Applications of information and communication technologies in libraries in Pakistan

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INTRODUCTION

During the last fifty years, the world has witnessed important changes; in particular, information and communication technology (ICT) has brought a revolution in every sphere of life. Using ICT, libraries have not only observed remarkable changes in their daily operations and services, but also identified a new and active role for librarians. Automation or computerization is an important application of ICT in libraries. It facilitates speedy library operations, services, and access to and delivery of information.

The current study is the first of its kind to examine the current status of ICT applications in medical libraries in Pakistan. It evaluates the status of automation and the availability of Internet, Higher Education Commission (HEC) Digital Library resources, and websites in medical libraries in Lahore, which is the capital of Punjab province and second largest city of Pakistan, with a population of nine million people. As a historical, cultural, and educational city, it is regarded as the heart of Pakistan. Medical libraries in Lahore were, therefore, selected as a case to examine the prevailing status of ICT applications.

LITERATURE REVIEW

Libraries in developed countries computerized their operations two decades ago. However, the pace of ICT applications in libraries in developing countries has been very slow. Studies conducted by Hopkinson [1], Seneviratne and Amaraweera [2], Singh [3], and Vasishta [4] provide a good basis from which to grasp the status of ICT applications in the libraries of developing countries.

The computer was first used in 1968 in Pakistan to provide a union catalog of scientific periodicals at the Pakistan Scientific and Technological Information Centre, but automation in libraries did not really begin until the 1980s. Prior to that, librarians in Pakistan were reluctant to introduce automation, fearing that it would minimize their role. However, soon they realized its advantages, and now there is a growing trend of applying ICT in Pakistani libraries [5, 6].

International agencies and organizations like the Asia Foundation, government of the Netherlands, Interna-
national Development Research Centre of Canada, United States Agency for International Development, and World Health Organization (WHO) have played an important role in library development in Pakistan, especially the Netherlands Library Development Project. These organizations have contributed computer equipment, software preparation, networking, training of librarians, and curriculum development [7]. For example, WHO’s regional office, the Eastern Mediterranean Regional (EMR) office in Egypt, has assisted the medical libraries of the region by providing health sciences literature and computer equipment, as well as holding workshops and conferences for ICT training for medical librarians. Pakistan hosted the third regional conference on the EMR Health Sciences Virtual Library in 2003. These programs have helped to change medical librarians’ perceptions toward ICT. However, compared to the situation in the developed world, the libraries in developing countries like Pakistan still lag far behind.

Like those in other developing countries, Pakistani libraries are facing many problems with respect to ICT applications. Malik considers that software is the most important component of the automation process [5]. Due to limited financial resources and lack of guidance, Pakistani libraries face difficulties in selecting or developing suitable software to meet their needs. Haider writes that proper awareness of current software is rarely available to Pakistani libraries [8]. Riaz finds the problems of computer illiteracy, poor planning, absence of standardization and quality control, bureaucratic obstacles, and conversion of retrospective records for library automation [9]. Haider also identifies the problems of the lack of competent and willing manpower, lack of cooperation between libraries, scarcity of funds, poor communication facilities, and lack of electricity supply [8].

OBJECTIVES OF THE STUDY
This study aims to:
1. examine the prevailing status of ICT applications in medical libraries in Lahore
2. explore the problems that medical libraries in Lahore are facing with respect to ICT applications
3. present librarians’ suggestions for improving ICT applications in medical libraries

RESEARCH METHODOLOGY
Medical libraries in Lahore were surveyed during November 2009–January 2010, using a survey instrument based on questionnaires for similar surveys in Pakistan (Appendix, online only). The list of medical libraries was developed using the online directory of Pakistan Medical and Dental Council–recognized medical institutions. Questionnaires were sent to the heads of all medical libraries (n=24) by email or delivered in person. The data collected from 22 (91.7%) libraries were analyzed by the principal author quantitatively for closed-ended questions and qualitatively for open-ended questions using a thematic approach. The questionnaire was divided into 14 categories, and each category contained multiple questions for better understanding and analysis as below.

RESULTS
Demographics
The respondents were asked about their gender, professional qualification, age, status of institution, and types of library. The data revealed that out of 22 medical libraries, 11 (50.0%) were headed by male and 11 (50.0%) by female librarians. Nineteen (86.4%) library heads held master’s degrees in library and information science (LIS), and 3 (13.6%) had paraprofessional qualifications only. Twelve (54.5%) librarians were between 21 and 30 years old; 7 (31.8%) were between 31 and 40; 2 (9.1%) between 41 and 50; and 1 was (4.5%) over 50. There were 13 (59.1%) medical libraries in the public sector and 9 (40.9%) in the private. Among these 22 libraries, 13 (59.1%) were special and 9 (40.9%) were academic libraries.

Level of information and communication technologies (ICT) staff
The respondents were asked if the professional and nonprofessional staff in the library were computer literate. Professional staff at 17 (77.3%) medical libraries and nonprofessional staff at 12 (54.5%) libraries were computer literate.

Hardware
Seven (31.8%) libraries had only 1 computer, 5 (22.7%) had 2–5 computers, 4 (18.2%) had 6–10 computers, 3 (13.6%) had 11–20, and 3 more than 20. Other commonly used hardware—such as a photocopier (13, 59.1%), printer (15, 68.2%), and scanner (17, 77.3%)—were available in most of the libraries, while other key hardware—such as an audio player (6, 27.3%), DVD player (9, 40.1%), barcode reader (7, 31.8%), fax machine (6, 27.3%), and multimedia projector (4, 18.2%)—were available in less than half of the responding libraries.

Automated library operations and information retrieval services
The respondents were asked whether their libraries had started automating and what level of automation different technical operations and information retrieval services had reached. The data indicated that 16 (72.3%) libraries had started automating, of which 7 (43.8%) libraries were in the public sector and 9 (56.3%) in the private. The level of automated library operations varied among libraries. Cataloguing was the most frequently automated operation. Nine (56.3%) libraries had almost completely computerized their cataloging operation; 8 (88.9%) of these 9 libraries were in the private sector. Data for other automated services showed very little automation (Table 1).
Library software

The respondents were asked to identify the software being used for automation; whether they had used any other software before; and, if so, if they had either successfully transferred the data or faced any problem in data transfer. They were also asked about any security systems for their automated databases. The data indicated that 16 (72.2%) libraries were using various kinds of software. Library Information and Management System (LIMS), which is freeware, was the most frequently used software (9, 56.3%). Four (25.0%) libraries were using software developed in-house, 2 (12.5%) WINISIS, and 1 (6.3%) used MLIMS. Three (18.8%) libraries had converted their databases into new software but had to face problems of data loss. These libraries had to reenter the data. Just 3 (18.8%) libraries had a security system.

Financial assistance for ICT equipment and automation

The respondents were asked if they received a separate annual grant or financial assistance for ICT equipment and library automation. Not a single library received a separate annual budget.

Internet access

Questions were asked about Internet access, the connection used, and availability of a local area network (LAN). The results showed that 18 (81.8%) of medical libraries had Internet connectivity, and multiple connections were being used. Some libraries had 2 or more options for Internet connections. Digital subscriber line (DSL) was the most used connection, as 10 (45.5%) libraries were using it; 6 (27.3%) had cable; 4 (18.2%) wireless; and 3 (13.6%) used a satellite link. Fifteen (68.2%) libraries had an intranet, of which 7 (46.7%) libraries were in the public sector and 8 (53.3%) in the private.

Resource sharing

When asked about interlibrary loan, 9 (40.9%) libraries said they participated in resource sharing. Two (9.1%) libraries each in the public and private sector were formally linked with the EMR Health Sciences Libraries Network for interlibrary loan. Two (9.1%) libraries under 1 organization were formally sharing their resources. Five (22.8%) had informal cooperation with other libraries.

Library website

Questions were asked about the availability of library website, link on institution home page, and services offered. The data revealed that not a single medical library had a website. However, 3 (13.7%) libraries, all in the private sector, reported that the website was under construction.

Higher Education Commission Digital Library

The respondents were asked if they had online access to HEC Digital Library resources. The data revealed that 16 (72.8%) medical libraries had access to the resources, of which 8 (50.0%) libraries were in the private sector and 8 (50.0%) in the public.

Training in ICT and library automation

In 22 medical libraries, only 5 (22.7%) libraries had a staff training budget, 2 (40.0%) public sector and 3 (60.0%) private. Twelve (54.5%) librarians had received computer and library automation training, of whom 6 (50.0%) got training with their own resources.

Problems in ICT applications

The respondents were asked to indicate the problems hindering effective computerization of libraries. Twenty-one (95.5%) respondents indicated that they had to face problems. Lack of cooperation from higher authorities for 13 (61.9%) and insufficient budget for 11 (52.4%) were the most significant problems (Table 2, online only).

Future plans

Fifteen (68.2%) respondents indicated their future plans, which were divided into 8 categories (Table 3, online).
only). The data indicated that 6 respondents were planning to develop or purchase new library software, while 4 were planning to develop an online public access catalog (OPAC) and automate other technical operations.

Suggestions

The respondents were asked to give suggestions for an effective use of ICTs in medical libraries. Sixteen (72.7%) respondents provided single or multiple suggestions, which were divided into 12 categories (Table 4, online only). Nine (56.3%) of these suggested that proper training facilities for computer literacy and library automation should be provided. Respondents also suggested that workshops, seminars, and continuing education programs for librarians be arranged on a regular basis to enhance their professional and ICT skills. Seven (43.8%) suggested providing an adequate budget for the purchase of ICT tools or hardware, and 6 (37.5%) medical librarians identified a need to develop integrated medical library software.

DISCUSSION

The findings of the study showed that medical libraries in Lahore are at preliminary stage of automation. Only a small number of medical libraries were equipped with a reasonable quantity of basic ICT equipment. Medical literature, both offline and online, is quite expensive, and it is not possible for a medical library to purchase all available materials. Automated resource sharing among libraries can help to address this problem. However, the results showed that medical libraries in Lahore, though possessing limited financial resources, were nonetheless working in isolation. An integrated library system (ILS) is an important tool for developing a resource-sharing network. The results revealed that the medical libraries were using various kinds of software rather than an ILS for possible resource sharing. Moreover, the study highlighted lack of training opportunities for medical librarians to enhance their ICT skills.

Widespread Internet access and the availability of HEC Digital Library resources were positive findings from the survey. The Internet is an important tool for getting information instantly and an integral part of a modern library. The results revealed that most of the medical libraries in Lahore had Internet access. However, not a single library was using it for creating websites and offering remote services. The HEC is a primary supervisory body of universities, degree-awarding institutions, and research organization in Pakistan. Its national Digital Library program has provided free access to high-quality journals, databases, and books of various disciplines to its affiliated institutions [10]. Peer-reviewed medical journals, databases, and electronic books are also accessible under this program. The results showed that most of the medical libraries were offering these resources to health care professionals to fulfill their research and information needs.

CONCLUSION

Medical libraries are an important part of health care organizations and serve one of the most important communities of a society, the health care professionals. This community should be well informed about latest developments in their field for better patient care. This objective can be achieved using modern technologies in libraries. This study was conducted to investigate the status of ICT applications in medical libraries in Lahore and found a low level of ICT applications. Lack of hardware, partial automation, absence of ILSs for automation, absence of websites, inadequate funds, lack of cooperation from higher authorities, and few training opportunities for medical librarians were the main problems. However, medical libraries of Lahore were well connected and had good access to HEC Digital Library resources.

It may be concluded that the provision of hardware, standardized library software, adequate financial resources, and proper training facilities for medical librarians will help to strengthen ICT application in medical libraries of Lahore. Cooperation from higher authorities is a key to success that is strongly needed in this case. It is recommended that library schools and professional associations in Pakistan arrange refresher courses, workshops, seminars, and continuing education programs for medical librarians. Consortiums of medical libraries at the regional and national level may be developed for resource sharing to overcome libraries’ financial limitations. Medical librarians in Pakistan should join together to provide more applications of ICT in libraries to serve health care professionals in an efficient way.

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