Continental J. Applied Sciences
John-Mohanye (2024) 19 (3): 70 – 86 Doi: 10.5281/zenodo.13963094
Research Article

# Evaluation of Awareness and Utilization of Electronic Health Records System among Public Health Workers in Ondo State, Nigeria

**Aderonke John-Mohanye**
**Department of Public Health, City University, Cambodia**
**email: aderonkejohn2013@yahoo.com**

## Abstract

*Electronic health records (EHR) system provides invaluable contributions to the quality health care delivery. It helps in compilation, storage and management of electronic records of health related information of patients by authorized health care providers in health institutions. EHR system saves costs, reduces medical errors, saves time, evaluates and monitors patients' health records among others. EHR system in medical practices has seen a significant increase in recent time but of limited use among health professionals in both private and public health institution in Nigeria. Thus, this study aims at evaluating the level of awareness and utilization of electronic health records system among health workers in Ondo State. A descriptive cross sectional design was adopted for this investigation. The sample consists of three hundred and ninety nine (399) public health workers purposively selected from six government's owned hospitals in Ondo State. A systematic sampling technique was used to select participants from the study population. Data was collected using structured questionnaire. Data analysis was done by using both descriptive and inferential statistics package for social sciences (SPSS). The results of the study revealed that most of the respondents are aware of the existence of electronic health records resources but are not making use of them in their various places of work. The result of the hypothesis tested between the respondents' level of awareness by electronic health record and administrative purpose showed that there is significant relationship between the two variables ($r = 12.29$, $p < 0.000$). However, there is no significant relationship between respondents use of electronic health record system and administrative purpose ($r = 13.09$, $p = 0.789$). This study concluded that most health workers in Ondo State have high awareness of electronic health records resources but low utilization of the EHRS in their various offices. This study, therefore, recommended among others that government should ensure training and re-training of health workers on the use of information communication technology (ICT), improve electricity supply, procure and install computer system and internet facilities in the health institutions for efficient and effective service delivery*


**ISSN: 3043–6087. Science and Education Development Inst., Nigeria**

**Keywords:** Evaluation, Electronic Health records, systematic sampling techniques, health care

**Received: 10 July 2024** **Accepted: 10 October 2024**

Citation: John-Mohanye, A. (2024). Evaluation of Awareness and Utilization of Electronic Health Records System among Public Health Workers in Ondo State, Nigeria. Continental J. Applied Science, 19(3), 70–86. Doi: 10.5281/zenodo.13963094

## Introduction

Electronic Health Records (EHR) system is one of the essential pathways to achieving and optimizing the delivery of quality of health care and a veritable repository platform for clinical data for bio medical research Adedeji, Irinoye, Ikono and Komolafe (2018);Al-Nassar, Abdullah, and Sheik Osman (2011). EHR system entails compilation, management and use of electronic record of health related information of patients by authorized health care providers in health institutions (Abodunrin and Akande, 2009); Adedeji, Irinoye, Ikono and Komolafe, 2018). Adoption of EHR system in a health care system will transform health care in terms of savings costs, reducing medical errors, improving service delivery, increasing patients safety and decision making, saving time and data confidentiality, and sharing medical information (Afolaranmi, Hassan, Dawar, Wilson, Zakari, Bello, Ofakunrin and Ogbeyi,2020); Dorman, Pinyopompanish, Jinapercharper, Hashmi, Dejkriengkrcukul and Angkurawaranon, 2019).

According to the latest United Nations data based on world meter elaboration, Nigeria 2020 population is estimated to be 206, 139, 589 people. This is equivalent to 2.64% of the total world population. The country needs effective EHR system to ensure improved health care delivery for its teeming population. In the same vein, Sub-Sahara Africa accommodates about 27% of the global burden of disease (Boonstra and Broekhuis, 2010); Burneues, 2014). There is also a critical need for efficient Health information system. (Odekunle and Shankar, 2019); (Biruk, Yilma, Andualem and Tilahun, 2014). As it stands, Nigeria still lags behind in the implementation of? EHR system due to inadequate health care infrastructures, health professionals' attitude and awareness level, lack of proper management of resources, shortage of skilled personnel, users resistance, policy related issues, poor commitment of staff, and poor maintenance services among others (Al-Nassar, Abdullah and Sheik Osman, 2011); (Elikwu, Igbokwe and Emokhare, 2020).

Timely and accurate access to patients' information which EHR system are essential in meeting the health care needs of any patient culminating into sound clinical decisions and if otherwise, the resultant effect could be inefficient patient care (Erezina, Gift, Odipe, Raimi, Abaya and Kawi, 2023; (Hasanain, Vallmuur and Clark, 2015). Through implementation of EHR system differs globally, Nigeria health institutions are yet to fully implement its utilization. This elicited the interest of this study to evaluate the level of awareness and utilization of Electronic Health Records system among public health workers in Ondo State.

**Statement of the Problem**

The use of information and communication technology (ICT) and its associated facilities have grown rapidly in the provision and delivery of health care services over the last few decades. Paper based records are fast giving way to electronic health records (EHR) in most developed countries. According to Al-Khatlan, Alazmi and Almutari (2017), the electronic health records is designed to alleviate the limitations associated with the paper record system and help improve the quality of care delivered. In manual records, it is also established that the greatest issue is lack of space for the increasing number of health records. With concern to physical space for storage of paper health records, it has been a challenge that many institutions keep battling with producing hundreds to thousands of records each day. This means that after a given period of time, the record accumulates high volume of paper records. This usually brings about difficulty in locating some records and also lack of sufficient space to contain all the records before they are disposed of. This becomes the major challenge for paper records. Hence, there is need for the awareness and effective use of electronic records system for administrative effectiveness in Nigerian health care services.

**Objectives of the Study**

The objectives of this study include:

1. To ascertain the level of awareness of electronic health records (EHR) System among public health workers in Ondo state.
2. To examine the frequency of utilization of electronic health records system among public health workers in Ondo state.
3. To determine benefits of electronics health system in health institutions in Ondo state.
4. To assess educate the factors hindering the utilization of electronic health records system among health workers in Ondo State.


**ISSN: 3043–6087. Science and Education Development Inst., Nigeria**

**Research Questions**

This study is guided by the following research questions

1. What is the level of awareness of electronic health records system among public health workers in Ondo state?
2. How frequently do public health workers in Ondo state utilize electronic health records system?
3. What are the benefits of electronic health records in public health institution in Ondo state?
4. What are the factors inhibiting the utilization of electronic health records system among public health workers in Ondo State.

**Significance of the Study**

i. The data from this study from this study will assist the government to formulate policies that will enhance the awareness and utilization of Electronic Health Records (EHR) Resources in their administrative functions.
ii. It will assist the future researchers and.
**iii.** It will add to the body of knowledge about the topic under investigation.

**Literature Review**

**Electronic Health Records System**

Majority of the information needed for the growth running of an organization are buried in the internally and externally generated records. Records are the corporate memory of the organization that created them and they are used to supplement human memory. (Adedeji, Irinoye, Ikono and Komolafe (2018); Al-Alawi, Al Dhaheri, Al Baloushi, Al Dhaseri and Prinsloo (2014). Records are documented evidence of our daily activities. It is a document, regardless of form or medium created, received, maintained and used by an organization(public or private) or an individual in pursuance of legal obligation or in the transaction of business of which it forms a part or provides an evidence (Elikwu, Igbokwe and Emokhare,2020).

Records is a written account of facts, events, official facts, events written down at the time they occurred and stored at preserved in writing or in other ways eg on a disc and other electronic media, according to Yehualashet, Andualem and Tilahun (2015); Simba and Mwangu (2004), it can also be likened to a history book which contains facts of past and present events which would be referred to by future generation (Burrows, 2014). Health information is one of the key factors that contribute to the strengthening of health care delivery in every country. Reliable health information leads to timely health polices and


**ISSN: 3043–6087. Science and Education Development Inst., Nigeria**

planning, which improves the general health status of a country, as well as serving a vital element for individual health facilities in managing and improving health care delivery (Mahenoher, 2020; Erezina, Gift, Odipe, Raimi, Abaya and Kawi, 2023). The role of information and communication technology (ICTs) in improving the general management of health information cannot be downplayed. This is affirmed by the ability for ICTs to capture, store, retrieve, analyze and transmit large volumes of health information across various locations (Burneues, 2014). The adoption of ICTs in healthcare delivery which could generally be referred to as e-health has not been copied generally, as expected, in improving the reliability and effectiveness of health information. (Sami, Manohar and Alkali (2017). EHR which has the potential of improving the quality of healthcare services are also not left out in the ICT implementation in the Nigerian healthcare system. (NHS) systems such as health administration management system (HAMS), District Health Information system (DHIS), District Health Information management system (DHIMS) and Hospital Administration management systems (HAMS) are some of the implemented health record systems. Although some of these systems such DHIS and DHIMS are implemented nationwide to generate health information to facilitate health polices and interventions and address some of the challenges faced with the paper- based records.

There are many benefits that justify the use of electronic health records system Namely:

(1.) Electronic health records system standardizes the processes and ease of information recovery
(2.) It enhances a better control over drugs prescription.
(3.) It provides easy and faster access to online personal records of chronic patients
(4.) It provides direct engagement of patients
(5.) It stores complete information of the patients
(6.) It helps in the review of laboratory tests and prevents medical errors
(7.) It prevents wastages of resources and time as EHRs eliminates tons of paper records and also X-ray film, reduces the number of visits and
(8.) Unlike paper records that can get old, torn, spilled or spoilt with fire, water or termites,

Electronic health records system prevents destruction of information and retains the originality (Vos, Boonstra, Kooistra, Seelen and Offenbeek, 2020). Despite these huge benefits, the use has not been generally adopted in many public health institutions in Ondo state. The Nigerian health care system has continued to suffer from years of neglect


**ISSN: 3043–6087. Science and Education Development Inst., Nigeria**

by successful governments, hence the existing poor infrastructural base of both public and private health institutions. Source of notable factors that are hindering the utilization of electronic health records system as identified by Pantuvo, Naguib and Wickramasingbe(2011); Mahenoher(2020); Sami, Manohar and Alkali(2017) are listed below:

i. High cost of procurement and maintenance of ICT tools
ii. Lack of clear cut policies on the use of EHRs in Government –owned hospitals
iii. Ineffective network performance.
iv. Poor internet connectivity
v. Inadequate relevant technical staff
vi. Paucity of funds or resources.
vii. Inadequate facilities to run the system.
viii. Network congestion.
ix. Epileptic supply of electricity
x. Limited ICT skills of health professionals.

## Materials and Methods

### Study area

This study was conducted in six selected health institutions across the three senatorial districts of Ondo State.

i. University of Medical Science Teaching Hospital (Annex), Akure
ii. Ondo State General Hospital Ondo
iii. Ondo General Hospital Ikare- Akoko
iv. Comprehensive Basic Health Centre, Akure
v. Ondo State General Hospital, Owo
vi. Ondo State General Hospital, Okitipupa

These health institutions offer specialized services in the various aspects of medicine.

### Study population

The study population comprises selected public health workers consisting of residence doctors, medical officers, pharmacists, nurses and midwives.


**ISSN: 3043–6087. Science and Education Development Inst., Nigeria**

**Study design**

The research design adopted for this study is the descriptive cross-sectional design. This method allows for collection of data in quantitative manner. It also entails study of more than one variable of a population of interest at the same time. The population of this study comprises health workers of selected hospitals in Ondo State. The choice of these hospitals is informed by large number of available medical professionals therein.

Thus, 399 respondents were considered as the sample size. A systematic random sampling technique was used to select the needed sample size from the available data base on intervals. This type of sampling technique entails the selection of participants from secondary data at an interval with respect to the study population and the number of required sample. Having selected the required number of sample through this sampling technique, the selected participants were assessed using a structured questionnaire.

**Sample size determination**

To determine the sample size of this study, the study population is 399 as reflected by the hospital data base which comprises, doctors, nurses, pharmacist, radiologist, laboratory scientists and their designations and cadre etc. Therefore, in determining the sample size of this study, Taro Yamane (1975) formula for calculating sample size was adopted. Below is the calculation.

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

**Where:**

| | | |
|---|---|---|
| n | = | sample size sought |
| e | = | level of confidence 95% (0.05) |
| N | = | Populace size of the study (900) |
| 1 | = | represents a constant value |

$$n = \frac{900}{1 + (900\ (0.05)^2}$$

$$n = \frac{900}{901\ (0.05)^2}$$



**ISSN: 3043–6087. Science and Education Development Inst., Nigeria**

$$n = \frac{900}{901\,(0.0025)} = \frac{900}{2.2525}$$
$$n = \frac{900}{2.2525} = 399$$

Sample size = 399 (This represents the total number of questionnaire administered to respondents)

## Results and Discussion

The data generated were analyzed using descriptive statistics such as frequency table, percentages, proportion and inferential statistics (chi-square) was also used for hypotheses testing to show whether there is a relationship between variables under investigation or not. The questionnaire instrument comprises three sections. Section A –Demographic profile for the respondents. B – Containing questions raised to assess the awareness of electronic health records among the respondents. Section C containing questions asked to assess the utilization use of electronic health records among the respondents. Section D – contains questions asked to assess the perceived problems associated with the use of electronic health record management. The questionnaire consist of both open and closed ended questions. The reliability of the study instrument was tested through a pre-test conducted at the Basic Health Centre at Okejebu, Akure. A total of 20 medical professionals were drawn from the facility for this purpose.

Table 1 provides the socio-demographic profile of the respondents collected in the course of the study.

**Table 1: Age of respondents**

| Age Group(years) | Frequency | Percentage (% ) |
|---|---|---|
| <35 | 250 | 62.66% |
| 36 and above | 149 | 37.34% |
| Total | 399 | 100 |

Source: Author's field survey 2022

Table 1 analyzed the age of the respondents. From the table 250(62.66%) respondents are less than 35% of age above. This implies that majority of the respondents are still in the active age and have complete vigor for life endeavor

**Table 2: Sex of the respondents**

| Sex | Frequency | Percentage (%) |
|---|---|---|
| Female | 210 | 52.6% |
| Male | 189 | 47.4% |
| Total | 399 | 100 |

Source: Author's field survey 2022

The Table 2 analysed the sex of the respondents. From the table 210 (52.6%) are female while 189(47.4%) are male. This implies female respondents are in the majority.

**Table 3: Categories of Health Workers**

| Variable | Frequency | Percentage (%) |
|---|---|---|
| Medical Officers | 70 | 17.53% |
| Resident Doctors | 80 | 20.1% |
| Pharmacists | 49 | 12.28% |
| Nurses/Midwives | 200 | 50.1% |
| Total | 399 | 100 |

Source: Author's field survey 2022

The Table 3 shows that the majority of the respondents are nurses/midwives.

Research Question 1: What is the level of public health workers awareness on electronic health records system for use in discharging their duties?

**Table 4: Respondents view of awareness of electronic health records management.**

| Variable | Frequency | Percentage (%) |
|---|---|---|
| Yes | 320 | 80.2% |
| No | 79 | 19.8% |
| Total | 399 | 100 |

Source: Author's field survey 2022

The Table 4 shows the respondents responses on level of awareness on electronic health records. From the table 320(80.2%) respondents agreed that they are aware of the use of electronic health records in health information management while 79(19.8%) said they


ISSN: 3043–6087. Science and Education Development Inst., Nigeria

are not aware. The analyses from the table therefore, shows that the majority of the respondents are aware of the usage of electronic health records system.

Research Question 2: How frequently do the health workers make use of electronic Health records resources available to them?

**Table 5: Respondents views on how-frequently they use electronic health record resources**

| Frequency | No of Respondents | Percentage (%) |
|---|---|---|
| Twice in a week | 90 | 22.6% |
| Once in a week | 95 | 23.8% |
| Occasionally | 98 | 24.6% |
| Not at all | 116 | 29% |
| Total | 399 | 100 |

Source: Author's field survey 2022

The Table 5 shows the views of respondents on how frequently they use electronic health resources in their place of work. From the table 90(22.6%) claimed they use it twice in T week while 95% (23.8%) said they use it once in a week. Similarly, 98(24.6%) use it occasionally while 116(29%) are not using them at all. It can therefore be inferred from the table that majority of the respondents are not using electronic record resources at their places of work.

Research Questions 3: What are the purposes for which health workers use electronic health record resources?

**Table 6: Respondents view on purposes for which they use electronic health resources**

| Uses | Frequency | Percentage (%) |
|---|---|---|
| Patient record | 120 | 30.1% |
| Laboratory results | 100 | 25% |
| Treatment/ drug present | 90 | 22.6% |
| Data management | 89 | 22.3% |
| Total | 399 | 100 |

Source: Author's field survey 2022


**ISSN: 3043–6087. Science and Education Development Inst., Nigeria**

The Table 6 shows respondents view on purpose for which the use electronic health resources. From Table 6, 120 (30.1%) respondents claimed they use electronic health record resources for recording patients; record while 100(25%) agreed they use it for laboratory results and 90(22.6%) expressed the opinion of using it for treatment/ drug presentation. 89(22.3%) are using it for data management. The above analysis implies that those that are using it for patient record are in the majority.

Research Question 4: What are the problems hindering the effective use of electronic health record resources among the respondents?

**Table 6: Respondents view on problems hindering the use of electronic health record resources**

| Variable | Frequency | Percentage |
|---|---|---|
| High cost of procurement and installation of ICT system | 100 | 25.1% |
| Lack of computer operational skill | 150 | 37.6% |
| Infrastructural problem | 80 | 20% |
| Resistant to change | 69 | 17.3% |
| Total | 399 | 100 |

Source: Author's field survey 2022

Table 6 shows respondents view on problem hindering their use of electronic health record resources. From the table, 100(25.1%) claimed they are not using If due to high cost of procurement and installation while 150(37.6%) affirmed they are not using due to lack of computer operational skill on their part. 80(20%) respondents also agreed they are not using it due to infrastructural program and 69(17.3%) agreed that they are being resistant to change prevented them from using electronic health record tools.

**Hypotheses testing**

Ho1: There is no significant association between awareness about electronic health record resources and administrative purposes.

**Table 7: Association between awareness about EHR and administrative purposes**

| Variable | N | Mean | Std | r | Sig |
|---|---|---|---|---|---|
| Respondents' level of awareness | 399 | 32.08 | 3.42 | 12.29 | .000 |
| Administration purpose | 399 | 35.06 | 2.45 | | |

n=399

Table 7 presents the relationship between respondents' level of awareness and administration purpose. The table shows there is significant association between respondents' level of awareness and administrative purpose (r= 12.29, P.000)

Ho2: There is no significant association between the use of electronic health record resources and administrative purpose.

**Table 8: Association between the use of EHR resources and Administrative purposes**

| Variable | n | Mean | Std | r | Sig |
|---|---|---|---|---|---|
| Use of electronic record resources | 399 | 29.4 | 1.45 | 13.09 | 0.789 |
| Administration purpose | 399 | 26.2 | 2.41 | | |

n= 399

Table 8 presents the relationship between respondents, use of electronic record resources and administrative purpose. The table shows that there is no significant relationship between the use of electronic health record among respondents and administrative purpose (r= 13.09, P = 0.789).

## Discussion of Findings

Findings of this study revealed that the majority of health workers enlisted in the study are age 36 years and above. Also, there are more female respondents than male and majority of the respondents are nurses/midwives. The study further revealed that the majority of the respondents, are aware of the existence of electronic health records resources. Similarly, majority of the respondents affirmed they have not been using


**ISSN: 3043–6087. Science and Education Development Inst., Nigeria**

electronic health record resources. On the purpose for which they use electronic health resources, most respondents claimed they use it for patient record. With respect to the assessment of problem hindering the use of electronic health record among respondents, most of them claimed the high cost of procurement and installation of system as the major reason for not using it for administrative purpose. However, the hypotheses tested to show relationship between the use of electronic health record by respondents and administrative purposes revealed there is no significant relationship between the two variables. (r= 13.09, P= 0.789) and the result showed that there is significant relationship between the level of awareness of the respondents and administrative purpose (r= 12.09, P< .000).

From the study, the health care workers are making efforts to keep in time with global shift from outdated paper medical records systems to the electronic health information system. However, some departments that are yet to start its utilization of EHR are making huge budgets for the ICT tools

The similarity that exists between this study and the one conducted by Afolaranmi, Hassan, Dansar and Wilson (2020) showed that the high level of awareness of EHR systems among frontline health care workers in Jos University Teaching Hospital Plateau State Nigeria, does not even translate to the utilization of such system when installed in these health facilities. Contrary findings from the research conducted by Msiska, Kumitowa and Kumueeri (2017) which opined that lower levels of awareness of EHR systems were observed in study's conducted in Malawian central hospitals.

It is important for holistically assessment of the adoption of EHR system by future researchers in terms of the influence of government policies on the utilization of electronic health records and information system and the variation which exists in the level of awareness of EHR systems along the categories of health workers in Ondo State.

## Conclusion

Based on the findings of this study. It is concluded that majority of health workers in Ondo State have high awareness about electronic health record management but low usage of the resources in the various place of work. However, government should help in the improvement of electricity supply to all health facilities as epileptic nature of power supply has really affected the use of the available computers in various health facilities.


**ISSN: 3043–6087. Science and Education Development Inst., Nigeria**

## Recommendations

Management of health facility should provide more computers with internet access and acquisition of relevant prints resources. Health workers should avail themselves of the needed technical know-how of electronic health resources operation. Government should come to the aid of health facilities in the provision and installation of computer system as the cost of installation is too high to be borne alone by the management.

Government should also help in the improvement of electricity supply to the health facilities as epileptic nature of power supply has really affected the use of the available computer in the various health facilities. Government is also encouraged to prioritize training and retraining of health workers on the use of information communication technology (ICT) for effective and efficient delivery.

## References

Abodunrin, O.L and Akande, T.M (2009). Knowledge and Perception of e-health and Telemedicine among Health Professionals in LAUTECH Teaching Hospital, Osogbo, Nigeria. *International Journal of Health Research*.2 (1):51-8

Adebara, O.V., Adebara, I. O., Olaide, R., Emmanuel, G.O., and Olanrewaju, O. (2017). Knowledge, Attitude and Willingness to Use Health Technology among Doctors at a Semi Urban Tertiary Hospital in Nigeria. *Journal of Advances in Medicine and Medical Research*, 22(8):1-10

Adedeji, P., Irinoye, O., Ikono, R., and Komolafe, A. (2018). Factors influencing the use of
electronic Health records among nurses in a teaching hospital in Nigeria. *Journal of Health Informatics in Developing Countries.*12 (2):1-20

Afolaranmi, T.O., Hassan, Z.I., Dawar, B.L., Wilson, D.B., Zakari, I.A., Bello, K.K., Ofakunrin, and Ogbeyi, O.G. (2020). Knowledge of electronic medical records system among frontline health care worker in Jos University Teaching Hospital, Plateau State, Nigeria. *International Journal of Research in Medical Sciences*. 8(II), 3837-3848Doi:10.18203/23206012yrms20204867.

Al Alawi, S., Al Dhaheri, A., Al Baloushi, D., Al Dhaseri, M and Prinsloo E.A.M (2014). Physician user satisfaction with an electronic medical records system in primary


**ISSN: 3043–6087. Science and Education Development Inst., Nigeria**

healthcare centres in Al Ain: a qualitative study. *BMJ* Open.4:e005569Doi:10.1136/bnjopen-2014-005569.

Al-Nassar, B., Abdullah, M., andSheik Osman, W.R.B. (2011). Health professionals' use of Electronic Medical Records System (EMR system) in Jordan hospitals. *International Journal of Computer Sci Network Security*. 11(8):112-8

Al-Khatlan, H.M., Alazmi, S.F., and Almutari, B.A. (2017). Knowledge, Attitude and Practice of E-health among Health Care providers in Kuwait. *Greener Journal of Medical Sciences*. 7(5):42-51

Boonstra, A., andBroekhuis M., (2010). Barriers to the acceptance of electronic medical records by physicians from systematic review to taxonomy and interventions. *BMC Health Serv Res*. 10(1):231

Biruk, S., Yilma,T., Andualem, M.,and Tilahun, B. (2014). Health Professionals readiness to implement electronic medical record system at three hospitals in Ethiopia: a cross sectional study. *BMC Medical Informatics and Decision Making*. 14:115

Burneues, A. (2014). An analysis of the obstacles to a full adoption of electronic medical Records. *The Journal of Government Financial Management* 63(4), 24-30. doi.org/10.1186/s/2913-020-05542-6. https://bmchealthservers. blomodcentral.com.

Burrows, A. (2014). An analysis of the obstacles to a full adoption of Electronic Medical Records. *The Journal of Government Financial Management*. 63(4), 24 – 30.

Dorman, L., Pinyopompanish, K., Jinapercharper, W., Hashmi, A., Dejkriengkrcukul., N., and Angkurawaranon. C. (2019). Utilization of electronic health Records for public health in. Asia: A review of success, factors and potential challenges. *BioMedical Research International.* https://doi.org/10.1155/2019/7341841

Elikwu, M.L., Igbokwe, C.A and Emokhare, G. (2020). Effects of electronic Health information system on medical records management in Public Health Care Institutions. *Unizik Journal of Business*, 3(1) 10.3610 /unizikjb/ 0202.30.0140.

Erezina, A.E., Gift, R.A., odipe, O.E., Raimi, M, O., Abaya, S.T., and Kakwi, D.J. (2023). Level of professional Awareness among Health Record officers in Bayelsa State and their


**ISSN: 3043–6087. Science and Education Development Inst., Nigeria**

Implications for patient care, Health systems and Health policy. American Journal of physical Education and Health Science, 1 (i), 19-30. Wtps: || dol. Org | 10.54536 | ajpehs. V lil -1582.

Hasanain, R.A., Vallmuur, K and Clark. M. (2015). Electronic Medical Record Systems in Saudi Arabia: Knowledge and Preferences of *Healthcare Professionals Journal Health Informatics in Developing Countries* (1):23-31

Odekunle, F.F, Odekunle R.O, Shankar, S (2019) why sub-saharan Africa lags in electronic health record adoption and possible strategies to increase its adoption in this region, *Internet Journal Health Sci*. 11 (4):59-6

Pantuvo,J.S,Naguib R and Wickramasingbe N.(2011). Towards implementing a nationwide electronic health record system record system in Nigeria. *International Journal Health care Delivery Reform Initiatives*; 3:39-55

Mahenoher, S. (2020). Electronic Health Record system-Benefits and challenges: A literature review. *International Journal of Research in Computer Application and Management*. 8(02)http://rcm.org.in

Msiska, M.E., Kumitawa, A., and Kumunda, B. (2017). Factors affecting the utilization of electronic medical records system in Malawian Central Hospitals. *Malawi Medical Journal*, 29(3), 247-253 dol: 10. 4314/ mmiv29B.4. https: www.ncb.n/m.nih.gov/pm/articles/PNC5911997

Sami, N., Manohar, R.K., and Alkali, A.R., (2017). Factors hindering the adoption of Digital Record in Nigeria. A systematic Review of some Literatures. *International Research Journal of Management and Technology* 8(10), 59 – 65.

Simba, D.O and Mwangu, M. (2004). Application of ICT in strengthening health information systems in developing countries in the wake of globalization. *Afr Health Sci.,* 4:194-8.

Vos, J.F.J., Boonstra, A., Kooistra, A., Seelen, M., Offenbeek, V.M. (2020). The influence of electronic health record use on collaboration among medical specialties. *BMC Health Sciences Research.*20,676.Doi.org/10.1186/s/ 291.302005542.6.


**ISSN: 3043–6087. Science and Education Development Inst., Nigeria**

Yehualashet, G, Andualem, M., and Tilahun, B. (2015). The Attitude towards and Use of Electronic Medical Record System by Health Professionals at a Referral Hospital in Northern Ethiopia: Cross-Sectional Study, *Journal of Health Information in Africa*. 3(1):19-29. Doi: 10.12856/JHIA-2915-V3-JI-124


**ISSN: 3043–6087. Science and Education Development Inst., Nigeria**