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Level of Professional Awareness among Health Record Officers in Bayelsa State and Their Implications for Patient Care, Health Systems, and Health Policy

Ahoda Esther Erezina¹, Raimi Aziba-anyam Gift², Oluwaseun Emmanuel Odipe³, Morufu Olalekan Raimi^{4*}
Samuel Terungwa Abaya⁵, Daniel Josephine Kakwi⁶

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ABSTRACT

As Electronic health records (EHRs) become more commonplace, and are expected to play a key role in improving the quality of Nigeria health care. Thus, EHRs can improve quality of care delivery in numerous ways such as providing accurate and up-to-date patient information and medical knowledge, rapid retrieval of health information, ability to exchange health information to all authorized participants within or across organizations, automated clinical reminders, improved adherence to treatment guidelines, and accumulation of data for quality monitoring and improvement. Based on regulatory and governmental recommendations, the EHR is being adapted in an increasing number of academic institutions (NDUTH), government hospitals (FMC) and private practice settings. It is incumbent upon HIM leadership to ensure students are skillful users of the technologies that will be in place as they care for patients. The study aimed to explore, identify and understand critical awareness of electronic health records management level to ensure confidentiality in public health care sector (FMC & NDUTH) in Bayelsa State, Nigeria. The cross-sectional descriptive design was used and a total of 159 health professionals who represented a variety of user groups across different specialties within the hospital completed the questionnaire. The collected data were analyzed. both descriptively and inferentially. Frequency and percentages were used to analyse the data and the result presented in tables. Data analysis was facilitated using the Statistical Package for Social Sciences (SPSS version 20.0). Majority of the respondents (90.6%) were aware of the electronic health record management among health record officers. To ensure continuity of care, it is necessary to develop educational and manageable program to improve EHR awareness. The findings may inform other hospitals and healthcare systems on actions that can be taken prior to EHR implementation to reduce concerns for quality, confidentiality, safety of patient care and improve the chance of successful implementation.

INTRODUCTION

The rapid pace of scientific discovery and technological innovation over the last several decades are unprecedented and raises the prospect of achieving dramatic improvements in the nation's health and well-being. Yet stakeholders from across the healthcare system, from patients to practitioners to payers, are demanding fundamental improvements to a system that is seen as costly, fragmented, and ineffective (Raimi and Raimi, 2020; Raimi *et al.*, 2020; Morufu *et al.*, 2021a; Raimi *et al.*, 2021a, b; Raimi *et al.*, 2022). Because of its emphasis on integrating the best available external evidence with clinical experience, electronic health records management provides a guiding framework for the development of systems and approaches necessary to deliver the promise of 21st century health care in which knowledge is both applied and generated as a natural outgrowth of the care process, to ensure delivery of the care most appropriate for each individual patient. In recent years, Electronic

Health Records (EHRs) have been implemented by an ever-increasing number of hospitals around the world. There have, for example, been initiatives, often driven by government regulations or financial stimulations, in the USA (Abramson *et al.*, 2011), the United Kingdom (Robertson *et al.*, 2010) and Denmark (Rigsrevisionen, 2011). EHR implementation initiatives tend to be driven by the promise of enhanced integration and availability of patient data (Hartswood *et al.*, 2003), by the need to improve efficiency and cost-effectiveness (Grimson *et al.*, 2000), by a changing doctor-patient relationship toward one where care is shared by a team of health care professionals (Grimson *et al.*, 2000; Gift *et al.*, 2020), and/or by the need to deal with a more complex and rapidly changing environment (Mantzana *et al.*, 2007; Morufu *et al.*, 2021b). EHR systems have various forms, and the term can relate to a broad range of electronic information systems used in health care. EHR systems can be used in individual organizations, as interoperating

¹ Department of Health Information Management, School of Health, Allied and Environmental Science, College of Pure and Applied Sciences, Kwara State University, Malete, Kwara State, Nigeria

² Office of the Vice Chancellor, Federal University Otuoke, Nigeria

³ Department of Environmental and Occupational Health Sciences, School of Public Health, University of Medical Sciences, Ondo State, Nigeria

⁴ Department of Community Medicine, Environmental Health Unit, Faculty of Clinical Sciences, Niger Delta University, Wilberforce Island, Bayelsa State, Nigeria

⁵ Nigeria Centre for Disease Control and Prevention, Yenagoa Office, Nigeria

⁶ Department of Community Health, Faculty of Health Sciences, Plateau State University, Bokokos, Jos, Nigeria

* Corresponding author's e-mail: morufuolalekan.raimi@gmail.com

systems in affiliated health care units, on a regional level, or nationwide (Abramson *et al.*, 2011; Robertson *et al.*, 2010). Health care units that use EHRs include hospitals, pharmacies, general practitioner surgeries, and other health care providers (Boonstra *et al.*, 2008). The implementation of hospital-wide EHR systems is a complex matter involving a range of organizational and technical factors including human skills, organizational structure, culture, technical infrastructure, financial resources, and coordination (Jha *et al.*, 2009; Heeks, 2006). As Grimson *et al.*, (2000) argue, implementing information systems (IS) in hospitals is more challenging than elsewhere because of the complexity of medical data, data entry problems, security and confidentiality concerns, and a general lack of awareness of the benefits of Information Technology (IT). Boonstra and Govers (2009) provide three reasons why hospitals differ from many other industries, and these differences might also affect EHR implementations. The first reason is that hospitals have multiple objectives, such as curing and caring for patients, and educating new physicians and nurses. Second, hospitals have complicated and highly varied structures and processes. Third, hospitals have a varied workforce including medical professionals who possess high levels of expertise, power, and autonomy. These distinct characteristics justify this study that focuses on awareness of electronic health records management as a means of ensuring confidentiality in EHR implementation in hospitals. Thus, this study sought to identify critical awareness level of electronic health records management in public health care sector (FMC & NDUTH) in Bayelsa State, Nigeria.

METHODOLOGY

Research Design

According to Abdulraheem *et al.*, (2018), Funmilayo *et al.*, (2019) and Gift & Obindah (2020) Research Design refers to how a piece of research is planned and carried out. The study adopted the Descriptive Survey Research Design to meet its purpose. According to Abdulraheem

et al., (2018), Funmilayo *et al.*, (2019) and Gift & Obindah (2020), surveys describe current conditions or attitudes as well as explain the reason for certain existing situations. The survey method has the advantage of effectiveness in obtaining information about personal perceptions, beliefs, feelings, motivations, anticipations and future plans as well as past behaviours. Abdulraheem *et al.*, (2018), Funmilayo *et al.*, (2019) and Gift & Obindah (2020), put it succinctly when they stated that the survey interprets, synthesizes and integrates useful data for sound conclusions. The survey research design study was appropriate because it examined the relationship that existed between awareness and practice of electronic health records management in Bayelsa state teaching hospital. The survey design provided a quantitative or numeric description of patterns or trends, attitudes, or opinions of the administrative staff's (Gift & Obindah, 2020). This allowed for generalization from the sample about the population so that inferences could be made about the practice of electronic health records management as a means of ensuring confidentiality in teaching hospitals in Bayelsa state. The survey design was chosen because it was easy to produce economically and made data collection easy (Gift & Obindah, 2020). The study design was cross-sectional using structured questionnaire as the tool for collection of primary data, hence the quantitative nature of the study.

Research Population

Population refers to the entire subjects that the researcher will get information from. My population is a finite population which are, the number of Nurses, Radiologist (X-ray, Scan), Doctors, Paramedics, Pharmacists, IT Specialist, Information Technology Personnel, Management (Administrative Professionals), and Others staff working in teaching hospitals in Bayelsa state (Gift & Obindah, 2020). Research population is generally a large collection of individuals or objects that is the main focus of a scientific query. It is for the benefit of the population that researches are done. Amadi (2014);

Table 1: Population Distribution

S/N	Professionals	Federal Medical Center Yenagoo	Niger Delta University Teaching Hospital (NDUTH) Okolobiri
1	Nurse	35	20
2	Radiologist (X-ray, Scan)	13	6
3	Doctors	20	15
4	Paramedics	4	2
5	Pharmacists	16	12
6	IT Specialist	6	5
7	Information Technology Personnel	18	10
8	Management (Administrative Professionals)	40	28
9	Others	10	4
	Total	162	102
	Grand Total		264

Source: Hospital Management (2019)

Abdulraheem *et al.*, (2018), Funmilayo *et al.*, (2019) says population of study signifies the entire class of people, object, events or elements to which generalizations are to be inferred. A research population is also known as a well-defined collection of individuals that have similar characteristics. Thus, the population of this study comprised of two hundred and sixty-four (264) consisting of Nurse, Radiologist (X-ray, Scan), Doctors, Paramedics, Pharmacists, IT Specialist, Information Technology Personnel's, Management (Administrative Professionals) and any other cadre in Federal Medical Centre (FMC) and Niger Delta University Teaching Hospital (NDUTH) in two (2) different teaching hospitals in Bayelsa state, namely.

Location

Yenagoa became a state Capital when Bayelsa state was created in 1996, Yenagoa is geographically located between latitude 4° 47' 15" and 5° 11' 55" Northings and Long. 6° 07' 35" and 6° 24' 00" Eastings (Figure 1). The LGA has an area of 706 km² and a population of 353,344 comprising of 187,791 male and 165,553 females with an annual exponential growth rate of 2.9 as

at the 2006 National Census (Federal Republic of Nigeria Gazzete, 2007). Yenagoa Local Government Area (LGA) is bounded by Mbiama communities of Rivers State on the North and East, Kolokuma/Opokuma LGA on the north west, Ogbia LGA on the south and Sourthern Ijaw on the west, Ogbia LGA on the South East and Sourthern Ijaw on the South west (Ndiwari, 2014; Sridhar *et al.* 2011; Abdulraheem *et al.*, 2018, Funmilayo *et al.*, 2019 and Gift & Obindah, 2020).

Yenagoa Local Government Area is located on the banks of Ekole Creek the latter being one of the major river courses making up the Niger Delta river (Koinyan, *et al.*, 2013), with only one political/administrative ward namely: Epie-Atisa (Sridhar *et al.* 2011; Abdulraheem *et al.*, 2018, Funmilayo *et al.*, 2019 and Gift & Obindah, 2020). There are 21 communities within the study area namely; Igbogene, Yenegwe, Akenfa, Edepie, Agudama, Akenpai, Etegwe, Okutukutu, Opolo, Biogbolo, Yenizue-Gene, Kpansia, Yenizue-Epie, Okaka, Azikoro, Ekeki, Amarata, Onopa, Ovom, Swali, Yenagoa.

Yenagoa Local Government Area is the traditional home of the Ijaw people, Nigeria's fourth largest ethnic group after the Hausa, Yoruba and Igbo. The Ijaws form the

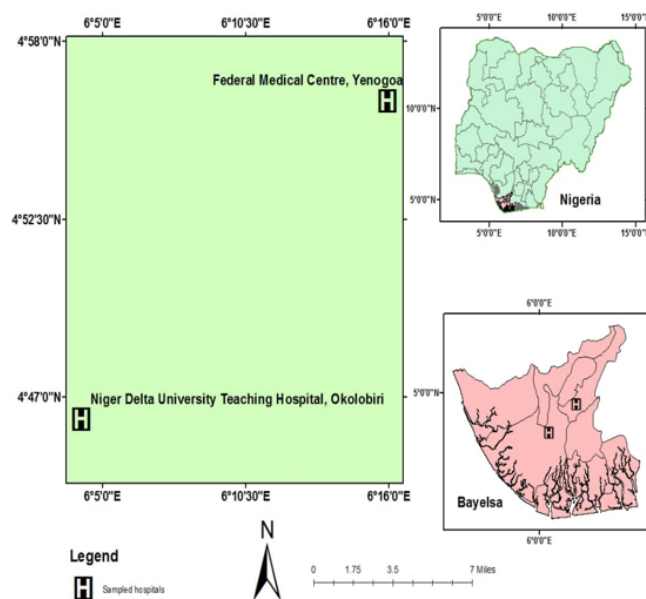


Figure 1: Map of Bayelsa State showing the Study Area

majority of the town. English is the official language, but Epie/Atissa language, one of the Ijaw languages, is the major local language spoken in Yenagoa. Other Ijaw dialects include Tamu, Mein, Jobu, Oyariri, and Tarakiri. There are other pockets of ethnic groups such as Urhobo and Isoko. There are local dialects in some places. Other notable languages in the LGA are Epie, Atisa, Nembe and Ogbia. Christianity and traditional religion are the two main religions in the State. The culture of the people is expressed in their unique dresses, festivals, dietary habits, arts and crafts, folklore and dancing. These distinguish the people from other ethnic groups. The major crafts include canoe building fish net and fish traps making, pottery, basket and mat making.

Population of the Study

The population of the study comprised of 264 health professionals in Federal Medical Centre, Yenagoa and Niger Delta University Teaching Hospital (NDUTH), Okolobiri, Bayelsa state. The population consists of 162 health professionals in Federal Medical Centre, Yenagoa and 102 health professionals in Niger Delta University Teaching Hospital (NDUTH), Okolobiri, Bayelsa state.

Sample Size Determination

The sample size of this study was determined using Taro Yamane formula given as:

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

Where, $N = 264$, $e = 0.05$.

$$n = \frac{264}{1 + 264(0.05)^2} = \frac{264}{1 + 0.66} = \frac{264}{1.66} = 159.04.$$

Hence, sample size of 159 health professionals was estimated. The optimal allocation formula was used to determine the sample sizes from the two hospitals considered. The sample size was calculated as follows:

Health professionals in Federal Medical Centre, Yenagoa = $(162/264) * 159 = 98$

Health professionals in Niger Delta University Teaching Hospital (NDUTH) = $(102/264) * 159 = 61$

Instrumentation and Measurement

Instrumentation is the method used to administer instrument to the respondents. The instrumentation for this study was questionnaire designed after an extensive literature review. The researcher took cognisance of the research question as well as the hypotheses in a manner that enables the researcher gather as much information as possible from the respondents. Structurally, the questionnaire was divided into five sections A, B, C, D and E. The section A, was the demographic data which consist of personal information or attributes of the respondent such as sex, age, etc, and the section B, C, D and E was the core questions that strictly relate to the purpose of the study, by putting your conceptual framework into consideration.

Validity of Instrument

To determine the validity of the research instrument, the original copy of the research instrument (questionnaire) was validated by the research supervisor for review whether they are suitable for the purpose of the study, research questions, hypotheses and the language that is used to develop the item. The supervisor make correction where necessary and modify the instrument before it was administered to the selected respondents.

Administration of Instrument

As earlier stated a questionnaire was administered by the researcher to the respondents directly or was given to the administrative heads or managers of the various hospitals which in turn will hand over the instrument (questionnaire) to the office managers working in teaching hospitals such as Nurse, Radiologist (X-ray, Scan), Doctors, Paramedics, Pharmacists, IT Specialist, Information Technology Personnel's, Management (Administrative Professionals) and any other cadre in Federal Medical Centre (FMC) and Niger Delta University Teaching Hospital (NDUTH), etc. for coordination purpose. The scaling items was 4point likert scale such as; strongly agree, agree, disagree and strongly disagree. This scaling method was used to measure the relationship between awareness and practise of electronic health records management as a means of ensuring confidentiality.

Data Analysis Technique

Data were analysed both descriptively and inferentially. Frequency and percentages were used to analysed the data and the result presented in tables. Also, the results were also presented pictorially using charts while Chi-Square test was used to test the hypotheses at the 0.05 level of significance. Probability values less than 0.05 was considered statistically significant. Data analysis was facilitated using the Statistical Package for Social Sciences (SPSS version 20.0).

Results

Response Rate/ Completeness of Data

The response rate was 100%, however, out of the 317 questionnaires administered and retrieved, 21 were not useful due to improper and incomplete filling and only 296 were used, leading to incomplete data (93.4% complete). The 296 questionnaires were finally used to analyse the demographic variable (information) and research questions.

Demographics of the Respondents

Table 2: Distribution of the Respondents by Gender

Gender	FMC (n=98)		NDUTH (n=61)		Total (n = 159)	
	f	%	f	%	f	%
Male	56	57.1	34	55.7	90	56.6
Female	42	42.9	27	44.3	69	43.4

Source: Field survey (2021)

Result in Table 2 indicates that 56.6% of the respondents were male and 43.4% of the health professionals were female. Result shows that the majority of the health professionals sampled were male (56.0%). In FMC, 57.1% of the health professionals were male and 42.9% were female and in NDUTH, 55.7% of the respondents were male and 44.3% of the respondents were female.

Table 3: Distribution of the Respondents by Gender

Age (years)	FMC (n=98)		NDUTH (n=61)		Total (n = 159)	
	f	%	f	%	f	%
18-20	16	16.3	23	37.7	39	24.5
21-30	28	28.6	5	8.2	33	20.8
Above 30	54	55.1	33	54.1	87	54.7

Source: Field survey (2021)

Results in Table 3 reveal that 24.5% of the respondents were between 18-20 years, 20.8% of the respondents were between 21-30 years while 54.7% were above 30 years. The result shows that the majority of the respondents were above 30 years (54.7%). Result also indicates that in both FMC and NDUTH, the majority of the respondents were above 30 years (55.1% in FMC and 54.1% in NDUTH).

Table 4: Distribution of the Respondents by academic qualification

Academic qualification	FMC (n=98)		NDUTH (n=61)		Total (n = 159)	
	f	%	f	%	f	%
SSCE/ Equivalent	27	27.6	1	1.6	28	17.6
OND/ Equivalent	18	18.4	10	16.4	28	17.6
HND/B.Sc.	40	40.8	18	29.5	58	36.5
Post graduate degrees	13	13.3	32	52.5	45	28.3

Source: Field survey (2021)

Results in Table 4 reveal that 17.6% of the respondents were SSCE or equivalent holders, 17.6% of the respondents were OND holders while 35.6% of the respondents were HND/B.Sc holders. Result also indicates that 28.0% of the respondents were postgraduate degree holders. Results reveal that majority of the respondents in FMC (40.8%) and NDUTH (29.5%) were HND/B.Sc holders.

Results in Table 5 reveal that 20.1% of the respondents had less than 5 years of experience, 10.7% of the respondents had 5- 10 years while 69.2% of the respondents had above 10 years of experience.

Result indicates that most of the respondents had more than 10 years of experience.

Table 5: Distribution of the Respondents by years of experience

Year of experience	FMC (n=98)		NDUTH (n=61)		Total (n = 159)	
	f	%	f	%	f	%
Less than 5 years	24	24.5	8	13.1	32	20.1
5-10 years	15	15.3	2	3.3	17	10.7
Above 10 years	59	60.2	51	83.6	110	69.2

Source: Field survey (2021)

Answering of Research Questions

Research Question 1

What is the level of awareness of electronic health record management among health record officers in Bayelsa state?

Result in Table 6 indicates that 90.6 % of the respondents are aware of the electronic health record management while only 10.1% of the respondents were not aware of the electronic health management. Result shows that the majority of the respondents were aware of the electronic

Table 6: Level of awareness of electronic health record management among health record officers in Bayelsa state

Level of awareness of EHRM	FMC (n=98)		NDUTH (n=61)		Total (n = 159)	
	f	%	f	%	f	%
Aware	88	89.8	56	91.8	144	90.6
Not aware	10	10.2	5	8.2	15	10.4

Source: Field survey (2021)

health record management. In FMC, 89.8% of the respondents were aware while in NDUTH, 91.8% of the respondents were aware of the electronic health record management. Based on these results, most of the sampled health officers were aware of the electronic health record management. Hence, the level of awareness of electronic health record management among health record officers in Bayelsa state can therefore be adjudged to be high.

DISCUSSION

A Review of the Samples in Question

Before the results of the statistical analyses are observed, the samples in question needs to be reviewed so as to ascertain from what specific population the results were generated. In terms of gender, there was a significant difference observed in the distribution of gender participants in their classification. The numbers indicates that 56.6% of the respondents were male and 43.4% of the health professionals were female. Result shows that the majority of the health professionals sampled were

male (56.0%). In FMC, 57.1% of the health professionals were male and 42.9% were female and in NDUTH, 55.7% of the respondents were male and 44.3% of the respondents were female. This view is contrary to the study conducted by Popoola *et al.*, (2020) who shows that the majority (56.2%) of the respondents were female while males accounted for 43.8%. It is also contrary to the study conducted by Park (2019) who shows that the percentage of Male (3.4%) and Female (96.6%) and Janet (2015) who shows that more than half of the respondents were females (70%) and the proportion of female to male respondents is 60 percent to 40 percent, as one expects this disparity to even be wider at hospital because it is perceived that health sector is dominated by females. Moreover, this found support with the study conducted by John *et al.*, (2008) who shows that (62.1%) males and (37.9%) females. It follows that the majority of the respondents in this study were males. Similarly, this view found support to the study conducted by Adeleke *et al.*, (2014) who shows that the numbers indicates that 110

[50.5%] of the respondents were male and 108 [49.5%] of the health professionals were female. Besides, this view found support to the study conducted by Zayabalaradjane and Santosh, (2016) who shows that the distribution of the sub samples taken for the study (61%) of the sample is male and (39%) were female.

The largest age group was above 30 years old (54.7%), which shows that the majority of the respondents were above 30 years (54.7%). Result also indicates that in both FMC and NDUTH, the majority of the respondents were above 30 years (55.1% in FMC and 54.1% in NDUTH). This view is contrary to the study conducted by Janet (2015) who shows that most (75%) of the respondents are between the ages of 21 and 40 which is the youthful age in the life of humankind. The lower percentage (25%) of respondents is above age 40. These facilities are blessed with youthful health staff. Also, this view is contrary to the study conducted by Popoola *et al.*, (2020) who shows that the ages of the respondent's range between less than 20 years and above 40 years, majority (45.2%) of whom were between the ages of 21 and 25 followed by 26 to 30 which accounted for 25.7%, implying that the respondents were mostly young adults who were in their final-year levels or those in the postgraduate classes. Similarly, this view is contrary to the study conducted by Park (2019) who shows that the percentage of average age of the subjects was 47.4% for those under 30 years old, 32.5% for those aged 30 to 39 years, and 12.4% for those aged 40 to 49 years, with an average of 32.15 ± 8.75 years. Besides, this view is contrary to the study conducted by Zayabalaradjane and Santosh, (2016) who shows that majority of the respondents belonged to the age group of 30-40 years followed by 41-50 years of age group (36%). Respondents belonging to age group of 51-60 years and above 60 years were 9% and 7% respectively. However, these findings are consistent with the study done by John *et al.*, (2008) who shows that (34.2%) of the respondents are 25-34 years age category, (32.7%) in 35 - 44 years old, (21.2%) in 45-54 years old, 55 and over (5.9%). Similarly, this view found support to the study conducted by Adeleke *et al.*, (2014) who shows that a vast majority 234 (94.7%) of the participants were between the ages of 20 and 50 years with a mean age of 36 ± 9 years.

All categories of the levels of education participated in the study. Results reveal that 17.6% of the respondents were SSCE or equivalent holders, 17.6% of the respondents were OND holders while 35.6% of the respondents were HND/B.Sc holders. Result also indicates that 28.0% of the respondents were postgraduate degree holders. Results reveal that majority of the respondents in FMC (40.8%) and NDUTH (29.5%) were HND/B.Sc holders. Hence, the largest levels of education were university degrees (35.6%) as against a minority of respondents who had SSCE or equivalent (17.6%) who had basic level of education. This shows that the literacy level of participant was high with the majority having completed at least a university degree (35.6%) education. It is vivid

that majority of the respondents have a Bachelor's degree as their highest academic qualification. Implied that most of the staff are reasonably educated as the healthcare occupation requires a high level of occupational training. This also makes candidates for the survey suitable since per their level of educational qualification it can be assumed that they are knowledgeable enough to offer intelligent and relevant information to authenticate the findings of the study. Although, this view is contrary to the study conducted by Janet (2015) who shows that out of the total of 60 who responded to the questionnaire, 43.3% had certificate, 26.7% had Diploma, 20% had Bachelor's degree education and 10% of the respondents had other professional qualifications. Also, this view is contrary to the study conducted by Park (2019) who shows that the percentage of education was 20.9% for professional college graduates and 79.1% of university graduates and the view is also contrary to the study conducted by Adeleke *et al.*, (2014) who shows that above half of them 155 (62.0%) possessed a higher national diploma.

Based on experience, it reveals that 20.1% of the respondents had less than 5 years of experience, 10.7% of the respondents had 5 - 10 years while 69.2% of the respondents had above 10 years of experience. Result indicates that most of the respondents had more than 10 years of experience. This view is contrary to the study conducted by Gift & Obindah (2020) who shows that (58.5%) had between 1 and 5 years' experience while (1.5%) of the respondents had 16-20 yrs and above 20 experience suggesting that respondents had a good blend of working experience. Also, it is contrary to the study conducted by Francis (2016) who shows that 48.2% of the respondents have 6 - 10 years work experience, while 28.6% of respondents have 2 - 5 years work experience. 12.5% have worked for 11 - 15 years at the hospital, 7.1% have worked over 15 years and 3.6% of the respondents have worked in less than 2 years. The results suggest that 96.4% of the respondents have very good work experience of above 2 years; Afrrev (2013) who state that only about 46.9% of respondents have had between 11 - 20 years of experience, followed by 5 - 10 years 20 (31.7%), less than 5 years 8 (12.7%) and above 20 years 6 (9.5%) at the time of the survey. Similarly, this view is also contrary to the study conducted by Park (2019) who shows that the work duration was 45.7% for less than 5 years, 24.8% for more than 5 years, less than 10 years, 9.8% for more than 10 years, and 19.7% for more than 15 years and by Adeleke *et al.*, (2014) who shows that about a third 77 (31.3%) of the participants have spent less than five years in health information management practice while only a few 8 (3.3%) have spent above 30 years in practice, with mean service years of 12 ± 8 years.

Level of Awareness of Electronic Health Record Management among Health Record Officers in Bayelsa State?

Having hospital staffs with prior awareness and

experience regarding information technology in health care increases the possibility of successful development and implementation of EHR, thus, awareness and practice enables hospitals to develop and improve health care delivery. Hence, electronic health record systems implementation allows healthcare professionals to gain immediate access to patient health record so as to advance the quality of care. The healthcare field has prolonged adopting modern information technology even as they incorporate advanced technology to treat patients and have the newest form of documenting a patient's information. While, previous reports from Nigeria that studied the level of awareness and skills in health IT focused mainly on doctors, nurses, clinical students and medical librarians (Igben & Akobo, 2007; Komolafe-Opadeji, 2009; Ajuwon & Rhine, 2008; Bello *et al.*, 2004; Ajuwon, 2003). However, Bello *et al.*, (2004) studies involved health information management professionals among the three groups in their study. This study shows that the majority of the respondents were aware of the electronic health record management. Based on these results, most of the sampled health officers were aware of the electronic health record management. Hence, the level of awareness of electronic health record management among health record officers in Bayelsa state can therefore be adjudged to be high. Hence, this is pivotal to the roles in healthcare information systems in FMC and NDUTH. Virtually majority of the participants in the study acknowledged the importance and relevance of EHR in managing health information and healthcare services in general. While, researchers have examined the benefits of EHRs by considering clinical, organizational, and societal outcomes. Clinical outcomes include improvements in the quality of care, a reduction in medical errors, and other improvements in patient-level measures that describe the appropriateness of care. Organizational outcomes, on the other hand, have included such items as financial and operational performance, as well as satisfaction among patients and clinicians who use EHRs. Lastly, societal outcomes include being better able to conduct research and achieving improved population health. Hence, ensuring continuous usability and maximum user satisfaction of EHR, there is a need for continuous awareness and training workshops or courses concerning basic ICT skills as well as the actual usage of EHR systems (Walker *et al.*, 2005). The technical intricacies of EHR systems necessitate the need for a high level of technical competence on the part of users (Sahay & Walsham, 2006). These technical competences are achieved largely by organising training and other workshops for users of the system. Further, there is a need for training in order to alleviate or lessen the problems associated with general usage of EHR such as poor preparation of data for use, and low initiative for using the data.

CONCLUSION

Electronic health records (EHRs) allow structured medical

data to be shared between authorised health stakeholders in order to improve the quality of healthcare delivery and to achieve massive savings. While, a centralised EHR allows access to health information any place and anytime. EHR can enhance effectiveness, reduce costs, accuracy, currency, completeness, accessibility and generally improve the quality of healthcare services. Healthcare entails complex delivery systems involving teams of doctors, nurses and others, and clinicians, regulators, auditors, and trainees who all need to access and use medical records. Nonetheless, it also leads to an increase in the amount of information that is collected, sorted, filtered, transferred or otherwise retained, and the risks to such data therefore multiply raising the potential abuse and the risk of violation of privacy. Furthermore, the diversity of health systems, especially with respect to quality and safety policies is as a major stumbling block for enabling the deployment of cross-border EHR. It is therefore crucial that confidentiality, privacy and data protection are embedded within the entire life cycle of the EHR from the very early design stage to its ultimate disposal. Hence, if the awareness and implementation of electronic health records is done correctly, they will improve the quality of healthcare while lowering costs.

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Declaration of Interest/Competing Statement

The authors declare that they have no conflicting/competing interest.

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Availability of Data and Material

The datasets generated and/or analyzed during the current study are available from the corresponding author on reasonable request.

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