Original Paper

Implementation Assessment of Electronic Records Management System in Bayelsa State, Nigeria

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Abstract

The quality of information available to medical practitioners when delivering treatment to patients influences the outcome of service delivery. In the healthcare industry, health information technology has been shown to improve patient safety and treatment quality. The purpose of this research is to identify the facilitators and hurdles to the deployment of an electronic records management system at NDUTH, Okolobiri. For this study, a descriptive cross-sectional research design was used. The stratified random sample was taken from the 204 staff members that participated in the survey at NDUTH Okolobiri. Telephone interviews were also conducted with a small number of hospital staff who had deployed the electronic records system. According to the findings, the majority of participants (51.0%) were female, with an average age of 37(SD+9.0) years. The respondents' overall understanding of electronic records management systems was 45.9%. The overall implementation rate was 22.8%. The study's facilitators were leadership support along with the availability of ICT equipment, whereas the barriers were funding, a lack of power, insufficient ICT infrastructures, administrative challenges, poor staff compliance, a lack of government support, and poor maintenance of software and ICT equipment. The findings indicate that

government and private enterprises should invest more in healthcare delivery via electronic records management systems. This is critical because the quality of information that medical practitioners have access to when caring for patients influences the effectiveness of health service delivery. It has also been discovered to ensure the proper operation of health institutions.

Keywords

electronic health record management, strategic framework, health information exchange, supportive policies, healthcare, Nigeria

1. Introduction

In delivering qualitative and effective healthcare services in any nation, hospitals play a very important role which cannot be over emphasized (Ojo & Popoola, 2015; Morufu *et al.,* 2021a, 2021b). Health records are crucial for the efficient preparation, development and administration/delivery of optimum healthcare services (Adeleke *et al.,* 2014; Tuebi *et al.,* 2021; Raimi *et al.,* 2021a). The level of information available to medical practitioners when delivering care to patients influences service delivery outcomes (Olalekan, 2020a, Olalekan *et al.,* 2020c). Exact, reliable and relevant information is a critical asset for the establishment and monitoring of healthcare services provided at all levels be it primary, secondary, or tertiary levels; thereby making the health sector a highly information-demanding industry (Oweghoro, 2015; Raimi *et al.,* 2019b, Raimi *et al.,* 2021a). In the healthcare industry, health information technology has been shown to improve patient safety and treatment quality. One of the six elements recognized by the World Health Organization as required for effective health strengthening is a health information system (Ohiri *et al.,* 2016; Raimi & Raimi, 2020; Raimi *et al.,* 2020a). Electronic "records management is a subfield of information as well as communication technology (ICT) concerned with the entirely automated way of managing official documents in organizations" (Gift & Obindah, 2020; Ile & Ojohwhoh, 2021). The term "electronic records management system" refers to the use of computer hardware and software to handle both automated as well as non-automated data (Duranti, 2010). In healthcare delivery or hospital setting, electronic record management system is a software designed for the purpose of ensuring and improving quality management of all areas in the healthcare system ranging from medical to administrative functions for effective organization and delivery of quality and timely healthcare services (Shoewu *et al.,* 2020; Raimi *et al.,* 2022). Hospital management systems brings together computerized records of all daily activities of administrative and personnel, patient information as well as accounting details (Shoewu *et al.,* 2020). Effective hospital management system is useful in gathering relevant information in a seamless flow across the healthcare facility which supports effective decision making for administration, patient care and financial accounting. Without effective management system of healthcare facilities, healthcare needs of the population will not be met or improved. Hence, in order to perform healthcare services effectively and

efficiently, there is need for an effective health management system (Toussaint, 2015; Omidiji & Raimi, 2019; Raimi *et al.,* 2019c; Raimi *et al.,* 2020b; Adedoyin *et al.,* 2020; Olalekan *et al.,* 2020b, d). Olumide (1997) refers to management as the practice of accepting responsibility for using others to accomplish goals in order to achieve timely, effective and efficient results. Efficient and effective resource management provided in the delivery of quality healthcare services goes beyond just medical qualification and years of experience; but requires effective management (Oleribe, 2009). Records management is a proven tool for effective and efficient administration in both private and public sectors. Effective record management systems provides information that are useful in decision making, as well as improving proper planning so as to be able to deliver maximum, timely and efficient results (Bhana, 2008; Raimi *et al.,* 2021a; Raimi *et al.,* 2022). While, Nigeria is currently experiencing a persistent push for the computerization of health information and healthcare processes, as well as the number of those who want it has increased. On the contrary, according to Adeleke *et al.* (2014), the government is changing its goals and strategies for using and implementing health information technology. In light of this, the National Health Information and Communication (Health ICT) Strategic Framework was developed by a multi-sectoral group of stakeholders under the direction of the Nigerian Federal Ministries of Health (FMOH) and of Communication Technology (FMCT) beginning in late 2014 and throughout the first half of 2015 (Federal Ministry of Health, 2016). An assessment of the enabling environment for Health ICT was conducted in 2014. The report, "assessing the enabling environment for ICTs for Health in Nigeria", identified the need for a coordinated Health ICT Strategy. The report concluded that Nigeria is transitioning from "experimentation and early adoption" to "developing and build up" (Figure 1) (Federal Ministry of Health, 2016).
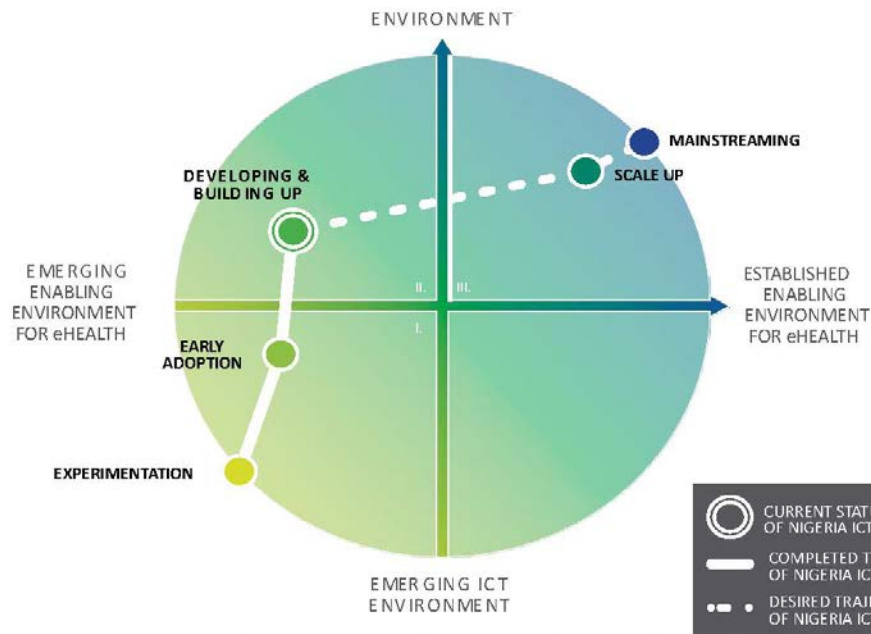
Figure 1. Current State of Nigeria's Enabling Environment for Health ICT

Source: (Federal Ministry of Health, 2016)

Nigeria is becoming a significant global powerhouse with a growing population and economy. To maintain the path to prosperity, improvements in the health system are needed to ensure and optimize the health and wellbeing of the country's citizens. Despite the health issues, Nigeria's growing telecommunications including information and communication (ICT) industries as well as the worldwide development of ICT for health (Health ICT), are opening up new avenues for strengthening the health system and improving the overall quality of healthcare delivery (Federal Ministry of Health, 2016; Raimi & Ochayi, 2017; Raimi, 2019; Gift & Obindah, 2020; Koleayo *et al.,* 2021a, 2021b). Thus, the increasing populsation in Nigeria is responsible for increasing demand of healthcare service delivery. However, the management group is in charge of monitoring and guaranteeing patient satisfaction and overall quality of life by delivering quality health care services be it medical or administrative sections (Erinosho, 2008; Erezina *et al.,* 2023). sUnfortunately, electronic record management system is only mostly applicable in medical aspect of the hospital in the form of electronic health record. The only teaching hospital in Bayelsa State, the "heart of the Niger Delta area in Nigeria, is Niger Delta University Teaching Hospital (NDUTH), Okolobiri. It was established as a teaching hospital" in 2007. Hence, this survey looks at the facilitators and barriers to the application of electronic record management system in NDUTH Okolobiri. The following objectives are to assess the knowledge of staffs of NDUTH on "the usage of electronic record management system for data management; to determine the level of implementation of electronic records management system by the

management of NDUTH; to determine the facilitators to the implementation of electronic record management system by the management of NDUTH; to assess the perceived barriers to the implementation of electronic records management system by the staffs of NDUTH" Okolobiri.

2. Methodology

2.1 Research Design

For this study, a descriptive cross-sectional research design was used. The sample was obtained from the entire employees of NDUTH Okolobiri using stratified random sampling. This strategy was chosen because it can yield evidence that can be extrapolated from the sample study's empirical findings, which is one of the qualities of high-quality research. Data from the participant were gathered using the mixed survey method. Interviews and questionnaires were used to achieve this.

2.2 Description of the Study Area

The research was carried out at the Niger Delta University Teaching Hospital in Okolobiri, Yenagoa Local Government in Bayelsa State.

2.3 Sources of Data

The "current research relied on primary data gathered from participants via structured questionnaires and interviews. The participants were Niger Delta University Teaching Hospital Okolobiri, Yenagoa, Bayelsa employees who were chosen using stratified random" selection.

2.4 Study Population

Niger Delta University Teaching Hospital (NDUTH) management staffs (5), doctors (51), nurses (76), laboratory scientist (13), Consultants (81), pharmacist (3) and Administrative Staffs and others (215)

2.5 Sample Size Determination

The Taro Yamane formula was used to compute the sample size for this investigation, which is as follows:

$$n = \frac{N}{1 + N(e)^2}$$

Where, N = 519, e =0.05.

$$n = \frac{519}{1 + 519(0.05)^2} = \frac{519}{1 + 1.2975} = \frac{519}{2.2975} = 225 \; .$$

Hence, sample size of 225 was estimated.

2.6 Sampling Techniques

The sample on which the study was conducted was chosen using stratified random sampling. Participants for the interview were selected using convenience sampling from the different individuals (staffs) that use electronic records management system in Niger Delta University Teaching Hospital (NDUTH)

Okolobiri.

2.7 Instrument for Data Collection

The study used questionnaires and interviews to obtain its data. The questionnaires were personally distributed. Only hospital workers who use the electronic record management system were interviewed.

2.8 Validity of the Instrument

With the help of research professionals in this area, the questionnaire underwent face and content validity testing to determine whether it measured the things it was designed to evaluate.

2.9 Instrument Reliability

The questionnaire was tested and retested on a few persons to ascertain the extent to which they produce the same response.

2.10 Methods of Data Analysis

Descriptive statistics using frequency distribution as well as percentages were used to assess the respondents' individual traits. Facilitators and "barriers to the implementation of electronic record management system in Niger Delta University Teaching Hospital, Okolobiri was established using Chi-square (aided by Statistical Package for Social Sciences-SPSS). Qualitative data analysis according to Abdulraheem *et al.,* (2018), Funmilayo *et al.,* (2019) and Gift & Obindah (2020), is desirable for this to take place simultaneously with data collecting so that researchers can develop an understanding of the research questions, which in turn influences both the sampling and the research questions. The phone conversations were organized into categories for easier analysis so that they would represent the goals of the study. The data was analyzed from the themes derived from the study objectives which are; the knowledge of the use of electronic record management system in NDUTH, the level of implementation of electronic record management system in NDUTH, Facilitators to the implementation of electronic records management system in NDUTH and the obstacles to the execution of electronic records management system" in NDUTH.

3. Results

Completeness of Data/Response Rate

Although there was a perfect response rate, only 204 of the 225 questionnaires that were distributed and collected were used, which resulted in partial data (90.7% complete). The demographic variable (information) and study questions were ultimately analyzed using the 204 questionnaires.

Table 1. Socio-demographic Information on the Respondents (n = 204)

Characteristics	Frequency	Percent (%)
Gender		
Male	100	49.0
Female	104	51.0
Total		**100**
Age Group (years)		
18 – 24	14	6.9
25 – 31	50	24.5
32 – 38	53	26.0
39 - 45	46	22.5
46 – 51	23	11.3
52 and above	18	8.8
Mean ± SD (years)	*37 ± 9.0*	
Total		**100**
Religion		
Christianity	198	97.1
Islam	0	0
Others	6	2.9
Total		**100**
Discipline		
Doctor	48	23.5
Nurse	44	21.6
Pharmacist	25	12.3
Accountant	2	1.0
HMIS/Record officer	21	10.3
Lab scientist/Technician	27	13.7
Admin. Officer	25	12.3
Others	11	5.4
Total		**100**
Department		
Med. Records	16	7.8
Administration	35	17.2
Account	3	1.5
Pharmacy	25	12.3

Nursing	43	21.1
Laboratory	28	13.7
Resident Doctors	25	12.3
Consultant	7	3.4
Others	22	10.8
Total		**100**
Cadre		
Junior staff	79	38.7
Senior staff	113	55.4
Management staff	12	5.9
Total		**100**

Source: Field survey, 2021.

The sociodemographic details of the respondents were shown in Table 1. The results showed that more than half were females (51.0%) and their mean age was 37 (SD ± 9.0) years. Majority (97.1%) were Christians. The respondents were selected across several disciplines but those who were Doctors, Nurses, Accountant, Pharmacist and Admin. Officers were in the majority (23.5%, 21.6%, 13.7%, 12.3% and 12.3% respectively). Majority of the respondents were in nursing, administration, laboratory, resident doctors and pharmacy department (21.1%, 17.2%, 13.7%, 12.3% and 12.3% respectively). A greater proportion of the respondents were senior and junior staff (55.4% and 38.7% respectively).

Table 2. Knowledge of Electronic Record Management System (n = 204)

Characteristics	Frequency	Percent (%)
Heard of ERMS		
Yes	188	92.2
No	16	7.8
Best description of ERMS*		
A system for global learning	11	5.4
Name of a government agency	1	0.5
Software for data management	192	94.1
Ever seen ERMS		
Yes	146	71.6
No	558	28.4

Ever used ERMS		
Yes	70	34.3
No	134	65.7
Type of ERMS known*		
Electronic health record	117	57.4
Computerized physician order entry	46	22.5
PowerMed	17	8.3
MediNotes	17	8.3
Practice management ULTRA system	8	3.9
Others	60	29.4
Knowledge of use of computer software		
Yes	168	82.4
No	36	17.6
Overall level of knowledge	***Good knowledge (45.9%)***	
	Poor knowledge (54.1%)	

* Multiple responses applicable

Source: Field survey, 2021.

Table 2 revealed the knowledge of electronic record management system among the respondents. Findings showed that the overall knowledge of electronic record management system among the respondents was 45.9%. Almost all (92.2%) had heard of electronic record management system. More than half (94.1%) described electronic record management system as a software for data management. A greater proportion of the respondents (71.6%) had seen electronic record management system. However, those who had used electronic record management system were a little above one-third (34.3%). The types of electronic record management system known by the respondents were electronic health record (57.4%) and computerized physician order entry (22.5%). More than 50% of those surveyed (82.4%) indicated that they have a knowledge of the use of computer software.

Table 3. Implementation of Electronic Record Management System (n = 204)

Characteristics	Frequency	Percent (%)
Have ERMS in hospital		
Yes	60	29.4
No	101	49.5
Unknown	43	21.1
Use ERMS (last 2 weeks)		
Yes	24	11.8
No	180	88.2
Type of ERMS used (n = 24)*		
HER	12	50.0
CPOE	5	20.8
PowerMed	10	41.7
MediNotes	2	8.3
Practice management ULTRA system	1	4.2
Others	4	16.7
Frequency of use of ERMS		
Never	114	55.9
Rarely	31	15.2
Sometimes	30	14.7
Always	16	7.8
Often	13	6.4
Received training on ERMS		
Yes	27	13.2
No	177	86.8
Deployment of ERMS in department		
Yes	52	25.5
No	152	74.5
Overall level of implementation	*Good implementation (22.8%)*	

	Poor implementation (77.2%)

* Multiple responses applicable

Source: Field survey, 2021.

Table 3 revealed the level of implementation of electronic record management system among the respondents. The overall implementation level of electronic record management system was 22.8%. Less than a third (29.4%) had electronic record management system while a lesser proportion of the respondents (11.8%) had used electronic record management system. The common electronic record management system used by the respondents were HER (50.0%), PowerMed (41.7%) and CPOE (20.8%). Those who used electronic record management system frequently were in the minority [always (7.8%) and often (6.4%)]. Only a few of the respondents (13.2%) had received training on electronic record management system. Less than a third of the respondents (25.5%) had electronic record management system deployed in their department

Table 4. Facilitators to the Implementation of Electronic Records Management (n = 204)

Characteristics	Frequency	Percent (%)
Have ICT equipment		
Yes	130	63.7
No	74	36.3
Know how to use ICT equipment		
Yes	115	56.4
No	89	43.6
Willingness to use ERMS		
Not willing	1	0.5
Somewhat not willing	20	9.8
Undecided	6	2.9
Somewhat willing	0	0
Willing	177	86.8
ERMS can improve work outcome		
Yes	199	97.5
No	5	2.5

Ways ERMS can improve work (n = 199)*		
Minimal errors	82	41.2
Improved information sharing	127	63.8
Increase speed of delivery	145	72.9
Information security	107	53.8
Better clinical decision	82	41.2
Others	4	2.0
Available support of government for use of ERMS		
Yes	35	17.2
No	169	82.8
Encouragement by leadership on use of ERMS		
Yes	125	61.3
No	79	38.7

* Multiple responses applicable

Table 4 showed the facilitators to the implementation of electronic record management system. The overall implementation level of electronic record management system was 22.8%, more than half (63.7%) had ICT equipment. Those who knew how to use ICT equipment were a little above half (56.4%). Majority (86.8%) of the respondents were willing to use electronic record management system. A greater percentage of the respondents (97.5%) mentioned that electronic record management system could improve their work outcome. Increase speed of delivery, improved information sharing and information security were identified as the major ways that the use of electronic record management system could improve work. Majority (82.8%) stated that there was no support from the government to encourage the usage of electronic record management system. However, more than half (61.3%) stated that they were encouraged by the leadership on the usage of the electronic record management system.

Table 5. Barriers to the Implementation of Electronic Record Management System (n = 204)

Characteristics	Frequency	Percent (%)
Availability of consistent power supply for ERMS		
Yes	41	20.1
No	163	79.9
Effort by management to encourage use of ERMs		
Yes	137	67.2
No	67	32.8
Sufficient funding to procure ERMS		
Yes	32	15.7
No	172	84.3
Form of resistance to use of ERMs		
Yes	62	30.4
No	142	69.6
Reasons for resistance (n = 62)		
No proper training	18	29.0
Non-compliance of doctors	3	4.8
staff attitude	5	8.1
Poor funding	11	17.7
poor electrical supply	7	11.3
Others	14	22.6
Barriers to implementation of ERMS*		
Funding	172	84.3
Administrative challenges	91	44.6
Government policy	42	20.6
Inadequate ICT equipment	134	65.7
Awareness	101	49.5
Others	8	3.9

[*] *Multiple responses applicable*

Table 5 revealed the implementation barriers of electronic record management system. Majority (79.9%) revealed that consistent power supply for electronic record management system was not available. More than half (67.2%) stated that the management were making efforts to encourage the use of electronic record management system. A greater proportion of the respondents (84.3%) stated that there was no sufficient funding to procure electronic record management system. About a third (30.4%) revealed that there was resistance to the usage of electronic record management system. No proper training (29.0%), poor funding (17.7%) and poor electrical supply (11.3%) were identified as the reasons for resistance to the usage of electronic record management system. The major barriers to the electronic record management system implementation that were identified were funding (84.3%), inadequate ICT equipment (65.7%), awareness (49.5%) and administrative challenges (44.6%).

Table 6. Facilitators to the Implementation of Electronic Record Management System in NDUTH Okolobiri (n = 204)

		Frequency			X^2	*P-value*
		Observed (N)	Expected (N)	Residual N (%)		
Facilitators	Yes	125	102.0	23.0	**10.373**	**0.001**[*]
	No	79	102.0	-23.0		
Total		**204**				

[*] *Chi-square test at 0.05 level of significance; Decision: result is significant at P < 0.05*

The results on Tables 6 above provided an investigation into the overall significance of the model. The estimated value of the test showed that Chi-square result (x^2) is 10.373 at P = 0.001 (P < 0.01). This finding demonstrates the existence of enablers for the adoption of an electronic record management system at NDUTH, Okolobiri. As a result, we reject the null hypothesis (H0) and come to the conclusion that there are factors that help NDUTH, Okolobiri adopt an electronic record management system.

Table 7. Obstacles to the Adoption of Electronic Management System in NDUTH Okolobiri (n = 204)

		Frequency				
		Observed	Expected	Residual	*X²*	*P-value*
		(N)	(N)	N (%)		
Barriers	Yes	41	102.0	-61.0	**72.961**	**0.000***
	No	163	102.0	61.0		
Total		**204**				

* Chi-square test at 0.05 level of significance; Decision: result is significant at P < 0.05

The results on Tables 7 above provided an investigation into the overall significance of the model. The estimated value of the test showed that Chi-square result (x²) is 72.961 at P = 0.000 (P < 0.01). This finding demonstrates that NDUTH, Okolobiri faces challenges in implementing an electronic record management system. We therefore come to the conclusion that there are obstacles to the adoption of an electronic record management system at NDUTH, Okolobiri, and reject the null hypothesis (H0).

4. Discussion

In this study, there were 51.0% female and 49% male. The respondents were from different departments and disciplines but those who were Doctors, Nurses, Pharmacist, Laboratory scientist, HIMS and Administrative officers were the majority. The age group between 32-38 years were the highest and more senior staffs compared to junior staffs constituted the respondents with 54.4% and 38.7% respectively. A study carried out in a tertiary hospital revealed that while factors like age and work experience had a significant association on the use of electronic health records among workers, sex and occupational category had no significant association with employee's perspective towards their use (Shahbahrami *et al.,* 2016; Raimi *et al.,* 2019a; Olalekan, 2020a, Olalekan *et al.,* 2020c). The study also shows that there is an overall 45.9% knowledge of the use of electronic records management system, also more than 82.4% of those surveyed are familiar with using software on a computer. This can be corroborated with studies conducted in India among nurses in Ludhiana, Punjab, India with an ICT literacy level of 75% (Raja *et al.,* 2004) also in Australia with an ICT literacy of 70% (Kuek & Hakkennes, 2020) and in a referral hospital in Northern Ethiopia with an ICT literacy of 74.3% (Mohammed *et al.,* 2013). This can be associated with the age of the respondents and their exposure in the use of mobile devices, emails and the internet. Also, this study shows an overall implementation level of 22.8%, only a few 13.2% of health workers have received training on the use of electronic record management system. There was also a 25.5% deployment of electronic record management system to the different department in the hospital. According to a study conducted in "Obafemi

Awolowo Teaching Hospital, Osun State, Nigeria (OAUTH)" a great percentage of the participants use electronic records for clinical documentation, the study further shows that lack of computer knowledge and training are also factors that limit implementation of electronic records (Ogbonna *et al.,* 2020). Similar studies highlighted the lack of training and support and also availability of computer equipment as a significant limitation to the adoption of electronic record system (Boonstra & Broekhuis, 2010). In terms of the facilitators to the implementation of electronic records management system the result shows that 86.8% of respondents have a willingness to use electronic record system, 63.7% of the respondents have ICT equipment's in their department. The result also shows that there is only 17.2% support from government while there's is 61.3% support in the adoption of electronic records management by the leadership of the hospital. According to the respondents, the usage of electronic records management will increase the speed of delivery, improve information sharing, increase information security, lead to minimal errors and better clinical decision (Raimi & Ochayi, 2017). According to a study by Akhtar et al. (2016), the successful adoption of an electronic health record system depends on the health professionals' desire to use IT applications. However, it is necessary to assess respondents' readiness using a more specific tool, such as the "Electronic Health Information Management System Success Factor," which has been implemented in a teaching hospital in Nigeria (Ojo & Popoola, 2015). The study further states that technical factors such as hardware, software compatibility, ease to use software, sufficient hardware must be present, as must sufficient system support providers are important in the implementation of electronic records system (Ojo & Popoola, 2015). Additionally, it has been found that organizational elements like top management commitment to the performance of the electronic management system, which includes support from the various departments involved in operations, rapid management attendance to systems operations, and maintenance, are also important. In conclusion, the study demonstrates that elements like leadership style including an organization's dedication to the deployment of an electronic records system contribute to its success (Ojo & Popoola, 2015). Similar studies by Lorenzi *et al.* (1997) also corroborates the findings that organizational factors are decisive in determining the success of electronic record system. This study shows that funding is a major roadblock to the adoption of electronic records management system. Other factors highlighted by the respondents are inconsistent power supply, inadequate ICT equipment, awareness and administrative challenges. Factors identified from phone call discussion not mentioned by the respondents include; Poor staff compliance to data entry, lack of internet connectivity, lack of government support, software ineffective, lack of centralized data management system, poor maintenance of computers and software and poor interconnectivity of the system. According to studies, the chronic underfunding of health has made a significant contribution to the unstable health systems in Africa (Chen *et al.,* 2004; Senkubuge *et al.,* 2014). Previous research in Nigeria found a strong correlation between funding and the use of an electronic

records system (Ojo & Popoola, 2015). Similarly studies conducted in Korea by Yoon *et al.* (2012) observed that among all the elements that help electronic health records adoption financing was reported as the highest facilitator and barrier. Electricity supply has also been observed to play a crucial part in healthcare delivery, the United Kingdom department of health and the study conducted by Gift *et al.* (2020), Gift and Olalekan (2020) named electricity as the most vital infrastructural service since without it none of the other applications will run (Odiawa, 2017; Gift *et al.,* 2020; Gift & Olalekan, 2020). ICT equipment's have also been observed as a significant challenge to the adoption of electronic records system. The introduction of an electronic records system had previously been seen as being hindered by a lack of ICT infrastructure (Martínez *et al.,* 2005; Ouma & Herselman, 2008; Ward *et al.,* 2006), this has been associated with poor budgetary allocation to healthcare in Nigeria (Akinsete, 2016; Samson *et al.,* 2020). Lack of awareness was observed as an obstacle in the implementation of electronic records system, this is consistent with earlier research which observed that the dearth of knowledge by stakeholders is an important factor responsible for the poor adoption electronic records systems (Diero *et al.,* 2006; Fullerton *et al.,* 2006). Administrative and government support was also observed as barrier to the implementation electronic record system in this study. Similarly a study conducted by Attah (2017) observed that poor administration plus a lack of government support were noted as a major challenge. This is corroborated by earlier research which indicated that poor administration contributes largely to the weak health system in the African States (Chen *et al.,* 2004; Senkubuge *et al.,* 2014; Olalekan, 2020a, Olalekan *et al.,* 2020c; Morufu *et al.,* 2021b; Erezina *et al.,* 2023). The adoption of an electronic records system was found to be hampered by staff compliance and internet connectivity. This has been noted in comparable studies that have noted the importance of staff compliance in the adoption of electronic records systems. The study also reveals that internet access is a challenge to the implementation of electronic records systems. This was observed to be as a result of epileptic internet connectivity in most part of Nigeria. Internet connectivity was observed to be important in the running of electronic records system (Attah, 2017). For the interview, the findings present a view of some implementing officers of electronic records management system in NDUTH, Okolobiri. The views are from phone conversations with a data clerk, pharmacist and the Health information management lead (HOD) in the hospital. Four sub-sections are used to display the results, one for each of the four study topics. The understanding of how to utilize an electronic record management system (ERMS) is covered in the first segment, while the degree of adoption is the focus of the second. Whereas the third and fourth sections examine the enablers and impediments to NDUTH's adoption of an electronic record management system.

The knowledge of the use of electronic record management system in NDUTH

All of the correspondents concurred that hospital staff members have a solid understanding of how to use the hospital's electronic record management system. Additionally, they discussed some previous

trainings on the use of electronic record management systems and expressed confidence in the staff members' and colleagues' knowledge of those systems. The most common definition of electronic record management system used by the respondents was: "Electronic record management system is the management of records or information using electronic device or the digital method of records management".

Level of implementation of electronic record management system in NDUTH

According to the Head of department of Health Information Management (HIM) in NDUTH different departments in the hospital have their own electronic record system, departments such as accounting, pharmacy, laboratory and records all have an electronic record system for data management respectively. The HOD also stated that there are two record systems in the hospital for which data is managed; the general electronic records for the daily running of the hospital and that of the Bayelsa Health Insurance Scheme (BHIS). He also alleged that there is only about 30% implementation of electronic record management in NDUTH. According to the data clerk, the system is used to access health records of patient's especially primary data of patient for issuance of birth certificate and the likes. He further stated that the system is locally hosted in the department and is accessible to all staffs of the department. Although no significant implementation in terms of usage among doctors and nurses but there is a good knowledge of the usage of electronic record management system among doctors as well as nurses.

Facilitators to the implementation of electronic record management system in NDUTH

A few facilitators were identified on the phone call discussions. Some of which are; availability of computers for data entry and administrative support by the management of the hospital in keeping with the use of electronic record system. According to the respondents the system in use was designed by the Chief Medical Director (CMD) of the hospital, who also does the trouble shooting and maintenance.

Barriers to the implementation electronic record management system in NDUTH

Some barriers were identified in the course of the phone call discussion some of which are;

Inconsistent power supply

The hospital runs mostly on generator because of the erratic power supply, cost of running generators are high hence it is difficult to maintain consistent power supply in the hospital. The generators also run within a particular time period and therefore it might be difficult to consistently enter data using electronic record system in the hospital.

Lack of centralized data management system

The findings from the discussions with the different correspondents from each department. All correspondents noted that they operate a different system from the other departments using electronic record management. The pharmacy correspondent stated that the software in use is E-pharmacy while the other respondents said the software used in their department is a locally hosted record management

system only accessible within the department.

Software not so effective

Some of the respondents also stated that the software currently been used in the hospital is not effective. According to the pharmacy respondent, the software has some challenges in performing analysis on prescription and issues with requisition.

No internet connectivity

The respondents also emphasized the need for internet supply on the hospital. According to them there is no internet supply in the hospital in the hospital and there is also poor internet connection in the area where the hospital is located this also discourages electronic data management in the hospital.

Poor staff compliance to data entry

The respondents also said that there is a poor compliance to electronic data entry from some staffs of the hospital. According to one of the respondents there are persons designated to enter data so as to ensure that all required data are captured on the system.

Funding issues

The respondents also mentioned the challenge of funding with regards to the management of electronic records. The usage of an electronic records management system in a hospital cannot be operated and maintained effectively due to a lack of resources, according to all respondents.

Poor maintenance of the computers and software

All the respondents emphasized the need for maintenance of the computers and software. They all agreed to the availability of computers but stated that most of the computers require some form of maintenance to run optimally.

Some staffs not sound with the use of computer

The correspondents also said that some staff also require some training in the use of computers to be able to enter data electronically. According to them because of the poor knowledge of the use of computers by some staffs, this also stands as a hindrance to the implementation of electronic record management system in the hospital.

Poor interconnectivity of the system

According to the correspondents all departments have their own record management system that are not connected to any other department.

Lack of government support in electronic records management

The correspondents also stated that there is no support from government in terms of electronic records management. The technology benefits the hospital as well as the government in maintaining track of the state health insurance program, according to the institution's HOD of Health Information Management. Consequently, the government must encourage the adoption of computerized records management.

Recommendations from the respondents

From the phone call discussion, the respondents made the following recommendations for effective utilization of electronic records managements system in the hospital. The need for government support and funding, the need for more trainings and orientation of staffs on the use of electronic record management system. The respondents also made mention of the need to have a centralized data management system that accommodates data entry from all departments of the hospital also the optimization of the system to perform data analysis. Summarily, the findings from the interview from the phone call discussions shows that there is significant knowledge of the use of electronic records management in NDUTH, Implementation of the system is skeletal as just few persons and department use electronic records in records documentation. At the moment there is no significant use of electronic records management system by doctors and nurses. The facilitators to the implementation of electronic record management are availability of computers and support from the management of the hospital particularly the CMD in ensuring the continuous running of the system. The barriers identified in the use of electronic records are; lack of funding, poor power supply, software challenge, poor internet connectivity, poor staff compliance, poor maintenance of computers and software, system not centralized and lack of government support.

5. Limitations of the Study

Participants may not be completely sincere with their responses to the facilitators as well as obstacles to the implementation of electronic record management system in NDUTH Okolobiri for fear of been queried or penalized.

6. Conclusion

This study's primary goal was to determine what helped and hindered NDUTH, Okolobiri's adoption of an electronic records management system. This is crucial to provide context for the hospital's level of adoption of electronic records management systems and some of the implementation problems. Planning, developing, and delivering the best healthcare services all depend on the availability of health records. The quantity and accuracy of information that medical practitioners have access to when caring for patients influences the effectiveness of service delivery. The study was conducted across different disciplines and departments of the hospital. The findings from this study shows that there is 45.9% knowledge of electronic records management system by staffs of the hospital, the level of implementation of electronic records management is 22.8% as most departments do not use electronic records system for data capturing including doctors and nurses. Some of the merits highlighted by the staffs of the hospital for the acceptance of electronic records management system are increased speed of delivery, improved information sharing, information security, minimal errors and better clinical

decisions. The factors responsible for the implementation of electronic record management system as observed from this study was the leadership of the hospital which was 61.3%, this particularly was credited to the Chief medical director (CMD) by the implementers of the system in the hospital and the availability of ICT equipment's which was 63.7%. The major obstacles to the implementation of electronic records management system in the hospital were funding (84.3%), inconsistent power supply (79.9%), inadequate ICT equipment (65.7%), lack of awareness (49.5%), administrative challenge (44.6%).Others identified from the phone interviews are poor staff compliance, lack of internet connectivity, Ineffective software, system not centralized, poor maintenance of ICT infrastructure and software and lack of support from government to implement electronic records management system.

7. Recommendations

The following are some recommendations that will make it easier to deploy an electronic records management system in healthcare delivery:

1)   The need for Public Private Partnership (PPP) to support the adoption of electronic records management system in government owned secondary and tertiary facilities.

2)   Organizing periodic seminars for healthcare professional to boost their capacity to use electronic records system.

3)   The necessity of utilizing an electronic records management system as part of medical education in training medical personnel

4)   The need for government support in relations to policies as well as funding towards supporting the implementation of electronic records management system.

5)   Tertiary institutions can also consider developing and maintaining their own electronic records system for efficient management of their facilities.

Date Availability and material

The corresponding author will provide the datasets created and/or utilized in the current work upon reasonable request.

Authors contributions

Not applicable to the mono-authored manuscript.

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