

# **Impact of Information and Communication Technology (ICT) on Management, Storage and Retrieval of Patient Records in Federal Medical Centers (FMCs) in Nigeria**

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## **ABSTRACT**

*The study investigates the impact of Information and Communication Technology (ICT) on management, storage and retrieval of patients records in Federal Medical Centers (FMC) in Nigeria. Four research questions guided the study. Descriptive survey research design was used for this study. The population of the study consists of 73 personnel's. There was no sample, the whole population was used. The instrument used for data collection was structured questionnaire. Standard deviation was used as statistical method in analyzing the data. The study revealed among other that majority of respondents indicated that Personal Health Record (PHR) software are the ICT facilities used in management of information resources in the hospitals , it was also revealed that majority of the respondents strongly agreed that ICT facilities such as CD ROMs are adequate and effective for management of records in the hospitals. The study concluded that the whole personnel agreed to has acquired level of skills/competencies towards the use of ICT facilities for management of record in the hospital. Finally, the study recommended among others that the management of the hospitals should provide and deploy more ICT facilities to facilitate large storage and management of patient' records; this will in turn reduce manual handling of huge records and files. Also, the management of the hospital should provide power plants and solar panels as backup to curtail the shortage of power supply.*

**KEYWORDS:** ICT, Management, Storage, Retrieval and Patient Records.

## **INTRODUCTION**

Information and communication technology (ICT) is a diverse set of technological tools and resources used to communicate, create, disseminate, store, manage information and promote human activities in various organizations hospitals included. These technologies include; computers, internet, printer, scanner, photocopy machine, binding machine, laminating machine, broadcasting technologies (radio, public address speaker and television), projector and telephony among others, and are widely used in day to day activities. Saleem, Tabusum and Batcha (2013) defined information and communication technology as the application of computers and other technologies to the acquisition, organization, storage, retrieval and dissemination of information.

The ultimate aim of records management and ICT is to support, protect and enable the any organization in a cost-effective manner now and in the future. Records management needs to rely on the technical capability of ICT, particularly in relation to the management of digital records. ICT decisions and actions regarding formats, systems and storage solutions can have significant impacts on the ability to capture records, and to protect their authenticity and longevity. ICT can draw on the expertise of the records managers to ensure the right information is being captured as records are classified in a way that promotes their retrieval while protecting their sensitivities, and records are only kept for as long as they are required for use.

An information retrieval system is an information system, that is, a system used to store items of information that need to be processed, stored, searched, retrieved, and disseminated to various user populations. Information retrieval is the science of searching for information in documents, searching for documents themselves, searching for metadata which describe documents, or searching within databases, whether relational stand-alone databases or hypertext networked databases such as the Internet or World Wide Web or intranets, for text, sound, images or data. Jansen (2016) asserts that information retrieval deals with the production, representation, organization, storage, retrieval, use, or evaluation of information, along with the tools and techniques associated with these processes. Any system that is designed to facilitate information searching may legitimately be called an information retrieval system (Agboola & Shuaibu, 2018). Thus, an information retrieval system aims to collect and organize information in one or more subject areas in order to make it available to users as soon as they ask for it.

A patient record is the repository of information about a single patient. A primary patient record is used by health care professionals while providing patient care services to review patient data or document their own observations, actions, or instructions (Gulavani& Kulkarni, 2014). Almost every patient has a medical record of some sort. A medical record is simply a record of a patient's health and medical history. Depending on the level or need of care a patient has, records may vary, but all medical records will contain some common information, the most common types of information that is necessary and helpful for treatment includes; Personal identification information, medical history, family medical history, medication history, treatment history and medical directives.

In the order hand, Information Communication Technologies enhances effective management of health records in our hospitals. Information Technology (IT) has the potential to improve the quality, safety, and efficiency of health care (Alotaibi, 2017). The application of Information Communication Technology (ICT) for the storage and retrieval of information in hospitals is very imperative, because the past records in the hospitals especially the patient's records, serves as the gateway to understanding the present health problem of the patient and also facilitate his

treatment. Before the advent of Information Communication Technology (ICT) in hospitals as a storage and retrieval tools, all patient records were paper based. Every time a patient is admitted to hospital many forms would be completed and added to their folders. Treatments were recorded on paper charts and nursing records were documented by manually. Eventually, these records were added to their file. For a patient who is admitted to a hospital regularly, their paper records could become very large and awkward to handle. And even bigger problem was the risk of misfiling or losing the records amongst the many thousands stored in the hospital.

In addition to that, the use of computers and communications technologies in information handling and processing has arisen because of the increased workload involved in coping with information explosion. In order to keep pace with handling the increasing number of record in the hospitals, ICTs are to be deployed to handle information processing with greater speed and accuracy than manual processing. The application of Information Communication Technology (ICT) for storage and retrieval of information in hospitals has will curtail the problem of holding cumbersome files and deformation of vital information and records of patient. The computerized record keeping means that, the patient who admitted in a hospital before has his personal and treatment records (medical records) that has been captured and code number has been given to serve as the card number, once he visited the hospital and they have entered his details, no matter how many times that the patient is admitted in the future, his records can be retrieved very easily and quickly which also hasten the treatment. The database creation for all the hospitals and the network connection amongst the hospitals makes the records of the patient accessible even when visits another hospital.

The increasing number of patient in hospitals and the regular admitting of some patient have increased their records. However, the use of ICT for the storage and retrieval of information in hospitals has controlled the explosion of the records through proper records of their personal data and that of the treatment (medical records). ICTs now manage the record of individual collections and provide facility to facilitate access to and retrieve records. In this case, a patient treatment is a continues process rather than a starting over, since records can be retrieved to other hospitals that has the network connection and this will help the doctors in the other hospitals to access the records of the patient concerning their previous treatment.

## **STATEMENT OF THE PROBLEM**

The challenges in the 21st century are a surplus of patient information. The human brain could not any longer contain these volumes of files and records. The ability of human to memorize things has remained flat, but the medical knowledge that needs to be assimilated is increasing geometrically. It is difficult for the human brain to memorize all the information at a given period of time. With the help of ICT medical record personnel can store massive amount of data and can retrieve it when required. Rapid technology advancements and continuous increase of records have made Information Technology (IT) applicable at all levels, health care sector particularly hospitals are included in patient record management. ICT presents numerous opportunities for improving and transforming healthcare which includes; reducing human errors, improving clinical outcomes, facilitating care coordination, improving practice efficiencies, and tracking data over time such as patient data management systems (PDMS).

The application of ICT for storage and retrieval of information in hospitals makes it easier for all the patient records to be captured. It is also use to keep the records of patient and to have access to it whenever a patient visit hospital again, and it is also use in hospital libraries to share information among medical staff and to update them about the

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latest development in their areas of information needs. Despite the important role that ICT has played, the researchers conducted a preliminary investigation in one of the Federal Medical Centers, FMC Yola which revealed that ICT facilities are inadequate. Also the patient records (files) are still on paper based, manually processed and stored unprofessionally on shelves which made it difficult to be retrieved; this might also lead to loss of files and information records therein. These problems could be attributed to inadequate deployment of ICT facilities and lack ICT skills exhibited by some personnel who manage patient records in the hospital. It is against this background that the researchers strived to investigate the impact of information and Communication Technology (ICT) on management, storage and retrieval of patient records in Federal Medical Centers in Nigeria

### **OBJECTIVES OF THE STUDY**

The main objective of the study is to investigate the impact of Information and Communication Technology (ICT) on management, storage and retrieval of patient's records in Federal Medical Centers (FMC) in Nigeria. Specifically is to determine;

1. The ICT facilities used for storage and retrieval of information in Federal Medical Centers (FMCs)
2. The adequacy and effectiveness of these ICT facilities for storage and retrieval of information
3. The level of skills/competencies of personnel towards the use of these ICT facilities in Federal Medical Centers (FMCs)
4. The problems of storage and retrieval of information using ICT in Federal Medical Centers (FMCs)

### **Research Questions**

The following questions guided the study

1. What are the ICT facilities used for storage and retrieval of information in Federal Medical Centers (FMCs)?
2. How adequate and effective of these ICT facilities for storage and retrieval of information in Federal Medical Centers (FMCs)?
3. What are the levels of skills/competencies of personnel towards the use of these ICT facilities in Federal Medical Centers (FMCs)?
4. What are the problems of storage and retrieval of information using ICT at Federal Medical Centers (FMC)?

### **SIGNIFICANCE OF THE STUDY**

The outcome of this research will be a great benefit to patient, doctors, and medical professional. The result of this study will benefit the patient, as it will hasten their treatment because of their previous records of treatment that has been captured gives an insight to their present health problem. Also, the outcome of the study will benefit the doctors and the other medical staff, because the patient database will help the medical them to know the background of the patient health problem, and this will facilitate their work as it will make the treatment a continuous process rather than a starting over. Finally, It will benefit the medical profession because it brings coordination and sharing of knowledge in the profession, since the database contain patient records could be accessible anywhere in case of referral.

## **Scope of the Study**

The study is delimited to investigate the impact of Information and Communication Technology (ICT) on management, storage and retrieval of patient's records in Federal Medical Centers (FMC) in Nigeria. It was also focused on personnel working in the patient's record unit in Federal Medical Center (FMC), Yola. Adamawa State, Nigeria.

## **REVIEW OF RELATED LITERATURE**

### **ICT Facilities Used for Storage and Retrieval of Information**

These Health IT tools support in specific areas and promote better, more efficient healthcare through the use of today's technologies. According to Gulavani & Kulkarni, (2014) the most commonly used health IT tools are as follows:

**Electronic Medical Records (EMR):** The EMR provides a clinician with real-time access to patient information, such as patients medical condition, visits to health providers, images and reports of diagnostic procedures, schedule of services, allergies and contact information to caregivers and a complete longitudinal record of care evidence based on decision support tools that can be used to aid clinicians in decision making

**Clinical Decision Support (CDS):** CDS encompasses computerized alerts and reminders to care providers and patients, clinical guidelines, condition-focused order sets, patient data reports and summaries, diagnostic support, and other tools that enhance decision making in

**Computerized Physician Order Entry (CPOE):** CPOE is used by physicians for ordering medications, orders for x-rays and other diagnostic procedures, referrals, discharges, and transfers. One important higher-level application in CPOE is that providers write orders including prescriptions using computers

**Electronic Prescribing (E-prescribing):** E-prescribing is the transmission, using electronic media of prescription between a prescriber, dispensers, pharmacy manager, either directly or through an intermediary, including an e-prescribing network. E-prescribing includes, two-way transmissions between the point of care and the dispenser

**Computerized Physician Order Entry (CPOE):** CPOE is used by physicians for ordering medications, orders for x-rays and other diagnostic procedures, referrals, discharges, and transfers. One important higher-level application in CPOE is that providers write orders including prescriptions using computers.

**Health Information Exchange:** It is the electronic connectivity via internet and other networks that enables health care providers to exchange patient health information. It is necessary that the networks that permit electronic communication among providers must be secure in order to safeguard the information from unauthorized access, use and disclosure.

**Personal Health Record (PHR):** PHR is an electronic application through which individuals can maintain and manage their health information in a private, secure, and confidential environment.

Use of ICTs has tremendously enhanced information storage and retrieval in special libraries in conformity with this, Aina (2008) asserted that, ICT comprises pieces of equipment, network infrastructure and the associated knowledge and skills for creating, manipulating, transferring and using information or knowledge. There are

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different aspects of ICTs that are applied to solve problems or ease the ways of doing things, such as business, education, health and other aspect of life. This information technology which enhances communication is a computer based tool used by people to carry out different activities. Internet is one of the major facilities used for transferring information from one point to another

A database is a large, regularly updated file of digitized information (bibliographic records, abstracts, full text documents, directory entries, images, and statistics) related to a specific subject or field, consisting of records of uniform format organized for ease and speed of search and retrieval and managed with the aid of database management system. Database is structured to facilitate the storage, retrieval, modification, and deletion of data in conjunction with various data processing operations. Database can be stored on magnetic disc tape, optical disc, or some other secondary storage devices. Mohammed (2011) further stated that, internet database are structured collection of records or data with no limitation to the location/site, format, nature and source of the information.

One of the ICT facilities is CD-ROM which can be used to store a variety of information including music, directories, books, periodicals and records. A typical CD-ROM can store the equivalent of 250,000 pages of text. The data stored in a CD-ROM can be easily read by means of a laser technology. Using the appropriate search retrieval equipment, data on CD-ROM can be easily accessed. CD-ROM is particularly important because it does not require telephone connection, Rodgers (2001) asserted that, computer method for information storage and retrieval have been developed to accommodate dramatic growth both in the amount of information and in the need to provide access to it, and to do so with economy efficiency. For many persons to have ready access to information has required the development of cost effective system. Fortunately, information technologist computers, related forms of data storage and display, and telecommunication have provided the means for meeting those needs

### **THE AVAILABILITY AND EFFECTIVENESS OF ICT FACILITIES**

The effect of ICT is obvious on information benefits through changes in types, substance and technique for generation and in addition to conveyance of information items. (Uzoma, Vandi, & Chagwa, 2018). Development of web as the biggest storehouse of information storage and retrieval has changed the pattern the way information experts, mediators, and facilitators handled their records. Also, ICT provide improved instruments for information transmission and transform. Availability and utilization of ICT facilities are preceded by record mangers, available tools and facilities enables them to take advantage of ICT to perform their duties effectively. It has been established through literature that ICT components such as computers, Internet, e-mail and CD-ROMs are relevant in the delivery of information services in libraries (Gilbert, 2016; Owolabi, Idowu, Okocha, & Ogundare, 2016)

The convergence of computers and telecommunication in handling and processing information constitutes what is now known as information and communication technology. Computer is important in management of information because of the speed with which it processes information activities. Also, computer is very reliable and error free unless errors introduced by the human factor. One of the major characteristics of computer is it high storage capacity. It can store a large amount of data which can easily be retrieved when needed.

Aguolu and Aguolu (2002) asserted that, electronic computers offered new mechanisms to store very large quantities of data or records, and have an exceptional capacity to manipulate, scan and search them, once properly programmed.

ICTs can effectively provide an almost instantaneous access to information stored in the

1. Identification of information relevant to the subject of inquiry;
2. Location of the document or information itself, that is, tracking it down to the source through effective bibliographic access control devices;
3. Delivering of the located information record through provision of necessary document delivering mechanisms and ensuring its physical accessibility.

However, much as technology, as a tool, can assist, to a large extent, in the solution of information storage and retrieval problems, especially in science and technology. Different information media have different capabilities in terms of storing and presenting different kinds of information. For presentation of ideas, arguments, or concepts, print is superior to all other media.

### **Staff skills/competency towards the use of ICT facilities**

Inadequate digital records management knowledge and skills is a major obstacle to realizing effective digital records management in the Ugandan Public Sector. (Augustine, 2012). The need for expertise in managing digital records has been identified as a critical success factor for implementing a digital records management program in the hospitals. ICT can draw on the expertise of the records managers to ensure the right information is being captured as records are classified in a way that promotes their retrieval while protecting their sensitivities, and records are only kept for as long as they are required.

Kokaiski and Maybury (2002) asserted that, many staff has trouble in generating a good search statement. The typical personnel do not have significant experience with not even the aptitude for Boolean logic statements. The use of Boolean logic is a legacy from the evolution of database management systems and implementation constraints. Until recently, commercial systems were based upon databases. It is only with the introduction of Information retrieval systems such as retrieval ware, TOPIC, AltaVista, info seek and Inquiry that the idea of accepting natural language queries is becoming a standard system feature. A limited knowledge of the vocabulary associated with a particular area along with lack of focus on exactly what information is needed posed a major obstacle

Suitably qualified personnel's are required for the application of ICT in the hospital to enhance quick search if information needs without too much waste of time. Kokaiski and Maybury further lament that presently, there is a low level of ICT skills among personnel's working in various record Unit as well as in special libraries, most librarians have little or no skills to work with computers, the internet. Yetunde (2008) asserted that, another major problem confronting the utilization of ICT in libraries is the inability to have the right personnel with the required skills and knowledge to handle and manage the ICT facilities and resources in their libraries. Thus technological developments have result in an increased need for personnel training to be able to handle these ICTs for retrieval systems

### **Problems encountered in the process of storage and retrieval of information using ICTs**

There is increased population numbers of patients in many hospitals. It has been noted that the appreciable increase in population numbers create more data and lack of practical automated tools to manage records, poses problems in the hospitals. It is also noted that there is a problem of limited skills possessed by records personnel.

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Gilbert (2016) asserted that, the use of computers and communication technology had an enormous influence on the way that information is produced, organized, stored, searched and managed and has certainly made more information accessibility to more staff. This means that result are available almost immediately because the computer is capable of searching very fast despite that the great size of the files involved. This speed of response in attractive to many users, it means that record keepers can take advantage of new information as they find it in other to adapt and refine their search strategies, a process known as feedback that has been found to improve the relevance of the materials retrieved.

Ojedokun (2007) asserted that, in spite of the potentials ICTs offer, many African countries are unable to adequately utilize these technologies for enhanced sustainable development fostered by access to global information networks. ICT provides impetus for growth at all levels of development. The problems facing many African countries in using ICTs, however, include: low telecommunications infrastructure and tele-services; lack of power and by poor power supply; poor national information policy; limited computer and by information technology (IT) literacy; ineffective planning; poverty; and lack of skilled manpower and/or inadequate skilled manpower. These are important prerequisites for participating in the information super high-way. Poor power supply and limited computers and/or information technology (IT) literacy are of much concern. Amkpa and Abba (2009) discovered that, lack of adequate bandwidth size and appropriate antivirus and other necessary software can also deny information professionals in use of ICT the optimum utilization of the facilities on ground. Insufficient and unrealistic infrastructural facilities are also among the major constraint toward ICT utilization. Ajidahun (2004) asserted that, factors affecting the application of ICT in Nigerian are epileptic or erratic power supply, poor telecommunications and manpower problem. Faboyinde (2006) affirmed that, the erratic nature of the provision of electricity, poor telecommunication infrastructure (both in quality and quantity) constitute major obstacles to the application of ICT in Nigerian libraries.

### **METHODOLOGY**

The descriptive survey research design was used for this study. The population of the study consists of 73 record personnel of Federal Medical Centre (FMC), Yola. There was no sample as the whole population was used due to the manageable size. The instrument used for data collection was structured questionnaire. The questionnaire was personally administered by the researchers, the administration and retrieval of the instrument was carried out to within the period of one (1) week. Standard deviation and mean scores was used as statistical method in analyzing the data presented in tables

### **Results**

The analysis and results of this study are presented as follows.

**Research Question 1:** What are the ICT facilities used for storage and retrieval of information in Federal Medical Center (FMC)?

**Table 1: Mean and standard deviation on the ICT facilities used for storage and retrieval of information in FMC (N=73).**

S/N	Item Statement	Mean	SD	Remark
1	The hospital provides database facilities which enhances storage and retrieval of vast files and records of patients	1.42	.64	Strongly disagree



2	The hospital use network and several other devices like CD-ROM as a medium for storage of patient's record	3.66	1.07	Strongly agree
3	The hospital provides Patient Data management systems (PDM)	2.43	.76	Disagree
4	There is Electronic Medical Records (EMR)	2.11	.66	Disagree
5	Personal Health Record (PHR) software are available in the hospital	3.76	1.03	Strongly agree
6	There are ICT facilities such as computers for storage and retrieval of information in the hospital	3.26	.81	Agree
7	Clinical Decision Support (CDS) software are available in the hospital	3.83	.79	Strongly agree
8	Health Information Exchange (HIE) software are available in the hospital	2.51	1.05	Agree
	<b>Grand Mean</b>	<b>2.91</b>		<b>Agree</b>

Data relating to research question 1 presented in table 1 shows the mean and standard deviation of respondents on the ICT facilities used for storage and retrieval of information in FMC. The data revealed that the respondents strongly agreed on 3 items, agreed on 2 items, disagreed to 2 items and strongly disagree to 1 item. On the whole, the respondents agreed to the ICT facilities used for storage and retrieval of information in FMC Yola. The standard deviation shows homogeneity in the respondents rating of the ICT facilities used for storage and retrieval of information in FMC.

**Research Question 2:** How adequate and effective of these ICT facilities for storage and retrieval of information?

**Table 2: Mean and standard deviation on how adequate and effective these ICT facilities are for storage and retrieval of information (N=73).**

S/N	Item Statement	Mean	SD	Remark
9	The hospital is adequately equipped with ICT facilities with mechanism to store very large quantity of record	1.60	1.08	Disagree
10	ICT Provide speedy and easy access to information	2.52	.73	Agree
11	The ICT facilities are very effective for converting large volume of patience record into readable form	2.90	.78	Agree
12	ICTs provide multiple access to the same information and Increases accuracy of information at a time	1.71	.92	Disagree
13	ICT facilities such as computers and CD ROMs are adequate for management of records	3.82	.71	Strongly agree
14	ICT makes retrieval easier and reduces time for tasks	2.01	1.04	Agree
	<b>Grand mean</b>	<b>2.42</b>		<b>Agree</b>

Data presented in table 2 shows the mean and standard deviation on how adequate and effective these ICT facilities are for storage and retrieval of information in FMC. The analysis revealed that the respondents strongly agree to 1 item, agree to 3 items and disagree to 2 items. However, on the whole the respondents agreed to the adequacy and effectiveness of these ICT facilities for storage and retrieval of information. The standard deviation shows that the respondents where homogenous in their ratings.

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**Research question 3:** What are the levels of skills/competencies of personnel towards the use of these ICT facilities in Federal Medical Centre (FMC)?

**Table 3: Mean and standard deviation on the levels of skills/competencies of personnel towards the use of these ICT facilities in FMC (N=73)**

S/N	Item Statement	Mean	SD	Remark
15	I have computer skills and competencies for management and retrieval of patient records	3.67	1.01	Strongly agree
16	I have acquired skills for searching and retrieving records on data base	3.45	1.30	Strongly agree
17	I always	3.33	.97	Strongly agree
18	I have the computer literacy to operate ICT, covert and input records using CD-ROMs	2.17	.71	Agree
19	I have skills and the ability to find, evaluate, and share information	3.00	.82	Agree
20	I have skills of search queries that made of ad-hoc keywords.	1.32	1.01	Strongly agree
21	I have the knowledge of digitizing patient records	3.67	.88	Strongly agree
	<b>Grand mean</b>	<b>2.94</b>		<b>Agree</b>

Data presented in table 3 shows the mean and standard deviation on the level of skills/competencies of personnel towards the use of these ICT facilities in FMC. The analysis revealed that the respondents strongly agree to 5 items and agree to 2 items. However, on the whole, the respondents agreed to the level of skills/competencies of personnel towards the use of these ICT facilities in FMC. The standard deviation shows that the respondents were homogenous in their ratings on the level of skills/competencies of personnel towards the use of these ICT facilities in FMC.

**Research questions 4:** What are the problems encountered in the process of storage and retrieval of information using ICT at Federal Medical Centre (FMC) ?

**Table 4: Mean and standard deviation on the problems encountered in the process of storage and retrieval of information using ICT at FMC (N=73).**

S/N	Item Statement	Mean	SD	Remark
22	There are insufficient and unrealistic ICT facilities to store and retrieve of information and record in the hospital	3.41	.91	Strongly agree
23	Epileptic or erratic power supply does not affect the process of storage and retrieval of information	2.03	.88	Agree
24	Limited equipment (computers, scanners and printers) in the hospital	4.00	.78	Strongly agree
25	Lack of conducive environment to operate ICT	3.21	.86	Strongly agree
26	Lack of trained and qualified personnel constitute major obstacles in	4.00	.78	Strongly

	management, storage and retrieval of patient record			agree
27	Increase population of patient is one of the problems of ICT	3.42	1.12	Strongly agree
	<b>Grand mean</b>	<b>3.34</b>		<b>Strongly agree</b>

Data presented in table 4 shows the mean and standard deviation on the problems encountered in the process of storage and retrieval of information using ICT at FMC. The analysis revealed that the respondents strongly agree to 5 items, and agree to 1 item. However, on the whole the respondents strongly agree to the problems encountered in the process of storage and retrieval of information using ICT at FMC. The standard deviation shows that the respondents were homogenous in their ratings on the problems encountered in the process of storage and retrieval of information using ICT at FMC.

### **Summary of findings**

1. The study revealed that majority of respondents indicated Personal Health Record (PHR) software are the ICT facilities used in management of patient records in the hospitals
2. The study revealed that majority of the respondents strongly agreed that ICT facilities such as CD ROMs are adequate and effective for management of patient records in the hospitals
3. The study showed that whole of the respondents indicated agreed to the level of skills/competencies of personnel towards the use of ICT facilities for management of patient records in the hospital.
4. The study revealed that the majority of the respondents indicated epileptic or erratic power supply is one of the major problems for management of patient records

### **Discussions**

Based on the analysis carried out on the data collected on research question 1, it was revealed that the respondents agreed to the ICT facilities used for storage and retrieval of information/ record. This finding affirms to the findings of Rodgers (2001) which revealed that, computer method for information storage and retrieval have been developed to accommodate dramatic growth both in the amount of information and in the need to provide access to it, and to do so with economy efficiency. Furthermore, this was supported by the findings of Gulavani and Kulkarni (2014) which found that a primary patient record is used by health care professionals while providing patient care services to review patient data or document their own observations, actions, or instructions.

More so, data analysis carried out on research question two revealed that the respondents agreed to the adequacy and effectiveness of these ICT facilities for storage and retrieval of information/record. This finding conforms to the findings of Alotaibi (2017) who found that Information Technology (IT) has the potential to improve the quality, safety, and efficiency of health care. He further stated that the application of Information Communication Technology (ICT) for the storage and retrieval of information in hospitals is very imperative, because the past records in the hospitals especially the patient's records, serves as the gateway to understanding the present health problem of the patient and also facilitate treatment.

Similarly, analysis carried out on research question three revealed that the respondents agreed to the level of skills/competencies of personnel towards the use of these ICT facilities. This finding is contrary with the findings of Kokaiski and Maybury (2002) which revealed that, many staff has trouble generating good search statement. Furthermore, it was stated that the typical personnel do not have significant experience with not even the aptitude for

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Boolean logic statements. The use of Boolean logic is a legacy from the evolution of database management systems and implementation constraints. Until recently, commercial systems were based upon databases.

The findings on research question four also revealed that the respondents strongly agree to the problems encountered is elliptic power supply in the process of storage and retrieval of information using ICTs. This finding is in agreement with the findings of Ojedokun (2007) who reported that, in spite of the potentials of ICT, many African countries are unable to adequately utilize these technologies for enhanced sustainable development fostered by access to global information networks due to inadequate power. ICT provides impetus for growth at all levels of development. This finding also is not in line with the findings of Amkpa and Abba (2009) who found that, inadequate bandwidth size and appropriate antivirus and other necessary software can also deny information professionals in use of ICT the optimum utilization of the facilities on ground. They concluded by stating that insufficient and unrealistic infrastructural facilities are also among the major constraint toward ICT utilization.

### **CONCLUSION**

Based on the findings the following conclusions were drawn:

1. The study concluded that Personal Health Record (PHR) software are the ICT facilities used in management of patients record in the hospitals
2. The study has also, concluded that ICT facilities such as CD ROMs are adequate and effective for management of records in the hospitals
3. The study concluded that the whole personnel agreed to has acquired level of skills/competencies towards the use of ICT facilities for management of record in the hospital.
4. The study concluded that epileptic or erratic power supply is one of the major problems for management of patient's record in the hospital.

### **Recommendations**

Based on the findings and conclusions of the study, the following recommendations were made:

1. The management of the hospitals should provide and deploy more ICT facilities to facilitate large storage and management of patients' record; this will in turn reduce manual handling of huge records and files.
2. The management of the hospital should made ICT facilities more adequate and effective to enhance management of patients record in the hospitals
3. The hospital management should ensure regular computer training programs and send them for workshop and conference to improve their ICT knowledge/skill so as to equipped them with the necessarily competencies to operate ICT facilities.
4. The management of the hospital should provide power plants and solar panels as backup to curtail the shortage of power supply

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