institutions and individual researchers in procuring literature not available in the country on subsidized rates.

### **Users Education**

In Pakistan majority of students enter the university with limited exposure to library use – its potentials and functions. The academic librarians, therefore, have responsibility to assist in introducing the enormous sources of information and knowledge to develop in them a self-learning approach. This may be accomplished by formal means of instructions in the use of libraries. These instructions are transmitted in the form of orientation programmes including the introductory lectures on the purpose and functions of library, use of its resources, information retrieval from conventional and electronic resources.

The Aga Khan University from the very beginning ensured integrating library into its academic programs of all levels whether in nursing or medicine. Various levels of orientations and user education programs are conducted for nurses, medical students, interns and residents depending on their needs throughout the year and at the start of each academic program. These include from tours of physical facilities to one-day intensive case-based information retrieval workshops to residents and interns. Walk-in training calendar assigns few hours everyday to reference librarians for assistance to faculty or students in building capability of surfing Internet or searching CD-ROM databases. Librarians also participate in “Medical Writing” workshops in which they teach bibliography, citation verification and literature survey. The AKU librarians are also sought after by many other

institutions for advice and consultancy. The library is visited as a model library when new medical colleges are founded.

ZMU also puts great emphasis on library use and organizes two-week library orientation for the first year students of MBBS. This program consists of two-hour morning classes conducted by medical librarians of reputed institutions who inform the students on both conventional and modern aspects of librarianship and information sources. The afternoon session provides two hours with hands-on experience on the computers to enable them to learn techniques of computer operation and retrieving bibliographical and textual data from electronic sources. The students give high ratings to this program.

### **Library Automation**

Development of the Integrated Library System (ILS) started in 1990 at AKU. The system was developed in FoxBASE under SCO UNIX. Dumb terminals and dot matrix printers were directly connected to the Unix machine. Data was entered related to books and journals holdings and the status of books on loan.

In 1993, to improve the system performance in terms of reliability and speed and to provide more flexible query features to the staff and customers, it was decided to port the ILS application to Informix SE under SCO UNIX. The new system was implemented in 1994. ILS was also integrated with the Student Admission and Record System (SARS) so that student information was automatically transferred from SARS to ILS thus eliminating manual data entry and associated data error problems.

In 1997, medical record charts of the hospital were also bar coded. Bar code readers are used to check-in and check-out charts. The objective of bar coding the medical record charts was to make sure that none of the charts were misplaced due to data entry errors and this procedure ensured the same.

Bar coding was introduced in the library in 1999. All books have been bar coded and bar code readers are used at the counter to check-in and check-out books thus ensuring 100% error free entry. At a later stage it is planned to modify ILS and provide bar code readers at the main exit of the library so as to further improve the security. Also all identity cards will be bar coded.

With the installation of campus wide network infrastructure, customers were demanding access to the Online Public Access Catalogue (OPAC) from their desktops. Early this year ILS database was moved to Informix Online under SCO Open Server and Web based OPAC has been developed using Active Server Pages (ASP) technology.



We plan to add many new features to ILS as library subscribes to more and more electronic journals and more and more publishers put their publication on the Internet.

Primarily the automation serves two purposes: a) automated housekeeping b) access to external databases and information retrieval. Computers are mainly used to assist a variety of functions such as maintaining and providing access to the catalog of item in the collection, managing the issuing and return of items from the collection, controlling the serial publications. These functions are lined in category one, while the category two will embody retrieval of information, searches through the CD-ROM databases, Medline and Internet.<sup>10</sup>

The main purpose for inducting the computers in housekeeping operations of library is to switch over to the cost effective, convenient, user friendly, speedy and time saving system. The librarians should be rational and judicious in adopting the automation of library services. It should not be for the sake of prestige only. The ZMU library decided to put the catalogue of books, reports, pamphlets, reprints and management of serials on computers, as the other housekeeping functions are presently not voluminous enough to be placed into automated form. For cataloging the software package LAMP 1.4 (Library Automation Management Program) developed by the Netherlands Library Development Project is used. This system has also assisted in managing the serials control and the preparation of holding list of the periodicals available in the centers.

There are many self-tutorial CD-ROM available with multi-media effect. People doing empirical research can download data and take it directly to other software platform for analysis and making graphical presentations. These databases are available to the readers for their research pursuits. The Center has also been compiling the website directory of important medical sites for the users.

ZMU has a strong commitment to excellent educational outcomes for the students in the areas of critical thinking, problem solving, and information skills. The Center strives to assist the users by providing access to an array of databases. "HMS Beagle", "Medscape", "eLibrary Trackers", "BMJ", "Lancet", "Nature" are some sites that are used extensively.

The promise of network technology via the Internet and localized Intranets present a new environment, and new tools, for partnerships and collaborations. With these technologies in hand, librarians continue to employ inventions in devising effective solutions to problems in providing accurate and appropriate information

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<sup>10</sup> Mathews DA & Picken FM. *Medical Libraries*. London: Bingley, 1979. P.89

at point of need<sup>11</sup>. The faculty, students and research scholars are deriving the maximum benefit from the services provided to them through CD-ROM databases (MEDLINE, CINAHL, ERIC), and Internet Services. CD-ROM collection not only conserves space but also provide multi-user access in network environment. Libraries facing high incidence of mutilation of materials will benefit from such electronic products. Email services are helping the researchers profusely for contacting and collecting the scientific information from medical researchers living around the globe.

Automation started in Pakistani libraries in its late seventies. But the pace of adoption in the libraries is painfully slow. Only two libraries are fully automated so far. Others have partially accommodated technologies to substitute library operations. In majority of academic libraries IT has yet to take off due to multifarious problems.

### **Conclusion and Future**

The Internet and especially World Wide Web, should be seen as a major driving force for change in the role of library/information professionals. The fact that the Internet has opened new ground for the end-user implies that a totally new approach is needed when educators decide goals and content for IS courses. “The trend that the location of information becomes less and less relevant, as we are able to move information around through “pull” and “push” button technology.”<sup>12</sup> The versatility of the multimedia and hypertext approach to information published via the Web, the end-user has found a way to become more information independent. Survival of librarians means survival of the knowledge base, approaches, values, practices and tools that must be applied to new problem areas.

Changes in the world at large since 1983, following on the break-up of USSR, has brought Muslim Countries onto the world stage that offer new potentials for AKU. The progressive globalization of the world and rising multi-culturalism present new opportunities and fresh challenges for the Aga Khan University “as an authentic representative of the developing and Muslim worlds”.<sup>13</sup> AKU has firmly established itself as an autonomous institution of quality and integrity in Pakistan and abroad. It must offer education of high quality and bring forth-important

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<sup>11</sup> Riordan ML, Perry GL. *Interlibrary Cooperation: from ILL to IAIMS and beyond*. Bull Med Libr Assoc 1999 Jul; **87**(3): 251-55

<sup>12</sup> Raitt D. ed. *Libraries for the New Millenium: Implications for Managers*. London: LA Publishing, 1997. p. 253

<sup>13</sup> The Future of the Aga Khan University: Evolution of a Vision: Report of the Chancellor's Commission, 1994

intellectual products through its research and scholarship. That cannot be possible without high quality information centers/libraries and proactive, enlightened librarians, who will have to become extensively engaged with the processes and activities of their universities. The Chancellor's Commission Report stressed three broad characteristics for future AKU, of which –A University on the “information superhighways”<sup>14</sup> of the world tops the list.

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<sup>14</sup> Ibid

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