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An Assessment of Information and Communication Technology (ICT) Competency of Medical Librarians of Punjab

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Abstract: The research aimed to an assessment of the Information and Communication Technology (ICT) competencies of medical librarians in the province of Punjab. The research study was descriptive in nature, and a quantitative approach was used for which a closed-ended questionnaire was conducted from librarians working in different health institutions in Punjab province. Therefore a whole population sample of 62 health institutions of the public and private sectors was selected from the areas of Punjab. A questionnaire consisted of two types of questions, one five rating Likert scale and the other yes and no type questions. Collected data was analyzed considering the objectives and research questions of the study. Descriptive statistics were used for data analysis which includes frequency, percentage, mean score and standard deviation for item analysis. It was found that there was a lack of training courses in medical librarianship. Therefore, it is recommended that the intuitions may demand training courses in medical librarianship, and the government may support and provide funds to arrange training. Medical institutions do not have sufficient funds. This factor caused a hindrance in the proper functioning of and enhancing their competencies in the field of ICT to keep libraries updated to fulfil the need of the day, so the government and the institutions may provide sufficient funds to the concerned field of libraries.

Introduction

Information and Communication Technology (ICT) is the best advancement throughout the entire existence of humankind which play a clear part in human as well as association exercises around the whole world from which library isn't delivered (Dhanavandan et al., 2012). Libraries of today are participating in digitalization in light of delivering fastly, natural, along powerful management of data to their clients. Information & Communication Technology (ICT) work with and gives deliver benefits quicker adjacent to proficiency and adequacy (Sani & Musa, 2019). It is additionally characterized that Information & Communication Technology (ICT) is a tool that

collects, downloading, transfers, stockpiling, and handles, in any case, the correspondence of data.

Information & Communication Technology (ICT) is a set or contraption utilized for catching, handling, putting away and getting to data. Christa & Shoko (2010) was of the assessment that Information & Communication Technology (ICT) in a library setting means the accommodation as well as the use of various advancements, abilities and like PC, 3D pictures, plans, different capability applications, high-level visual variety designs, retro-illustrations, sound visuals and other electronic gadgets for capacity, recreated generation, and broadcasting of data in a library setting. One might say that

impetus for creating, handling, putting away and scattering data (Seena & Sudhier-Pillai, 2014).

It has been featured Narasapa & Kumar (2016) that the underlying 70s introduced the advancement of the library mechanization process, and late 90s, the digitalization of libraries occurred with the innovation of the web and numerous assets organized carefully and the most recent development, which is Web 2.0 which further upset data administration deliver. Information & Communication Technology (ICT) changed numerous conventional library rehearses, which thusly represented another challenge, possibilities, difficulties, rivalry and battle for LIS experts. In this manner, it is important to prepare and outfit administrators with ICT abilities and give them a few skills (Ajeemsha & Madhusudhan, 2014). The universe of libraries has been changed by ICT (Information & Communication Technology) from manual and substantial structure to advanced and robotized exercises.

Library staff these days described with abilities and role of ICT (Ullah & Bakhtar, 2018). Expert and exceptional libraries lie clinical libraries were seen to be furthermore outfitted with data foundation as opposed to libraries of different classifications, yet it is seen an exceptional library in today's time desperate requirement for labour force with profound skills of Information & Communication Technology (ICT) devices rather a data framework will stay under-use of unused (Hamad et al., 2021). As per Medical Library Association (MLA, 2007), it is vital for custodians to keep themselves refreshed in view of the unique idea of clinical discipline, which has a more prominent impact as well as strain on clinical curators to foster their skills which are interest and fundamental for the time and them.

The library users are stacked with a lot of data. Solid, precise and fast data is their need and request (Gaje, 2017). Still, the go-between job of a curator is required by the by for acting their lead spot successfully they are wanted to acquire

high abilities level of ICT. It is reflected Singh (2018) that set that fulfilment, managing, gathering, delivering, association and relationship of data in the library will make do to pivot around ICT gadgets and apparatuses.

That is the reason on the grounds that the assortment of library and library actual area is not a higher priority than data openness, assets and storehouse (Faboyinde, 2016; Devchoudhary, 2017; Ezeani, 2010; Adelokun, 2011). Supporting it is additionally expounded by Igun & Adogbeji (2017) that bookkeeper abilities are vital for ICT application along with execution effectively and consolidation for the board of data and treatment of data. Looking at the previous discussion requires investigating the current status and practices of competency need assessment concerning the librarians and information professionals working in medical libraries of Pakistan. The main objectives of the study are as follows:

1. Discover different Information and Communication Technology (ICT) competencies of Medical Librarians
2. Identify the methods which are used in attaining ICT competencies by medical librarians
3. Identify kind of the challenges that are faced by a medical librarian in the acquisition of ICTs skills.

The above objective of this research study was further desired to answer the following research questions:

1. What are Information Communication Technology (ICT) competencies being practised by the medical librarians in Punjab?
2. What methods are used by the medical librarians for the enhancement of their ICT competencies in Punjab?
3. What challenges are faced by Medical librarians in the acquisition of ICT competencies?

Literature Review

Library role recitals have become identically valuable with the utilization of Information and Communication Technology (ICT) in colleges. It is valuable since delivery to clients is done quicker as well effectively. Exact, fast as well as exact data is given by Information and Communication Technology (ICT). Along with this, it additionally has utilization adaptability by different clients (Segaetsho & Moloi, [2019](#)). Limitless assets are gone in the entrance of people with the presence as well as the accessibility of Information & Communication Technology (ICT) management accessibility including Internet (www) and web availability. This additionally made an individual allowed to work from their own place and time accessibility. In short, one can take care of business with adaptability as per his/her own necessities (Khot, [2020](#)).

Adebisi ([2009](#)) noted in Khan & Parveen ([2020](#)) that expedient and simple admittance to limitless and numerous wellsprings of data is guaranteed by Information & Communication Technology (ICT) use in libraries. The term Information & Communication Technology (ICT) progressed and advanced from Data Innovation (IT). Albeit current pattern and devices which improve and supports data handling along their utilization are alluded to as Data Innovation (IT) while Information & Communication Technology (ICT) remains then again allude to the use of existing advances to trading, sharing and handling the data.

Sani & Musa ([2019](#)) made sense of and expounded that Information & Communication Technology (ICT) is a tool or a gadget which empowers to handle, convey, assemble and put away data precisely and productively. Dube (2021) expounds that Information & Communication Technology (ICT) is a bunch of gear and tools which empower the client to get to, catch, cycle and store data. Information & Communication Technology (ICT) contraptions or devices are utilized for getting or granting raw

numbers, data, measurements or information, and information is apparently continuously unending. Adding machines, cell phones, scanners, printers, presentations, PC and other related gadgets and so forth are incorporated into Information & Communication Technology (ICT). There are numerous Information & Communication Technology apparatuses and gadgets which work in alternate points of view and activities; however, in libraries PC related ICT tools and gadgets are underscored.

Acheampong ([2021](#)) perceives that the uses of Information & Communication Technology (ICT) further develop the delivery of management in libraries and associate various social orders, bodies and foundations obligated for the arrangement of data. Nwalo (2000) distinguished a portion of the benefits connected with Information & Communication Technology (ICT) towards libraries which are specialized management mechanization, proficient data management and references, indexing organizing activity, interlibrary credits, Global bibliographic venture and authority control. This multitude of undertakings becomes faster, speedier and more sensible, fully supported by Information & Communication Technology (ICT).

Atanda & Udoeduok (2019) portrays a library changed into another data administration unit, giving electronic indexing, On-line Free Inventory (OFI), electronic obtaining and serials control, electronic between library credit and electronic flow works. The College library, which has for quite some time been perceived as “the heart” of each and every scholastic organization, is one spot where the advantages of Information & Communication Technology (ICT) are immense. Idhalama ([2020](#)) summed up certain elements of college libraries where the utilization of Information & Communication Technology (ICTs) is basic for better achievement. They are as per the following:

- To give data materials expected to the scholastic program of the parent organization

- To furnish research data assets in consonance with the requirements of staff and exploration understudies
- To give data assets to diversion and for individual self-advancement of clients.
- To help out different libraries at a proper level for further developed data management.
- To give specific data management to suitable portions of the wide local area

The two most seasoned clinical libraries in Pakistan are connected to Ruler Edward Clinical College, Lahore, and Dow Clinical College, Karachi, established in 1860 and 1945 separately. Presently, there are in excess of ninety clinical schools in Pakistan, generally settled during the last ten years (www.pmdc.org.pk). Clinical libraries in Pakistan generally exist in clinical universities (schools), postgraduate and expert exploration foundations and clinical colleges. The library and data management for medical care faculty, patients, and the public is nearly non-existent in Pakistan. For that reason, clinical librarianship couldn't arise as an unmistakable part of LIS calling there up to this point (Abbas & Siddique, [2020](#)).

Clinical libraries support clinical sciences, which are perhaps a unique discipline. Besides, the workplace of library and data experts is becoming intricate because of the changing idea of data. Clinical experts need data to make their schooling, examination and practice more powerful. Thus, the steadily advancing patterns in clinical sciences and library and data sciences (LIS) have put a more noteworthy strain on clinical administrators to foster abilities that are vital for them (Lindberg & Humphreys, [2005](#)). The fundamental abilities can be created through schooling, preparing, proceeding with training and experience. On the whole, it is fundamental to recognize the essential role the specialists ought to have in meeting the data needs of clinical experts really (Homan, Establishment & McGowen, 2002)

Baro et al. ([2019](#)) reviewed the individuals from the Relationship of Scholastic Wellbeing Sciences Library Chiefs (AAHSLD) to figure out the abilities and characteristics wanted by managers of new alumni. The abilities recognized by the respondents were as per the following:

- Problem-addressing/insightful,
- Microcomputer,
- Bibliographic guidance,
- Online booking,
- Reference/data management,
- Medline looking,
- Science/wellbeing subject,
- Communication,
- Interpersonal and
- Cataloguing/OCLC.

Ojiegbe (2010) consider skill for exhibiting an individual's capacity to effectively carry out a characterized role through their insight, capacities, experience, and different qualities. Capability is an assortment of foreordained abilities that act as a methodical benchmark for estimating and assessing a singular's capability in completing a movement. The blend of commonsense and hypothetical information, abilities, direct, and esteems expected to improve an exhibition could be seen as capability. It could likewise be perceived as the state or normal for having the important devices and qualifications to do an undertaking.

Considering the previously mentioned, Gulati and Raina (2000) expressed that information on print and electronic data sources is a capability prerequisite for curators. The advancement of Information & Communication Technology (ICT) has generally reformed human undertakings, and scholastic libraries are no exemption. Information & Communication Technology (ICT) are being utilized increasingly more frequently, and libraries are supposed to offer management that meets the learning and exploration needs of many clients (Head, 2016). Ojiegbe (2010) expressed that ICT is an awe-inspiring phenomenon for updating scholastic libraries' management as well as improving library staff

skills that give employees and understudies admittance to dynamic data frameworks and management comparable to this.

Data and Methodology

This research was descriptive in its nature. Quantitative data sources and method was used to carry out this study. A survey design was adopted for this research. Questionnaires consisted of closed-ended questions and were designed to get quantitative data from the librarians. Non-probability method for sampling was adopted in which the purposive sampling technique was used, and total population sampling, where the entire population has been chosen, was used for data collection from the respondents

Study Population

The study population consisted of public and private sector medical colleges in the province of Punjab.

Study Sample

This research had a homogenous population of specific characteristics; therefore, the researcher selected a non-probability sampling method. Further Purposive sampling technique was adopted, and total population sampling was used where the entire population had been chosen for the purpose of data collection from the respondents. Sixty-two (62) librarians were the population of the study. The census population sampling technique was used for this research study.

Development of tool

A questionnaire was used as a research tool for data collection. The research tool was developed by the researcher for data collection from the respondents, i.e. medical librarians.

Validation of Research Tool

After the development of this research study data collection tool, it was validated regarding face validity, content validity, and construct validity through expert opinions. These experts were the persons who had PhD in the area of Library Science. Corrections were made to the research tool according to their input.

Analysis

Table 1 presents the demographic profile of respondents. It shows that 56.5% of the sampled librarian respondents were male librarians, and 43.5% were female librarian respondents. It was noted that 43.5% of the sampled librarian respondents were working in the technical hospital, 41.9% were of them working in academic libraries, 11.3% were working in research centres/institutes, and 3.2% were working in Specialist hospitals. It was noted that 29% of the sampled librarian respondents were in the age range of 20–30 years, 43.5 were in the age range of 31–40 years, 21.0% were in the age range of 41–50 years, and the rest 6.5% had the age range of above 50 years. It was found that 41.9% of the sampled librarian respondents had 0 to 10 years of experience, 51.6% had 11 to 20 years of experience, and the rest, 6.5% had 21 to 30 years of experience.

Table 1

Demographic Profile of Respondents

Variables	Categories	Frequency	Percent
Gender	Male	35	56.5
	Female	27	43.5
Type of Institution	Teaching hospital	27	43.5
	Academic library	26	41.9
	Research Center/Institute	7	11.3
	Specialist Hospital	2	3.2

Age	20–30 years	18	29.0
	31–40 years	27	43.5
	41–50 years	13	21.0
	Above 50 year	4	6.5
Experience	0– 10 Years	26	41.9
	11–20 Years	32	51.6
	21–30 Years	4	6.5
Total		62	

Source: Author's Calculations

Table 2 shows the extent of ICT skills owned by librarians. It is explored that 93.6% respondents agreed that they can use word processing, 93.6% of the sampled librarian respondents agreed that they were have good capability of copying/storing data into storage devices (e.g. hard drive, floppy drive, usb etc.), 93.6% of the sampled librarian respondents agreed that they can use power point effectively, 54.8% of the sampled librarian respondents agreed that they can analyze quantitative data using SPSS, 96.8% of the sampled librarian respondents agreed that they have good command on digitization skills, 80.6% of the sampled librarian respondents agreed that they have skill to use multimedia technology to manipulation of printed information, graphs, dynamic sounds, music and animated photographs etc, 90.3% of the sampled librarian respondents agreed that they were good

at inserting tables, graph, images, smart art and charts, 100% of the sampled librarian respondents agreed that they had good browsing skills (e.g. Google drive, surfing, good forms, searching, zoom and web content creation etc, 100% of the sampled librarian respondents agreed that they have ability to send or receive emails. It is found that 87.1% of the sampled librarian respondents agreed that they were good at using subject directories gateway/portals (e.g. engineering, Medical Databases and science), 48.4% of the sampled librarian respondents agreed that they were good at website designing, 96.8% of the sampled librarian respondents agreed that they could deliver documents using electronic media and 56% of the sampled librarian respondents agreed that they have abilities at utilizing OPAC/web OPAC.

Table 2

Competences

Statements		Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Mean
I can use word processing	f			4	26	32	1.55
	%			6.5	41.9	51.6	
I am good at storing/copying data into primary/secondary storage devices (e.g. hard disk, flash drive, USB etc.)	f			4	22	36	1.48
	%			6.5	35.5	58.1	
I can use PowerPoint effectively	f			4	28	30	1.58
	%			6.5	45.2	48.4	
I can analyse quantitative data using SPSS	f	12	16	26	8		2.52
	%	19.4	25.8	41.9	12.9		
	f			2	26	34	1.48

I have a good command of digitization skills (i.e. social media, Search engines, scanning, data analysis and uploading of scan documents)	%			3.2	41.9	54.8	
I can use multimedia technology for the manipulation of printed information, dynamic sounds, music, graphs, animated photographs etc.	f	4		8	26	24	
	%	6.5		12.9	41.9	38.7	1.87
I am good at inserting tables, pictures, smart art and charts	f			6	26	30	
	%			9.7	41.9	48.4	1.61
I have browsing skills (e.g. surfing, searching, web content creation etc.	f				30	32	
	%				48.4	51.6	1.48
I can send and receive e-mails	f				18	29	
	%				44.0	71.0	1.29
I am good at using subject gateway/portals (e.g. Medical Databases)	f			8	30	24	
	%			12.9	48.4	38.7	1.74
I am good at designing web pages	f	4	12	16	12	18	
	%	6.5	19.4	25.8	19.4	29.0	2.55
I can deliver documents using electronic media	f			2	28	32	
	%			3.2	45.2	51.6	1.52
I have skills in using OPAC/web OPAC	f		2	4	26	30	
	%		3.2	6.5	41.9	48.4	1.65
I have skills in using OPAC/web OPAC	f			4	34	24	
	%			6.5	54.8	38.7	1.68

Source: Author's Calculations

Table 3 presents the perception of respondents with respect to the acquisition of ICT skills. It is found that 90.3% of the sampled librarian respondents agreed that they attend ICT seminars and conferences, 90.3% of respondents agreed that they Online search for information for professional development, 90.3% of the respondents agreed that they have Self-preparing, 83.9% of the respondents agreed with the statement that Self-training of respondents

through mentors, 74.2% of the respondents agreed with the statement that attending international training programs, 80.7% of the respondents agreed with the statement that collaboration with other ICT professionals, 80.7% of the respondents agreed with the statement that the staff exchange among university libraries, and 94.6% of the respondents agreed with the statement that they were attending the classes of computer training.

Table 3

Acquisition of ICT Skills

Statements	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Mean
<i>f</i>	4.0	2	30	26	1.74	

Attending ICT conferences and seminars	%		6.5	3.2	48.4	41.9	
Searching online for professional development information	f			6	34	22	1.74
	%			9.7	54.8	35.5	
Self-training (i.e. practising with available systems) Through mentors	f			22	34	6	1.74
	%			35.5	54.8	9.7	
Attending international training programmes	f		2.0	10	28	18	2.13
	%		3.2	16.1	45.2	29.0	
Collaboration with other ICT professionals	f	2.0	2	8	36	14	2.06
	%	3.2	3.2	12.9	58.1	22.6	
Staff exchange among university libraries	f		8.0	4	38	12	2.13
	%		12.9	6.5	61.3	19.4	
Attending computer training classes	f		4.0		38	20	1.81
	%		6.5		61.3	32.3	

Source: Author's Calculations

Table 4 shows the challenges of respondents in the acquisition of ICT skills. It is found that 71% of the respondents agreed with the statement that there is an insufficient fund, 80.7% of the sampled librarian respondents agreed with the statement that they had inadequate training opportunities, 87.1% of the sampled librarian respondents agreed with the statement that there is Lacking educational content and plan for training of ICT, 74.2% of the sampled librarian respondents agreed with the statement that there is ICT facility and its maintenance were high cost, 74.2% of the sampled librarian respondents agreed with the statement that Poor internet connectivity, 77.4% of the sampled librarian

respondents agreed with the statement that the Unwillingness of management about the training of their library staff. It is found that 77.4% of the respondents agreed that there is a high cost of training, 80.6% of the respondents agreed that ICT facility and its maintenance were high cost, 67.8% of the respondents agreed that they have Poor internet connectivity, 77.5% of the respondents agreed that Unwillingness of management about the training of their library staff, 45.2% of the respondents agreed that my institute did not appreciate the training, 67.8% of the sampled librarian respondents agreed that there is my institute not sponsor.

Table 4
Challenges

Statements		Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Mean
Insufficient fund	f		4.0	14	22	22	
	%		6.5	22.6	35.5	35.5	2.00
Inadequate training opportunities	f		4.0	8	28	22	
	%		6.5	12.9	45.2	35.5	1.90
Inadequate curriculum content for ICT training in higher institutions	f		2.0	6	42	12	
	%		3.2	9.7	67.7	19.4	1.97
High cost of ICT facilities and maintenance	f		2	14	30	16	
	%		3.2	22.6	48.4	25.8	2.03
Poor internet connectivity	f		8.0	8	28	18	
							2.10

	%		12.9	12.9	45.2	29.0	
Management's unwillingness to send library staff for training	f		4	10	24	24	1.90
	%		6.5	16.1	38.7	38.7	
High cost of training	f	2	2	14	36	8	2.26
	%	3.2	3.2	22.6	58.1	12.9	
Lack of time to attend training programs	f	2	4	8	38	10	2.19
	%	3.2	6.5	12.9	61.3	16.1	
Training is not appreciated in my institution	f	2	14	18	20	8	2.71
	%	3.2	22.6	29.0	32.3	12.9	
Lack of sponsorship	f		6	14	30	12	2.23
	%		9.7	22.6	48.4	19.4	

Source: Author's Calculations

Conclusions and Recommendations

The study was conducted with the objective of exploring different information and communication technology (ICT) competencies in medical librarians working in the medical field in the province of Punjab. The study focused on the ICT competencies which are being practised by medical librarians. The findings show that the ICT skills of medical librarians were of a slightly high level. The majority of the participants revealed that they were computer literate and were able to perform multiple tasks using a computer, i.e., data storage, data analysis using SPSS, digitization, picture editing, surfing, searching, browsing, use of subject gateways, OPAC, and so on. The findings revealed that the majority of the participants were equipped with ICT skills. The outcomes of this study support the findings of Uwaifo (2009), who argued that computer self-efficiency helps librarians in their routine operations. ICT expertise enables librarians to provide better services to their users. The medical librarians were asked about the channels they go for the enhancement of their ICT competencies. The majority of them attended conferences for this very purpose, followed by Professional association training and Self-study programs, teleconferences, via online courses. The findings have shown a positive gesture of medical librarians in the context of their tendency to self-improvement. According to Agadi, Shokee, and Choukimath (2008), effective training and hands-on practices must be arranged for librarians from time to time for capacity building of the librarians.

In order to understand the challenges/ obstacles faced by medical librarians in the acquisition of ICT competencies, the LIS professionals were asked a number of questions. It was established from findings that 77.4% of respondents agreed that they do not have enough time to attend the training programs, followed by the high cost of training (71%) and lack of sponsorship from institutes (67.8). The findings show that the major challenge in the way of acquisition of ICT skills is the time constraints faced by library professionals. Adekele and Olorunsola (2010) in their study stressed the importance of using ICTs by librarians. Ayoku and Okafor (2015), in their study, highlighted that the major constraint in the acquisition of ICT skills is the lack of interest among librarians regarding the acquisition of ICT skills. The situation can be improved if the LIS professionals are encouraged by their authorities to attend workshops, training, seminars and conferences on ICT (Bansode & Viswe, 2015).

On the basis of findings and discussion, the researcher recommends the following action to be taken to make medical librarians better at the institution level in Punjab, Pakistan.

1. Data revealed that there was a lack of training courses in medical librarianship. Therefore, it is recommended that the intuitions may demand training courses in medical librarianship, and the government may support and provide funds to arrange training.

2. It
3. was found that there is no arrangement for online training or courses for medical librarians; hence the Government may plan and implement programs through which institutions avail online training for medical librarians to enhance their Information and Communication Technology (ICT) competencies and skills in the field of libraries.
4. It is said by the respondents that they are not provided sufficient funds. This factor caused a hindrance in the proper functioning of and enhancing their competencies in the field of ICT to keep libraries updated to fulfil the need of the day, so the government and the institutions may provide sufficient funds to the concerned field of libraries.
5. Mentoring and coaching of the library professionals must be designed to keep them on track as well as to enhance their role.
6. Professional Development Training must be designed at national and international levels to provide a forum for LIS professionals.

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