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Information and Communication Technology Applications and use in Medical Records and Information Management in Selected Hospitals in Ijebu Ode Local Government Area, Ogun State.

Aderonke Ogungbade CLN
aaogungbade@mtu.edu.ng

oluwatobi Abdul Mr
tobisolution0@gmail.com

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BY

OGUNGBADE, A. A. (DLIS, BLIS(ed), CLN).

ABSTRACT

This study investigated the information and communication technology application and use in medical records and information management in selected hospitals in Ijebu-Ode Local Government Area of Ogun State. The Objectives of the study found out the level of application and compliance of ICT and also investigated the challenges facing the application. The survey research design was adopted while total enumeration sampling technique was used in the selection of samples. Questionnaire was used to gather data for this study while mean and standard deviation frequency counts and percentages was used in data analysis. Findings shows that the information and communication tools applicable in the selected hospitals are computers (100%), softwares such as Microsoft word, excel etc (100%), surgical ICT tools (100%), internet (90%), management software (90%), infection detecting technologies (90%), Health Information system programme (HISP) (90%), ultrasound imaging device (80%), telemedicine (76%), national health care management information system (NHC/MIS) (75%) and scanner (60%). The challenges facing the use of ICT tools in medical records and information management in the hospitals are inadequate training, insufficient knowledge on use of IT tools, failure of equipment/old IT tools, security/privacy issues, inadequate ICT facilities, lack of physical access to the tools and affordability. The research therefore recommended among others that there should be more training, awareness, exposure or workshops for staff in the hospital on the application and use of ICT tools which are seldom or never used in the hospitals to improve the health care services rendered in the hospitals.

Keywords: *Information Communication Technology, Hospitals, Medical Records, Applications, Management.*

Introduction

Today, the technology is changing the landscape of the world and leading us towards a sophisticated technical world. The emerging role of information and communication technology has created a huge impact on healthcare. It enhances the quality of care, increases the patient security and data protection and reduces operating and administrative cost. Telecommunication devices are more users friendly and used by a huge population around the world which has reduced the communication gap to a zero level. Therefore, accessibility to information has become simple using information and communication technology and also people find themselves more relaxed while availing healthcare service. (Ajuwon, 2003)

Information systems include all the expert workforce, computer networks, system models and system information required to perform various functions such as collection, processing, storage, access and distribution of information. It is possible to see information systems as systems that aim to provide accurate, up-to-date information where and when they are needed (Bengshir, 2016).

The Hospital Information Management System is a system that hospitals collect and process all necessary information is processed and collected through computers about health care services and management. This information can be transferred between the units via the automation system in the electronic environment. It plays integrating role different information that emerges in terms of medical, financial and management functions of the hospital (Akkoç, 2019). The hospital information management system is an institutional resource planning system that has been privatized and increased in quality according to the needs of the health sector (Özoğul, Karsak, Tolga, 2019).

Most hospitals public and private have deeply concentrated on paper-based records without giving considerations to electronics medical records. There have been many efforts for the application of information and communication technology in medical records and information management; many of these efforts have proven to be unsustainable because of political, socio-economic and technological factors, inadequate skills and knowledge at a local level to handle new systems and technologies (Evans, 2016)

Most Nigerian hospitals still experience some obstacles or hindrances in the effectiveness and efficient use of information and communication technology resources. This study, therefore want to investigate information and communication technology applications and use in medical records and information management in selected hospitals in Ijebu-Ode Local Government Area of Ogun State

Objectives

The objectives of the study are as to find out the information and communication technology tools applied for medical purposes, level of application, compliance and investigate challenges facing application and use of information and communication technology in medical records and information management in selected hospitals in Ijebu-Ode Local Government Area of Ogun State.

Literature review

The application of information and communication technologies tools (ICTs) or alternatively e-health tools to successful health care delivery had been widely demonstrated through various ICT health projects in developing and developed world. E-health, an umbrella term that encompasses the use of ICT in healthcare, includes telemedicine, where medical advice or consultation is provided over long distances via Internet, radio, telephone and other communication devices. In another vein, e-health is the use of ICT tools for dissemination of health related information such as HIV/AIDS and vaccination hubs using radio, television, Internet or short message service (UNDP, 2017) Successful application of e-health tools in the developed economies had contributed to the delivery of quality healthcare services. On the contrary, the utilization of e-health tools in the developing countries are posed with challenges which needs to be addressed. These barriers include lack of computer equipment, lack of computer skills, cost of computer and so on. These have contributed to the unreliability, inaccessibility and lack of sustainability of ICT infrastructures (Ouma and Herseman, 2018).

In many industrialized countries of the world, there is huge investment of resources into ICT in health care as a commitment to providing the most efficient and effective health care services to their teeming population. Jossey-Bass & Roberta (2018) argue that the implementation of risk management in Gynecological healthcare delivery in hospitals is one of the key measures that can be taken to prevent loss of patient information and enforce patient safety. In particular, the issues of human factors and safety management were analyzed in relation to exploitation of reports about non-conformity events and field observations.

The Hospital Information Management System is a system that hospitals use to collect and process all necessary information through computers about health care services and management. This information can be transferred between the units via the automation system in the electronic environment. It plays integrating role different information that emerges in terms of medical, financial and management functions of the hospital (Akkoç, 2019).

Application of ICT in information management in the hospital is the intersection of information science, computer science, information technology and healthcare. It deals with the resources, devices, and methods required in optimizing the acquisition, storage, retrieval, and use of information in health care and biomedicine. This includes not only computers but also clinical guidelines, formal medical terminologies, and information and communication systems. Research and development efforts within the healthcare industry and the rapid advancement in ICT over the last two decades have brought about significant advances in the quality of medical services to the patients.

Challenges facing Information and Communication Technology Applications in Hospitals includes the following; digital divide, security issues, lack of information control, safety, and cost of service delivery to the patients (Hospitals and Health Networks , 2019: Heron , 2010 and Rudowski, 2006).

Methodology

The population of this study comprises of Medical Records Officers, Doctors and Nurses in some selected hospitals in Ijebu Ode Local Government Area of Ogun State which according to the field survey carried out by the researcher are 51 respondents. Table 1 shows the population across the zones and the total population for this study.

Table 1 showing the population for the study

Name of Hospitals	Population
Primary Health Care	5
General Hospital	25
Primary Health Care, Italapo	7
Health Care, Ita Osu	5
Primary Health Center, Oguntuga	4
Health Center, Ilese	5
TOTAL	51

Results

Table 2: Demographic Information of Respondents

Gender	Frequency	Percentage %
Male	15	30%
Female	35	70%
Total	50	100
Age	**Frequency**	**Percentage %**
15-20	0	0%
21-30	12	24%
31 and above	38	76%
Total	50	100
Religion	**Frequency**	**Percentage %**
Christianity	30	60%
Islam	20	40%
Others	0	0%
Total	50	100
Marital Status	**Frequency**	**Percentage %**
Married	33	66%
Single	17	34%
Divorced	0	0%
Total	50	100

Table 2 above revealed that 35(70%) of the respondents are female. The table also revealed that 38(76%) of the respondents are 31years and above. Table 2 also revealed that 30(60%) of the respondents practices Christianity. The table also shows that 33(66%) of the respondents are married.

Table 3: Available Online Databases

S/N	ICT tools	Frequency	Percentage
1.	Computers	50	100%
2.	Internet	45	90%
3.	Management Software	45	90%
4.	Scanner	30	60%
5.	Ultrasound imaging devices	40	80%
6.	Infection detecting technologies	45	90%
7.	National Health Care Management Information System (NHC/MIS)	35	75%
8.	Softwares such as microsoft word, excel etc.	50	100%
9.	Health Information system programme (HISP)	45	90%
10.	Telemedicine	38	76%
11.	Surgical ICT tools	50	100%
12.	Bioredirectional video feeds	25	50%

Table 3 above revealed that 50(100%) of the respondents were of opinion that computers is one of the ICT tools applied for medical purposes in hospitals. More so, it was also revealed 45(90%) of the respondents were of opinion that internet is another ICT tools applied for medical purposes in hospitals. In addition, the table also reviewed that 45(90%) of the respondents were of opinion that management software is another ICT tools applied for medical purposes in hospitals. The table also shows that 30(60%) of the respondents were of opinion that scanner is also part of the ICT tools applied for medical purposes in hospitals. In addition, the above table also revealed that 40(80%) of the respondents were of opinion that ultrasound imaging devices is another ICT tool applied for medical purposes. It was also revealed that 45(90%) of the respondents were of opinion that infection detecting technologies is another ICT tool used in hospitals. Furthermore, the table also revealed 35(75%) of the respondents were of opinion that National Health Care Management Information System (NHC/MIS) is another ICT tool used in hospitals. More so, the table revealed that 50(100%) of the respondents were of opinion that software such as Microsoft, word, excel etc. are other ICT tools used in hospitals.

The table shows that 45(90%) of the respondents were of opinion that Health Information system programme (HISP) is another ICT tool used in hospitals. The table also revealed that 38(76%) of the respondents were of opinion that telemedicine is another ICT tool used in hospitals. In addition, the table observed that 50(100%) of the respondents were of opinion that surgical ICT tools is another ICT tools used in hospitals. Lastly, the table also shows that 25(50%) of the respondents were of opinion that bioredirectional video feeds is another ICT tool applied in medical purposes in the selected hospitals.

Therefore, it can be concluded that computers, softwares such as Microsoft, word, excel etc, surgical ICT tools, internet, management software, infection detecting technologies, Health Information system programme (HISP), ultrasound imaging devices, telemedicine, national health care management information system (NHC/MIS) and scanner are the ICT tools applied in medical purposes in the selected hospitals in Ijebu Ode Local Government Area of Ogun State.

Table 4: Level of Application of ICT in medical records handling

S/N	ICT Tools	Mean	St. Dev	Remark
1.	Computers	3.83	.695	Significant
2.	Internet	3.69	.738	Significant
3.	Management Software	3.59	.559	Significant
4.	Scanner	3.56	.638	Significant
5.	Ultrasound imaging devices	3.52	.579	Significant
6.	Infection detecting technologies	3.47	.579	Significant
7.	National Health Care Management Information System (NHC/MIS)	3.31	.541	Significant
8.	Softwares such as microsoft word, excel etc.	3.47	.600	Significant
9.	Health Information system programme (HISP)	3.31	.545	Significant
10	Telemedicine	2.76	.524	Significant
11	Surgical ICT tools	3.83	.695	Significant
12	Bioredirectional video feeds	2.76	.706	Significant
	Overall Mean	$(\bar{x}) = 41.1$		
	Grand Mean	$(\bar{x}) = 3.4$		

Decision: It has been adjudged considering the grand mean score that it is significant

Therefore it can be concluded that level of application of ICT in medical records handling such as internet, ultrasound imaging devices, infection detecting technologies, softwares (Microsoft word, excel etc.), surgical ICT tools, computers, management software, NHC/MIS, HISP and scanners is very high

Table 5: Frequency of Use of Information and Communication Technology in Medical Records

S/N	ICT Tools	Daily	%	Weekly	%	Occasionally	%	Never	%
1.	Computers	40	80%	10	20%	-	-	-	-
2.	Internet	50	100%	-	-	-	-	-	-
3.	Management Software	45	90%	5	10%	-	-	-	-
4.	Scanner	30	60%	10	20%	5	10%	5	10%
5.	Ultrasound imaging devices	50	100%	-	-	-	-	-	-
6.	Infection detecting technologies	50	100%	-	-	-	-	-	-
7.	National Health Care Management Information System (NHC/MIS)	45	90%	5	10%	-	-	-	-
8.	Softwares such as microsoft word, excel etc.	50	100%	-	-	-	-	-	-

S/N	ICT Tools								
9.	Health Information system programme (HISP)	45	90%	5	10%	-	-	-	-
10.	Telemedicine	30	60%	10	20%	5	10%	5	10%
11.	Surgical ICT tools	50	100%	-	-	-	-	-	-
12.	Bioredirectional video feeds	30	60%	10	20%	5	10%	5	10%

Table 5 above revealed that 40(80%) of the respondents were of opinion that computers is used daily. The table also observed that 50(100%) of the respondents were of opinion that internet is used daily. It was also observed that 45(90%) of the respondents were of opinion that management software is used daily. In addition, table 7 shows that 30(60%) of the respondents were of opinion that scanner is used daily. Furthermore, the table shows that 50(100%) of the respondents were of opinion that ultrasound imaging devices is used daily. More so, the table revealed that 50(100%) of the respondents were of opinion that infection detecting technologies is used daily. In addition, the table also revealed that 45(90%) of the respondents were of opinion that National Health Care Management Information System (NHC/MIS) is used daily In addition, the table also revealed that 50(100%) of the respondents were of opinion that softwares such Microsoft word, excel etc is used daily. More so, the table shows that 45(90%) of the respondents were of opinion that Health Information System programme (HISP) is used daily. Also, 30(60%) of the respondents were of opinion that telemedicine is used daily. Furthermore, the table revealed that 50(100%) of the respondents were of opinion that surgical ICT tools is used daily. Lastly, the table revealed that 30(60%) of the respondents were of opinion that bioredirectional video feed is used daily.

It is therefore concluded that internet, computers, management softwares, ultrasound imaging devices, infection detecting technologies, software such as microsoft word, excel etc., surgical ICT tools, National Health Care Management Information System (NHC/MIS), Health information system programme (HISP), scanners, telemedicine and bioredirectional video feeds are the frequently used ICT tools in medical records in the selected hospitals in Ijebu -Ode Local Government Area of Ogun State.

Table 6: Frequency of Use of Information and Communication Technology in Information Management

S/N	ICT Tools	Daily	%	Weekly	%	Occasionally	%	Never	%
1.	Computers	40	80%	10	20%	-		-	
2	Internet	50	100%	-		-		-	
3	Management Software	45	90%	5	10%	-		-	
4	Scanner	30	60%	10	20%	5	10%	5	10%
5	Ultrasound imaging devices	50	100%	-		-		-	
6	Infection detecting technologies	50	100%	-		-		-	

S/N	Item	Freq	%	Freq	%	Freq	%	Freq	%
7	National Health Care Management Information System (NHC/MIS)	45	90%	5	10%	-		-	
8	Softwares such as microsoft word, excel etc.	50	100%	-		-		-	
9	Health Information system programme (HISP)	45	90%	5	10%	-		-	
10	Telemedicine	30	60%	10	20%	5	10%	5	10%
11	Surgical ICT tools	50	100%	-		-		-	
12	Bioredirectional video feeds	30	60%	10	20%	5	10%	5	10%

Table 6 above revealed that 40(80%) of the respondents were of opinion that computers is used daily. The table also observed that 50(100%) of the respondents were of opinion that internet is used daily. It was also observed that 45(90%) of the respondents were of opinion that management software is used daily. In addition, table 7 shows that 30(60%) of the respondents were of opinion that scanner is used daily. Furthermore, the table shows that 50(100%) of the respondents were of opinion that ultrasound imaging devices is used daily. More so, the table revealed that 50(100%) of the respondents were of opinion that infection detecting technologies is used daily.

In addition, the table also revealed that 45(90%) of the respondents were of opinion that National Health Care Management Information System (NHC/MIS) is used daily. In addition, the table also revealed that 50(100%) of the respondents were of opinion that softwares such microsoft word, excel etc is used daily. More so, the table shows that 45(90%) of the respondents were of opinion that Health Information System programme (HISP) is used daily. Also, 30(60%) of the respondents were of opinion that telemedicine is used daily. Furthermore, the table revealed that 50(100%) of the respondents were of opinion that surgical ICT tools is used daily. Lastly, the table revealed that 30(60%) of the respondents were of opinion that bioredirectional video feed is used daily.

It is therefore concluded that internet, computers, management software, ultrasound imaging devices, infection detecting technologies, software such as Microsoft word, excel etc, surgical ICT tools, National Health Care Management Information System (NHC/MIS), Health information system programme (HISP), scanners, telemedicine and bio-redirectional video feeds are the frequently used information and communication technology in information management in selected hospitals in Ijebu-Ode Local Government Area of Ogun State.

Table 7: Challenges facing the Application and Use of ICT in Medical Records and Information Management

S/N	CHALLENGES	Frequency	Percentage
1.	Inadequate training	50	100%
2.	Inadequate ICT facilities	45	90%
3.	Insufficient knowledge on use of IT tools	50	100%
4.	Lack of physical access to the tools	45	90%

5.	Affordability	45	90%
6.	Failure of equipment/old IT tools	50	100%
7.	Security/privacy issues	50	100%

From the table 7 above, 50(100%) of the respondents were of opinion that inadequate training is one of the major challenge facing the application and use of ICT in medical records and information management. Also, the table revealed that 45(90%) of the respondents were of opinion that inadequate ICT facilities is another challenge facing the application and use of ICT in medical records and information management. In addition, the table 8 also revealed 50(100%) of the respondents were of opinion that insufficient knowledge on use of IT tools is another challenge facing the application and use of ICT in medical records and information management. Also, the table revealed that 45(90%) of the respondents were of opinion that lack of physical access to the tools is another challenge facing the application and use of ICT in medical records and information management. More so, the table also revealed that 45(90%) of the respondents were of opinion that affordability is another challenge facing the application and use of ICT in medical records and information management. More so, 50(100%) of the respondents were of opinion that failure of equipment/old IT tools is another challenge facing the application and use of ICT in medical records and information management. Lastly, the table also revealed that 50(100%) of the respondents were of opinion that security/privacy issues is challenge facing the application and use of ICT in medical records and information management in selected hospitals in Ijebu-Ode Local Government Area of Ogun State.

It can therefore be concluded that inadequate training, insufficient knowledge on use of IT tools, failure of equipment/old IT tools, security/privacy issues, inadequate ICT facilities, lack of physical access to the tools and affordability are the challenges facing the use of information and communication technology in medical records and information management in selected hospitals in Ijebu-Ode Local Government Area of Ogun State

Summary of Findings
1. The ICT tools that are applicable in information management in the hospitals are computers, internet, management software, ultrasound imaging devices, infection detecting technologies, National Health care management information system (NHC/MIS), software such Microsoft word, excel etc, Health information system programme, telemedicine and bioredirectional video feeds.
2. The frequently used ICT tools for medical records in the hospitals are internet, computers, management softwares, ultrasound imaging devices, infection detecting technologies, software such as microsoft word, excel etc, surgical ICT tools, National Health Care Management Information System (NHC/MIS), Health information system programme (HISP), scanners, telemedicine and bioredirectional video feeds.
3. The challenges facing the use of ICT tools in medical records and information management in the hospitals are inadequate training, insufficient knowledge on use of IT tools, failure of equipment/old IT tools, security/privacy issues, inadequate ICT facilities, lack of physical access to the tools and affordability.

5.2 Conclusion
Information and communication technology in healthcare has helps in finding the possible prevention measures to eradicate and reduce the spread of diseases. Information and communication technology helps in diagnosis which reduces the time and cost. This saves the

lives of many individuals by providing treatment in advance. Through information and communication technology, the traditional healthcare systems are eliminated and new models are formed for effective quality care. The fundamental use of information and communication technology in hospitals is for electronic storage of medical data. This helps to retrieve the information easily. Through information and communication technology the data are transferred to the patient or to the doctors for consultation.

Information and communication technology (ICT) is arguably the most rapidly growing segment of the world ecosystem. The development in the sector permeates every human activity; social, economic, cultural, religious, political or health care (Idowu, Ogunbodede, and Idowu, 2018). The huge networking possibilities afforded by ICT has significantly transformed the health care systems in the world (Feliciani, 2013; Myers and Mary, 2013) dispersing health care information with comparative ease, bringing patient closers to care givers, making access to the best health care technology and expertise available to the remotest parts of the world

5.3   Recommendations

1. There should be more training, awareness, exposure or workshops for staff in the hospital on the application and use of ICT tools which are seldom or never used in the hospitals to improve the health care services rendered in the hospitals.

2. The hospital management should also provide access free information and communication technology tools available to the medical records officers, doctors and nurses to encourage and enhance their knowledge on the use of ICT so as to aid effective use of ICT in hospitals

3. Adequate budgetary allocation should be given to the hospitals for acquisition of information and technology tools needed in the hospitals for effective information management and medical records in the hospitals

4. The medical records officer, doctors and nurses should considered using information and communication technology tools instead of concentrating on manuals methods for medical records and information management in hospitals as this will increase their knowledge to the fully usage of ICT tools.

5. Formal training and orientation programs should be organized at the various departments in the hospitals for medical records officers, doctors and nurses on the use and application of information and communication technology in their professional field so that there will be enough staff to make use of the ICT tools which will promote efficient medical records and information management in the hospitals.

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