

AVAILABILITY OF INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) TOOLS AND SKILLS FOR THEIR USE IN OPERATION IN MEDICAL LIBRARIES IN NIGERIA

BY

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Abstract

Background- ICT availability, use in library operations and the required skills with which to use them in medical libraries are the core drivers of service delivery in modern medical librarianship.

Objective – To assess the extent of ICT availability in medical libraries, the ICT skills of medical librarians and the use of ICT for library operations in medical libraries in Nigeria.

Methods – A descriptive research design was adopted. The instrument used for data collection was a structured questionnaire administered to a population consisting of 379 medical librarians, 246 were retrieved and found usable questionnaires

Results – Findings revealed the availability of most ICT tools to a moderate extent. Mobile phones, Internet connectivity, computers, OPAC, printers, E-mail are the tools that were mostly available. The medical librarians studied have high level of ICT skills in areas such as social networking, Internet use, search engine use, search for e-resources, use of email, Web based forum and database use skills, however, the study revealed a low level of use of ICT tools to carry out medical library operations. Lack of and inadequate funding, erratic power supply, erratic Internet access, lack of trainer/training for ICT application and insufficient technical support for maintenance of ICT tools are the major hindrances to the use of ICT tools for library operations in Nigeria.

Conclusions – The use of ICT for library operations in medical libraries in Nigeria is low. Medical librarians have high ICT skills, however challenges to be surmounted in using ICT tools for library operations.

Keywords: ICT Skills, ICT Tools, Library Operation, Medical Libraries

Introduction

Libraries as repositories of knowledge and information are shifting their roles from just custodians of traditional information resources to the provider of service-oriented electronic information resources. The fast pace of the 21st century along with information explosion has compelled libraries to adopt new means and methods for library operations. In fact, putting it simply, Information and Communication Technology ICT have become an integral part of the modern libraries and their operations. According to Mairaj and El-Hadi (2012), using ICT, libraries have not only observed remarkable changes in their daily operations and services, but also identified new and active roles for librarians that have ensured that their libraries remain relevant in the scheme of things.

Medical libraries are not left out of these trends. They are key to the provision of accurate, fast and reliable health information to a user community that consist of health care professionals, medical students, researchers, paramedical staff and patients. Medical libraries

have a big duty and a significant role to play in acquiring, organizing, preserving recorded knowledge and making it available for medical clients and medical researchers. In doing this, medical libraries have started embracing the current developments in information technology to help them render effective library services to meet the dynamic information needs of the medical library's user community. Therefore, the emphasis of this study was to survey the availability of ICT tools in medical libraries, the ICT skill of medical librarians and the use of these ICT tools for library operations in medical library operations in Nigeria.

Statement of the Problem

The pervasiveness of ICT in all human endeavor cannot be over emphasized. Currently they are being used in a wide range of industries including libraries. With ICTs being used to perform library functions, like cataloguing and classification, serial management, collection management budgeting, circulation management, referencing indexing and abstracting, there are observations of researchers which have shown insufficient ICT tools available for use across libraries. There were also reports that librarians seem to lack skills on the operations of most of these ICT tools, with majority of them still struggling with the skills required to make effective use of these tools to access and disseminate information in libraries. This situation arouses worry and concern, especially at a time when ICTs are extremely indispensable, or even unavoidable in information sourcing, acquisition, processing, storage and dissemination. There were very limited researches on the availability of ICT tools in medical libraries in Nigeria. Furthermore, very little research has been done to ascertain the level of ICT skills literacy of medical librarians and the use of ICT tool to carry out library operations in the medical libraries in Nigeria. Consequently, this study was an attempt to fill this gap.

Research Objectives

- i. Identify the ICT tools available in medical libraries in Nigeria
- ii. Assess the ICT skills of medical librarians;
- iii. Determine the extent of ICT Use for Library Operations, and;
- iv. Identify the challenges facing the use of ICT tools in medical library operations.

Review of Related Literature

Making use of Information Communication Technology (ICT) is a common sight in most 21st Century organizations. This is mainly because ICTs are a set of technological tools and resources that facilitate the creation, dissemination, management and storing of information. ICT is a term used to describe a range of equipment (hardware: personal computers, scanners and digital cameras) and computer programs (software: database programs & multimedia programs), & the telecommunications infrastructures (phones, faxes, modems, video conferencing equipment and web cameras) that allow us to access, retrieve, store, organize, manipulate, present, send material and communicate locally, nationally & globally through digital media (Dunmill and Arslanagic, 2006).

Ebijuwa (2005) defined ICT as tools used for collection, processing, storage, transmission, and dissemination of information. According to Adebayo, Ahmed and Adeniran, (2018), there are various ICT tools that presently and continuously provide support for different library services. Nwabueze and Ozioko (2011); Umana (2018) also identified major ICT tools that librarians use for effective delivery in academic libraries to include computers, Internet, electronic mail (E-mail), World Wide Web (WWW) and Video. In his study on the availability and use of ICTs in collection management, Nwalo (2005) identified computers, DVDs, CDs, internet and telephones as available ICT tools for the management of collections in the libraries. Printing Technologies and Online Public Access Catalogue (OPAC) were also listed by Mishra and

Mishra (2014) as major ICT tools found in libraries. In the opinion of Saleem, Tabusum and Batcha (2013), the mobile phone was the most used ICT tool in academic libraries.

ICT have enabled medical libraries to expand from just the traditional roles. According to Ojo (2015), ICT can be applied to every section of medical libraries, for example, in the cataloguing and classification, Adoption of ICTs in libraries also reduces the duplication of effort within a library and eliminates some uninteresting and repetitive work (Ebunuwele, Ola, & Uduebor, 2014). In a study, Ivwighrehweta (2013) sought to find the various services and operations in the library in which ICTs are applied. The study revealed that majority of the respondents strongly agreed that ICT were mostly applied to the acquisition of materials, and that OPAC was mostly used for effective provision of services.

In a similar research carried out by Qutab, Saima, Bhatti, Rubina and Ullah (2014), they found that the library operations ICTs were used for included acquisitions, technical processing, trainings and promotions. It was further explained by the authors that the application of ICT completely changed the technical processing of library materials such as subject heading, classification and cataloguing with OCLC applications, copy cataloguing and LC subject headings. Also, Ebunuwele, Ola, and Uduebor (2014) stated that computers in libraries enabled effective handling and housekeeping functions to be carried out. A recent study by Aiyebelehin, Ikenwe, Okpetu, (2017) shows that that majority of librarians use the ICTs to assist researchers while 100% of them use ICTs in answering user queries. The findings by Saleem, Tabusum and Batcha (2013) indicated that very few libraries are offering video conferences services and this was attributed to few consortiums. The study by Omeluzor and Oyovwe-Tinuoye (2017) also reached the conclusion that only few libraries in South-Western zone of Nigeria adopted the use of ICT in the delivery of current awareness services and selective dissemination of information services, with a very higher percentage of the libraries studied still resorted to the use of traditional methods.

Among the few studies on ICT use in medical libraries in Nigeria, Oguonu's (2013) investigation of reference and information services in state teaching hospital medical libraries in South-East Nigeria showed that SDI was not provided by the libraries, while online catalogue and ICT facilities were also not available for reference and information services due to inadequate funding and lack of ICT facilities in reference services. Equally, Uzohue and Yaya (2016) in their study expressed the need for medical librarians to use CAS and SDI to deliver library services to their users.

The application of ICTs in libraries cannot be successful if the librarians do not possess a certain level of knowledge and skill. Librarians generally have long come to this realization since they found themselves in the ever complex digital environment (Nwakama, 2003). ICT literacy skill is defined as an individual's ability to use digital technologies, communication tools, and networks appropriately to solve information problems in order to fit in into the society (Anyim, 2018). Many authors have carried out investigations into the ICT skills levels of librarians in Nigeria. The results varied from region to region across the country. Earlier studies observed very low level of skillfulness in the use of ICT among librarians (Opadeji, 2009; Obuh, 2009). Krubu and Osawaru (2011) conducted a study on the impact of ICTs in Nigerian university libraries. The survey reported that out of the 48 respondents studied, some of the respondents have good computer skills, followed by those that have fair computer skills, few of the respondent representing had no skill at all. Only 3 respondents representing had excellent computer skills. A study to investigate the status of ICT applications in medical

libraries in Lahore found a low level of ICT applications among the medical librarians (Mairaj & El-Hadi, 2012). Emiri (2015) observed that librarians seem to lack skills on how to operate the computers, access email or interact through the internet. He further observed that many librarians also seem not to possess the skills to use the computer to access information and automate their libraries. Similarly, Anyoku (2012) observed that despite the importance of ICTs to the present-day information delivery, most reports and studies ascribe low computer use to librarians in Nigeria. This observation is also corroborated by Nkamnebe, Okeke, Udem and Nkamnebe (2015) that librarians in the universities in Anambra State were weakly skilled in ICTs.

Seenaa and Pillai (2014) gave the result of analysis of professionals' skills for managing various ICT related library services. It showed a majority of professionals were skilled above average for ICT based Information retrieval (accessing, searching and use of e-documents. Iqbal and Khan (2017) examined the awareness level of librarians on ICT applications in University of the Punjab (PU). Data analysis revealed that the majority of the participants were computer literate, having good knowledge of library automation and digitization. The knowledge of web-based services such as email, search engine, chatting, e-resources search, knowledge of OPAC/Web OPAC, etc by professionals was quite encouraging. But, the majority of them have less knowledge of programming languages, whereas, HTML (Hyper Text Markup Language) was comparatively a more popular programming language. Omeluzor and Oyovwe-Tinuoye (2017) found the levels of ICT literacy among the librarians to be low. Their study revealed that librarians did not have adequate ICT skills to use available online resources on the Internet and other ICT tools to deliver SDI and CAS in South-West, Nigeria. Also, Anyim (2018) concluded that the staff of Salem University digital library possess basic computer appreciation skills to a very high extent, i.e, they were able to turn on computer, connect to the Internet, open a computer file, word processing, sending an email messages, deleting a file from computer, using a www search engine such as Google.

Ifijeh (2013) studied the use of ICT in reference services provision and the effect that ICT skills of reference librarians has on their service delivery. The study found that, while libraries applied ICT facilities such as computers, internet and databases in carrying out reference services, their level of ICT involvement in reference services was however average. Similarly, Oyedokun Oyewumi, Akanbi, Laaro, (2018) demonstrated that library staff in selected university libraries (University of Ilorin, Kwara State University and Al-Hikmah University), has a high level of ICT competency, with skills that were considered basic and intermediate. The study showed that library staff in those universities can effectively deploy ICT tools for operations in the library.

There is a salient negligence of researches on the availability of ICTs and their use for library operations in medical libraries. Studies reviewed revealed that most research in Nigeria on ICT availability and use have been focused on academic and public libraries, while many studies focused on ICT tools use and skills of academic librarians and other library professionals working in other categories of libraries, there were limited empirical evidences of medical librarians use of their ICT skills for library operations. The study addresses this by investigating the availability of information and communication technology (ICT) tools and skills for the operations in medical libraries in Nigeria.

Research Methodology

The survey research design was used for this study. The study population consisted of all medical librarians in Nigeria from which a sample of twenty-five (25) different medical and clinical libraries were randomly selected from across the country (a list of medical and clinical libraries used for the study is provided in Table 1 below). To collect data, a self-designed questionnaire was used, keeping in view the basic objectives of the study. Different methods were used to administer and collect the instrument from the respondents. Some were distributed personally by the researcher during the 2019 annual medical librarian's conference while others were mailed online to medical librarians. The instrument was collected over a period of 6 months. A total of 346 copies questionnaire were distributed to the respondents and 246 copies were filled and returned, indicating a response rate of 71.10%. The data obtained were analyzed using simple percentage (%) and mean (X).

Table1: Names of Medical Libraries/Clinical Libraries that Participate in the Study

University of Benin Teaching Hospital Library, Benin City
Delta State University Teaching Hospital Library, Oghara
University of Nigeria Teaching Hospital Library, Enugu.
Delta State University Medical Library, Abraka
University of Medical Sciences Library, Ondo
University of Ilorin Teaching Hospital Library, Ilorin
Federal Neuropsychiatric Hospital Library, Yaba.
National Postgraduate Medical College, Lagos
Imo State University Teaching Hospital, Orlu
Niger State College of Nursing School, Minna
School of Nursing Library Port-Harcourt
College of Health Science Library, Niger Delta University
National Orthopedic Hospital Library, Enugu.
Department of Library Services, ABU Teaching Hospital, Zaria.
FCT School of Nursing and Midwifery Gariki-Abuja.
Neurology Hospital, Library Sokoto
Medical Library, University of Ibadan
Ladoke Akintola University College of Health Science Osogbo
University of Uyo Teaching Hospital Library, Uyo,
Ebonyi State University Institute of Health, Uburu
Central Medical Library, Federal Ministry of Health, Abuja
Federal Medical Center Owerri
Kwara State College of Health Technology, Offa
Medial Library College of Medicine, University of Nigeria, Enugu Campus.
Federal Medical Center. Abeokuta

Data Analysis

Table 2: Demographic Information of Respondents N=246

Gender	Frequency	Percentage (%)
Male	67	27.2
Female	179	72.7
Designation		
Chief Librarian	47	19.1

Deputy Chief Librarian	28	11.3
Principal Librarian	34	13.8
Senior Librarian	21	8.5
Librarian I	22	9
Librarian II	31	12.6
Assistant Librarian	24	9.7
Library Officers	39	16
Qualifications		
Ph.D	26	10.5
MSc/MPhil/ MLIS	87	35.3
BLIS/BLS/BSc/HND	103	41.8
OND And Others	30	12.1
Working Experience (In Years)		
Up To 5	82	33.3
6-10	63	25.6
11-15	85	34.5
More than 15	16	6.5

Table 2 presents the demographic characteristics of the respondents. It shows that the majority of medical librarians 179(72.7%) working in medical libraries across the country were females, while males constitute 67 (27.2%) of the number of medical librarians. As for the designation, most 47 (19.1%) were chief librarians, 39 (16%), were library officers, 34 (13.8%) principal librarians and 31 (12.6%) librarian II cadre. The least category of medical librarians 21 (8.5%), were senior librarians. On educational qualification, majority 103 (41.8%) were BLIS/BLS/BSc/HND degree holders, while 85 (34.5%) of the respondents have worked in a medical library between 11-15 years.

ICT Tools Available in Medical Libraries in Nigeria

The respondents were asked to indicate the ICT tools available in medical libraries, they were to tick as many option as it applies to their library

Table 3: ICT Tools Available in Medical Libraries

ICT Tools	YES	%	NO	%
Computers	148	60	98	40
Printers	144	58.5	102	41.4
CD-ROMS/DVD	137	55.6	109	44.3
E-mail	123	50	123	50
E-group	117	47.5	129	52.4
Databases	146	59.3	100	40.6
Fax machine	109	44.3	137	55.6
Printing technology	144	58.5	102	41.6
Online public access catalogue (OPAC)	147	59.7	99	40.2
Internet	150	61	96	39
Intranet	82	33.3	164	66.6
Mobile phones	217	88.2	29	11.7
Video conferencing	99	40.2	147	59.7
Scanners	143	58.1	103	41.8
I pads/tablet	106	43	140	57
RFID technology	40	16.2	206	83.7

Closed-circuit television (CCTV)	102	41.4	144	58.5
Library security technologies	48	19.5	198	80.5
Quick response (QR) code technology	102	41.4	144	58.5
Virtual reality technologies				

Table 3 presents the ICT tools available in medical libraries. The data revealed that the most available tool was the mobile phone, which constitutes 217 (88.2%). This was followed by the availability of Internet connectivity 150 (61%), computers 148 (60%), Online Public Access Catalogue (OPAC) 147(59.7%), databases 146 (59.3%), and printers 144 (58.5%). Similarly, 123 (50%) of the respondents attested to the availability of E-mail. Among the least available ICT tools were RFID technologies 40 (16.2%), library security technologies 48 (19.5%), Intranet 82 (33.3%) and video conferencing 99 (40.2%).

Medical Librarians' ICT Skills

Medical librarians were requested to assess their ICT skills by indicating one of the options provided.

Table 4: Medical Librarians' Level of ICT Skills

Librarians' level of ICT skills	Excellent	Good	Average	Poor	Mean	Ranking
Library automation skills e. g KOHA	36	30	46	134	1.86	10 th
Hardware/software installation	28	40	44	134	1.84	11 th
Trouble shooting and ICT repairs skills	30	26	61	129	1.82	12 th
E-mail use skills	93	82	21	50	2.88	5 th
Search engines use skills	79	109	42	16	3.02	3 rd
E-resources search	75	86	72	13	2.90	4 th
Use OPAC/web	51	47	77	71	2.31	9 th
Web design skills	34	24	19	169	1.68	14 th
Social networking skills	129	70	89	28	3.78	1 st
Web based forum skills	65	70	58	53	2.84	6 th
Instant messaging	48	77	50	72	2.41	8 th
Use of databases	52	94	77	23	2.71	7 th
Use of internet	123	79	32	12	3.22	2 nd
Aggregate Mean					2.77	

Criterion Mean 2.50

Table 4 shows the aggregate mean of 2.77 was above the criterion mean of 2.50. This shows that medical librarians assessed their ICT skills as high. It was immediately seen that librarians were mostly skilled in social networking (3.78) which ranked 1st among other skills. This was followed by Internet use skills (3.22) and search engine use skills (3.02). Librarians also reported skills to search for e-resources (2.90), use of email (2.88), Web based forum (2.84) and database use (2.71). Low skill level was recorded in more technical areas such as Library automation skills (1.86), hardware/software installation skills (1.84) and trouble shooting and ICT repairs skills (1.82).

Extent of ICT in Library Operations

The respondents were asked to indicate the library operations that they use ICT tools for.

Table 5: Library Operations Librarians Use ICT for

Library Operations	SA	A	D	SD	MEAN	RANKING
Cataloguing	43	73	44	86	2.29	7 th
Circulation services	44	30	91	81	2.15	10 th
Serials	63	41	98	44	2.50	5 th
Reference	88	81	23	54	2.82	2 nd
Collection development	65	69	58	54	2.53	4 th
Health Information literacy programmes	24	57	85	80	2.10	11 th
Readers services	90	47	36	73	2.62	3 rd
Selective dissemination of information	45	40	73	88	2.17	9 th
Document imaging	24	31	97	94	1.93	13 th
Word/document processing	103	97	11	35	3.03	1 st
Document delivery service	29	41	82	94	2.02	12 th
Database search	48	44	80	74	2.26	8 th
Stock-taking/verification	54	69	58	65	2.45	6 th
Aggregate mean						
2.34						

Criterion Mean

2.50

Result in Table 5 shows an aggregate mean of 2.34. This mean score was less than the criterion mean of 2.50, implying that the level of ICT use for library operations by librarians was low. Also noticeable from the table was that although all the library operations listed had a certain degree of use of ICT, most library operations recorded low level of use in library operations. The implication of this is that, the extent of ICT use in medical libraries for library operations was low. For instance, document imaging ranked 13th with the lowest mean score of 1.93 and document delivery service ranked 12th with a mean score of 2.02. Word/document processing ranked 1st (3.03). Respondents agreed to the use of ICT for services such as reference services (2.82), readers' services (2.62), collection development (2.53) and serials services (2.50).

Challenges Facing the Use of ICT Tools in Medical Library Operations

Table 6: Challenges Facing the Use of ICT Tools in Medical Library Operations

Factors	Yes	%	No	%	Ranking
Erratic Internet access	197	80	49	20	3 rd
Erratic power supply	205	83.3	41	16.6	2 nd
Insufficient technical support for maintenance of ICT tools	167	68	79	32	5 th
Lack of organizational commitment towards ICT acquisition	160	65	86	35	6 th
Lack of ICT facilities	146	59.3	100	40.6	8 th
Lack of technical knowhow of medical librarians	154	62.6	92	37.4	7 th
Lack of ICT skills	99	40.3	147	59.7	10 th
Lack of support from library management for implementing ICT applications in medical library	101	41	145	59	9 th
Inadequate funding	231	94	15	6	1 st
Inadequate trainer/training for ICT applications	188	76.4	58	23.6	4 th

Table 6 revealed that the major hindrances to the effective use of ICT tools in library operations was inadequate funding with 231(94%) of the respondents affirming this. This was followed closely by erratic power supply 205 (83.3%) and erratic Internet access 197(80%). Other hindrances were lack of trainer/training for ICT application 188(76.4%) and insufficient technical support for maintenance of ICT tools 167(68%).

Findings and Discussion

This study was to determine the ICT tools that are available in medical libraries in Nigeria. Accordingly, results revealed that most ICT tools were available to a moderate extent. Specifically, mobile phones, Internet connectivity, computers, OPAC, printers, E-mail were the tools that were mostly available. It was also noticeable that there were very few more modern and advanced technologies like RFID technologies and library security tools in medical libraries in Nigeria. This was similar to a previous result presented by Saleem, Tabusum and Batcha (2013), where they concluded that the mobile phone was the most available ICT tool used in academic libraries. The result from the current also agreed with Umana (2018) who identified major ICT tools as computers, Internet, electronic mail (E-mail), World Wide Web.

The issue of skills was of utmost importance. Reason being that it was the premise on which quality library services by medical librarians was hinged. The findings indicated that medical librarians assessed themselves to have high level of ICT skills. Their strength been seen in their social networking skills, Internet use and search engine use skills. Other skills where they expressed high skills were, skills to search for e-resources, use email, use web-based forums and database use skills. This finding implied that medical librarians are well equipped with modern skills that are required of librarians to excel in the 21st Century medical library. However, there are recorded areas where improvements are needed. More technical areas such as library automation skills, hardware/software installation skills and trouble shooting and ICT repairs skills. This gives credence to the result of Oyedokun Oyewumi, Akanbi, Laaro, (2018) that library staff in university libraries in the middle belt region of Nigeria recorded high ICT competencies, with skills that were considered basic and intermediate ICT skill.

Immediately seen from the results presented is that the level of use of ICT tools to carry out medical library operations was low, especially for a most of the library operations listed. This was seen as not encouraging enough. Only five (Word/document processing, reference services, readers' service delivery, collection development and serials services) have mean scores that were above the criterion mark. Moreover, modern and indispensable medical library services such as selective dissemination of information, document imaging, document delivery services and database Search require the use of ICTs to be effective. This finding confirmed the results of Ivwighreghweta (2013) that ICT were mostly applied to the acquisition of materials. It also confirmed a recent result by Aiyebelehin, Ikenwe, Okpetu, (2017) that majority of librarians use the ICTs to assist researchers while 100% of them use ICTs in answering user queries. Also, Omeluzor and Oyovwe-Tinuoye (2017) pointed out from their findings that only few libraries in South-Western zone of Nigeria employed the use of ICT in the delivery of current awareness services and selective dissemination of information services. The story is the same with the findings from an investigation of reference and information services in state teaching hospital medical libraries in South-East Nigeria that SDI was not provided by the libraries, while online catalogue and ICT facilities were also not available for reference and information services due to inadequate funding and lack of ICT facilities in reference services Oguonu's (2013).

In addition, the study revealed that there were hindrances that affect the use of ICT tools for their library operations. Major hinderances were inadequate funding, erratic power supply, erratic Internet access, inadequate trainer/training for ICT application and insufficient technical support for maintenance of ICT tools. Importantly, ICT use skills and lack of support from library management were not among the hindrances to the use of ICT tools in medical libraries.

Conclusion

At a time when huge advancements in the use ICT across all sectors of human endeavour is recorded, the level of use of ICT tools for library operations in medical libraries in Nigeria was found to be low. Although there were some ICT tools available, medical libraries are yet to fully adopt their use in the delivery of modern library services such as document imaging, selective dissemination of information, document delivery service and health information literacy programmes to its patrons. ICT skills levels among medical librarians was rated high. But challenges such as, inadequate funding, erratic power supply, erratic Internet access, lack of trainer/training for ICT application and insufficient technical support for maintenance of ICT tools were setbacks found to hinder the use ICTs in medical library operations in Nigeria.

Recommendations

Based on the findings from this study, the following recommendations are put forward:

- i. It is essential that ICT use for library operations should be given priority by library administrators, if medical librarians are to efficiently perform the role of information provision to their clients in these modern times.
- ii. There is need to integrate more and advanced ICT tools into medical libraries in Nigeria.
- iii. There is need for medical library managers to improve the use of more ICT tools in medical library operations, especially in areas such as adopt ICT in the delivery of services such as document imaging, selective dissemination of information, document delivery service and Health Information literacy programmes to its patrons.
- iv. Medical librarians should endeavor to engage in training programmes in more technical areas of ICT use skills.

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