

Effectiveness of Electronic Health Records in Patient Health Care Delivery

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Abstract: The term computer-based patient record (CPR) first used in 1980s, reflects some of the first attempts to automate essential functions such as medication, administration, and order communication. In 1990s, the term Electronic Medical Record (EMR) was used to describe a system that integrate transcription and document imaging with previous CPR functions. this study is to determine the effectiveness of Electronic Health Records in the health care delivery. The study will help the healthcare providers to exchange health information electronically, to provide higher quality and safer care for the organization through effective use of electronic health record across the hospital. Electronics health record has the ability to generate a complete record of a clinical patient encounter as well as supporting other care related activities directly or indirectly via interface including evidence based decision support, quality management and outcome reporting.

Keywords: Electronic Health Records, AHIMA, effective healthcare delivery.

INTRODUCTION

History reveals that there are many interpretations of what makes up Electronic Health Record (EHRs); moreover several different terms are used to describe the various forms of the Electronic Health Record. The term computer-based patient record (CPR) first used in 1980s, reflects some of the first attempts to automate essential functions such as medication, administration, and order communication. In 1990s, the term Electronic Medical Record (EMR) was used to describe a system that integrate transcription and document imaging with previous CPR functions. The idea of Electronic Health Records system is generally considered one that captures data from any number of computer systems in the healthcare organization and is used at the point of care to support clinical decision making.

In the words of health information management system, (2017) Electronic health records are longitudinal electronic record of patient health information, further stated that electronic health records automates and streamlines the clinicians workflow.

Electronic health records has the ability to generate a complete record of a clinical patient encounter as well as supporting other care related activities directly or indirectly via interface including evidence based decision support, quality management and outcomes reporting.

An electronic health records is generated and maintained within as institution, such as hospital, integrated delivery network, clinic or physician office.

From the above, the researcher can say that use of computer in the office to handle its information is very necessary.

The benefits from periphery and the absence of a strong central coordinating institutional frame work (federal ministry of health, 2015)as evidence continue to emerge the ability of the electronic health information system to radically transform medical implementing an integrated electronic health record system, because of its potential to improve the safety and quality of healthcare, reduce cost and enhance efficient.

Statement of Problem

Despite the fact that a reasonable number of healthcare setting are using electronic health record system in Nigeria, Nnamdi Azikiwe University Teaching Hospital Nnewi still use paper record which brings about patient health record is being exposed to unauthorized party by the rate the records is lying in different clinics.

According to AHIMA, there were problems that providers were hoping to resolve with the implementation of electronic health records.

They includes to eliminate the logistical problems of the paper records by making clinical data immediately available to authorized users wherever they are, no more unavailable clinical records, to reduce the work of clinical bookkeeping required to manage patients, no more missed diagnoses when laboratory evidence shouts its existence, no more forgetting about required preventive care.

To make the information gold in the medical record accessible to clinical epidemiological outcomes and management research.

The electronic method of keeping patient records is being considered as a simple replacement of the paper record.

Therefore, Electronic health record will be best to achieve the desired result and will give the patient full primary control over his or her medical record with a given key and decide who views their records and properly utilized in order to achieve effective healthcare delivery in various healthcare facilities.

OBJECTIVES OF THE STUDY

The general objective of this study is to determine the effectiveness of Electronic Health Records in the health care delivery. However, the specific objectives include to:

- Find out the current challenges facing Health Information Managers in the use of Electronic Health Records
- Examine the patent relationship existing between Electronic Health Records and manual record keeping in Nnamdi Azikiwe University Teaching Hospital, Nnewi
- Find out the suitable process towards the implementation of Electronic Health Records.

RESEARCH QUESTIONS

In the course of this research, to gather information that will enhance a successful investigation, research questions are mapped out in line with the objective of this study such as:

- What are the current challenges facing Health Information Managers in the use of Electronic Health Records?
- Do you think that Electronic Health Records is more effective compare to paper based method of keeping records in Nnamdi Azikiwe University Teaching Hospital, Nnewi?
- What are the suitable processes towards the implementation of Electronic Health Records tertiary hospitals?

Research Hypothesis

Ho: There is no significant relationship between electronic health record and effective healthcare delivery.

Hi: There is significant relationship between electronic health record and effective healthcare delivery.

Scope of the Study

The scope is considered in two categories, the subject matter deals on the effectiveness of electronic health record in patient health care delivery and the area coverage cover staff of Nnamdi Azikiwe University Teaching Hospital, Nnewi.

Significance of the Study

The study will help the healthcare providers to exchange health information electronically, to provide higher quality and safer care for the organization through effective use of electronic health record across the hospital. The study will be beneficial to patients and medical records departments as it will gear its recommendation towards full implementation of electronic health record system in the hospital which will facilitate the services render to patients by Records officers especially at the General Outpatient Department in order to eliminate overcrowding and waiting time in various clinics. The study will help the healthcare providers contributing to patient care and management, as it will encourage proper and effective use of electronic health record across the hospital. The study will be helpful to healthcare providers in promoting complete documentation of patient details and accurate data, streamlined coding and billing, enhancing privacy and security of patient data. It will also reduce costs through decreased paper work, improved safety; reduce duplication of testing and improved health.

The results of this study will also compel the Federal Government through the Ministry of Health to make adequate provision for implementation of electronic health record in tertiary hospitals in Nigeria.

Operational Definition of Terms

Effectiveness – That which is capable of producing a desired result

Electronic Health Record – This is a systematic of collection of patient electronically stored information in a digital format which is capable of being shared across different health care settings

Clinical Decision Support (CDS) – This is a system that assists the provider in making decision with regards to patient care.

Electronic Medical Records (EMR) - Describes a system that integrates transcription and document imaging with previous CPR functions

Meaningful Use - Meaningful use is using certified electronic health record (EHR) technology to improve quality, safety, efficiency, and reduce health disparities; engage patients and family; improve care coordination, and population and public health; and maintain privacy and security of patient health information.

Computerized Physician Order Entry (CPOE) - systems allow providers to enter orders (e.g. for drugs, laboratory tests, radiology, physical therapy) into a computer rather than doing so on paper.

Health Information Exchange (HIE) - is the process of sharing patient-level electronic health information between different organizations and can create many efficiencies in the delivery of healthcare, by allowing for the secure and potentially real-time sharing of patient information.

LITERATURE REVIEW

This chapter examines or evaluates various issues relating to the study, it provides a wholesome comprehension of the purpose of this research exercise which is to examine holistically the effectiveness of electronic health records in patient healthcare delivery, a case study of Nnamdi Azikiwe University Teaching Hospital, Nnewi. This chapter is reviewed under the following subheadings:

- Definition of Electronic Health Records (EHRs)
- Concept of Electronic Health Records (EHRs)
- Benefits of Electronic Health Records (EHRs)
- Barriers to adoption of Electronic Health Records (EHRs)
- Challenges facing staff of Health Information Management Department in the use of Electronic Health Records (EHRs)
- Implementation of Electronic Health Records (EHRs)
- The meaningful use of Electronic Health Records (EHRs)
- How to improve Electronic Health Records (EHRs) for effective healthcare delivery
- Basic electronic health record functions
- Electronic Health Records (EHRs) adoption predictors
- Summary of findings
- Review of Literature Gap
- Reference

Definition of Electronic Health Records (EHRs)

Electronic health records are digital records of health information. They contain all the information you would find in a paper chart and a range of data, including past medical history, vital signs, progress notes, diagnoses, medications, immunization status and dates, allergies, laboratory test results and radiology imaging reports, personal statistics like age and weight, and billing information. They can also contain other relevant information, such as insurance information, demographic data, and even data imported from personal wellness devices.

An Electronic Health Records (EHRs) is an official health record for an individual under the custodianship of the health system that is shared among multiple facilities and agencies, which holds all the relevant health information about a person over their lifetime (Rouse, 2011).

According to Gunter, *et al.*, (2005), Electronic Health Records (EHRs) refer to the systematized collection of patient and population electronically-stored health information in a digital format. It also states that these records can be shared across different healthcare settings. Records are shared through network-connected, enterprise-wide information systems or other information networks and exchanges.

Electronic Health Records (EHRs) are detailed accounts of health information, generated by a patient's healthcare providers across the industry. It is designed to be shared across the spectrum of a patient health experience with the most accurate information possible.

Pamar, (2014) opined that Electronic Health Records (EHRs) may include a range of data, including demographics, medical history, medication and allergies, immunization status, laboratory test results, radiology images, vital signs, personal statistics like age and weight, and billing information. Electronic Health Records (EHRs) systems are designed to store data accurately and to capture the state of a patient across time. It eliminates the need to track down a patient's previous paper medical records and assists in ensuring data is accurate and legible. It can reduce risk of data replication as there is only one modifiable file, which means the file is more likely up to date, and decreases risk of lost paper work.

Bates, (2008) ascertained that Electronic Health Records (EHRs) represents an essential tool of improving the safety and quality of healthcare.

Electronic Health Records (EHRs) are digitally stored healthcare information throughout and individual's lifetime with the purpose of supporting continuity of care, education, and research (Ajami, 2013). The Electronic Health Records (EHRs) may include such things as observations, laboratory tests, medical images, treatments, therapies, drugs administered, patient identifying information, legal permissions etc. with the growing emphasis on providing the right information to the right person anywhere at any time. In today's globally interconnected world, the healthcare industry has been moving towards the Electronic Health Records (EHRs) system. It also opined that it has become obvious that paper-record system is incapable of supplying caregivers with all the patient information they need in a way that they can utilize it. Studies reports that Electronic Health Records (EHRs) systems could save billions of money, in fact, one such study indicated that the system could save up to billion of money in healthcare cost annually, as well as improve healthcare quality. This may be lack of significant return on investment (ROI) in the short term associated with the adoption of the Electronic Health Records (EHRs) systems.

Moreno, (2005) noted that "although the EHRs have the potential to improve quality of care, reduce medical errors and lower administrative costs, incorporating them into clinical practice will require large investment in technology, in addition to changes in existing systems and processes.

Moreover, the Health Information Management System Society, (2017) defined Electronic Health Records (EHRs) as a longitudinal electronic record of patient health information generated by one or more encounters in any care delivery setting. The organization further stated that EHR automates and streamlines the clinician's workflow. Electronic Health Records (EHRs) has the ability to generate a complete record of a clinical patient encounter, as well as supporting other care related activities directly or indirectly via interface-including evidence based decision support, quality management and outcomes reporting. An Electronic Health Records (EHRs) is generated and maintained within an institution, such as hospital; integrated delivery network, clinic or physician office.

From the above definitions, we can say that the use of computers in an office to handle its information is very necessary. With the application of computers in the various offices especially in

healthcare delivery, there has been a remarkable improvement which calls for continuous use of this technology. For some decades, its application in other areas is not yet covered.

The introduction of computer in this regards has brought a lot of relief for more processing of healthcare activities.

The Concept of Electronic Health Records (EHRs)

An extensive literature review was undertaken to document and identify the benefits that may be attributed to using Electronic Health Records (EHRs) by health information managers and also the current challenges facing staff of health records department on the use of electronic health record, information and communication technology (ICT) and also, to quantify the economic benefits that could be realized through the introduction of Electronic Health Records (EHRs) system.

The literature highlights benefits from periphery and the absence of a strong central coordinating institutional framework (Federal Ministry of Health, 2015). As evidence continues to emerge, the ability of the electronic health information system to radically transform medical practice, many developed countries have either implemented or are in the process of implementing an integrated Electronic Health Records (EHRs) system, because of its potential to improve the safety and quality of healthcare, reduce costs and enhance efficiency.

A nationwide Electronic Health Records (EHRs) which is an integrated patient-centered health record will provide a longitudinal view of an individual key health history and care, including physicians' visits, hospitalization, diagnostic images, and reports, laboratory test results, prescribed drugs and immunization (Canada Health Infoway 2018).

Benefits of Electronic Health Records (EHRs)

Much of the literature has focused on key Electronic Health Records (EHRs) functionalities, including clinical decision support system, computerized order entry systems, and health information exchange. This work describes the potential benefits of Electronic Health Records (EHRs) that include:

Clinical outcomes (e.g. improved quality, reduced medical errors)

Organizational outcomes (e.g. financial and operational benefits) and;

Society outcomes (e.g. improved quality to conduct research, improved population health, reduced costs)

Some of the benefits associated with Electronic Health Records (EHRs) include being able to easily access computerized records and the elimination of poor penmanship, which has historically plagued the medical chart. Electronic Health Records (EHRs) system can include many potential capabilities, but three particular functionalities hold great promise in improving the quality of care and reducing cost at the healthcare system level:

- Clinical Decision Support (CDS) tools
- Computerized Physician Order Entry (CPOE) system
- Health Information Exchange (HIE) (Rodriguez-Vera, *et al.*, 2002).

These and other Electronic Health Records (EHRs) capabilities are the requirements of the “meaningful use” criteria set forth in the Health Information Technology Act of 2009.

A clinical decision support system is one that assists the provider in making decisions with regards to patient care. Some functionalities of a clinical decision support system include providing the latest information about a drug, cross-referencing a patient allergy to a medication, and alerts for drug interactions and other potential patient issues that are flagged by the computer. With the continuous growth of medical knowledge, each of these functionalities provides a means for care to be delivered in a much safer and more efficient manner. As more and more clinical decision support systems are used, one can expect certain medical errors to be averted and that overall, the patient will receive more efficient and safe care (Leavitt, 2001).

With more complete patient information, providers improve their ability to make well-informed treatment decisions quickly and safely. Physician benefits from Electronic Health Records (EHRs) through enabling workflow, accessed patient chart remotely, alerted to clinical laboratory value, alerted to potential medication error, are reminded to provide care meeting clinical guidelines, identified needed laboratory tests, facilitate direct communication with patient, enhance overall patient care, ordered fewer test due to laboratory result availability (Garber, *et al.*, 2015).

Computerized Physician Order Entry (CPOE) systems allow providers to enter orders (e.g. for drugs, laboratory tests, radiology, physical therapy) into a computer rather than doing so on paper. Computerization of this process eliminates potentially dangerous medical errors caused by poor penmanship of physicians. It also makes the ordering process more efficient because nursing and pharmacy staffs do not need to seek clarification or to solicit missing information from illegible or incomplete orders (Bates, 2014).

Using a computerized physician order entry system, especially when it is linked to a clinical decision support system, can result in improved efficiency and effectiveness of care. Once health data are available electronically to providers, Electronic Health Records (EHRs) facilitates the sharing of patient’s information through health information exchange (HIE). Health Information Exchange (HIE) is the process of sharing patient-level electronic health information between different organizations and can create many efficiencies in the delivery of healthcare, by allowing for the secure and potentially real-time sharing of patient information. Health information exchange can reduce costly redundant tests that are ordered because one provider does not have access to the clinical information stored at another provider’s location. Providers usually rely on faxing or mailing each other pertinent information, which makes it difficult to access in “real-time” when and where it is needed. HIE facilitates the exchange of this information via Electronic Health Records (EHRs), which can result in much more cost-effective and higher quality care.

Benefits of Electronic Health Records EHRs across Health Care Setting

The need of better improved care coordination includes as follows

As medical practitioner and technologies have advanced, the delivery of sophisticated, high quality medical area has come to require teams of health care providers, primary care physicians, specialist, nurses, medical record technicians and other clinicians, the health care teams view of the patient can become fragmented into disconnected facts and clusters of symptoms, healthcare providers needless fragmented views of patient. Leveraging an electronic health record across the continuum of care allows for,

- Better integration among providers by improved information sharing.

- Viewable and up to date medication and allergy lists.
- Order entry at point of care or off site.
- More convenient, faster, and simpler disease management.

How electronic health record system can decrease the fragmentation of care by improving care coordination, this is done by alerting the providers when a patient has been in the hospital allowing them to proactively follow up with the patient using electronic health record.

This is especially important with patient who are seeing multiple specialists and receiving treatment in emergency settings.

Patient Participation

Providers and patients who share access to electronic health information can collaborate in informed decision making, patient participation is especially important in managing and treating chronic conditions such as asthma, diabetes and obesity.

Electronic foster patient participation by ensuring high quality care and creating an avenue for communication with their patients.

Electronic health records support provider decision making, it can help providers to make efficient, effective decision about patient therapeutic decision care, through

- Improved aggregation, analysis and communication of patient information.
- Clinical alerts and reminders.
- Built in safeguards against potential adverse events.
- Support for diagnostic
- Sharing of patient information.

Benefit of Electronic Health Records (EHRs) in 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 Electronic Health Records (EHRs).

Societal outcomes include being better able to conduct research and achieving improved population health.

Many clinical outcomes that have been a focus of Electronic Health Records (EHRs) studies related to quality of care and patient safety. Quality of care has been defined as doing the right thing at the right time in the right way to the right person and having the best possible results and patient safety has been defined as avoiding injuries to patients from the care that is intended to help them (Ahro, 2014). Quality of care includes patients safety, effectiveness and efficient in Electronic Health Records (EHRs).

From the societal public health perspective, this helps to lower the risk of disease outbreaks in communities

Electronic Health Records (EHRs) improves the ability to conduct research: having patient data stored electronically increase the availability of data, which may lead to more qualitative analyses to identify evidence-based best practices more easily.

Moreover, public health researchers are actively using electronic clinical data that are aggregated across population to provide research across populations to produce research that is beneficial to society (Kukafka, 2017).

Basic Electronic Health Records Function

Electronic health records should perform some functions to help healthcare system practice better medicine and improve the patient care. Some of these Functions include, but are not limited to,

- Identify and maintain a patient record for each patient.
- Manage patient demographics.
- Electronics health record creates and maintain patient specific medication list.
- Manage result ability to filter and compare.
- Manage consents and authorizations.
- Support drug interaction checking.
- Support for accurate specimen collection.
- Place patient care orders.
- Support for monitoring response to notification regarding an individual patient's health, including appropriate follow-up notification.
- Data retention, availability and destruction.
- Enforcement of confidentiality.
- Entity authentication and authorization.

Comparison of Electronic Health Record with Paper Base Records

The increase portability and accessibility of electronic health records may also increase the

ease with which they can be accessed and stolen by unauthorized persons or unscrupulous ease with versus paper medical records.

Hand written paper medical record may be poorly legible, which can contribute to medical errors, pre printed forms, standardization of abbreviations and standards for penmanship were encouraged to improve reliability of paper medical records.

Electronic records may help with the standardization of forms, terminology and data input.

Digitization of forms facilitates the collection of data.

Barriers to Electronic Health Records (EHRs) Adoption

Despite the gnawing literature on benefits of EHR functionalities, some authors have identified potential disadvantages/barriers associated with this technology.

These include financial issues, changes in workflow, temporary loss of productivity associated with EHR adoption, privacy and security concerns, and several unintended consequences.

Financial issues, including adoption and implementation costs, ongoing maintenance costs, loss of productivity and declines in revenue, present a disincentive for hospitals and physicians to adopt and implement an EHR. Electronic Health Record adoption and implementation costs include purchasing and installing hardware and software converting paper charts to electronic ones, and training end-user (Schmitt, 2015).

According to Miller (2015), the maintenance cost of an EHR can also be costly.

Hardware must be replaced and software must be replaced and software must be upgraded on a regular basis. In addition, providers must have ongoing training and support for the end-user of an EHR.

Menachem, (2016) stated that the cost of Electronic Health Record adoption, implementation and ongoing maintenance are compounded by the fact that many financial benefits of an EHR generally do not accrue to providers (who is required to make the upfront investment) but rather to the third party payers in the form of error averted and improved efficiencies which translate into reduced claims payments

Another barrier to EHR is disruption of workflows for medical staff and providers, which result in temporary losses in productivity. This loss of productivity stems from end-users learning the new system and may potentially lead to losses in revenue (Wang, 2013).

End-users spend hours on implementation activities associates with getting and learning a new system (Fleming, 2011).

Another potential drawback of EHR is the risk of patient privacy violations, which is an increasing concern for patients due to the increasing amount of health information exchanged electronically (Zurita, 2014).

To retrieve some of these concerns, policy makers have taken measures to ensure safety and privacy of patient data through Health Insurance Portability and Accountability Act privacy security policies EHR may cause several unintended consequences, such as increased medical errors, negative emotions, and changes in power structure and over dependence on technology. Additionally, end-users may experience strong emotional responses as they struggle to adapt to new technology and disruption in their workflow.

Challenges Facing Staff of Health Information Department in the use of EHRs

Health information managers' acceptance of electronic health record systems is a critical factor for a successful implementation. Health information managers resist the technology due to productivity issues, lack of support, workflow challenges and other issues. This leads to high costs and reduction in unable to move easily between screens.

There are number of current challenges facing staff of Health Information Management in the use of Electronic Health Record such as:

Managing and supporting users – People resistance to change is crucial for concern in Electronic Health Record. Data sharing issues can cause privacy concerns among staff of health records department, effectiveness of user training is clinical, support for user is important and top-down approach to system selection and implementation does not engage users.

Usability and user acceptance – there must be engagement with all users, beginning from Electronic Health Record. All users need effective training and good system support need to be intuitive and user friendly. Systems also need to

be tailored to meet specific needs of staff of health information management in using Electronic Health Record.

Capital and revenue cost – the procurement, implementation and use of Electronic Health Record system are expensive, both in terms of capital cost and revenue consequences. These include training and administrative costs, cost of effective backup system, system cost, upgraded and replacement cost, ongoing maintenance, governance cost to ensure system and data security, software cost etc.

Training and re-training of staff – there is inadequate provisions made for training and retraining of staff on the use of Electronic Health Record in Nnamdi Azikiwe University Teaching Hospital, Nnewi. Adequate training should be provided for staff of health information managers for them to use Electronic Health Record system.

Power failure – sufficient power supply is not provided for staff of health information management for the, to use in Electronic Health Record. Epileptic power supply is a major challenge facing staff of health information management in the use of Electronic Health Record. Adequate and sufficient power supply should be provided to staff of health information department.

Security and confidentiality problems – due to access and patient information by large number of staff of health information management, security and confidentiality of health records are hardly maintained. Confidentiality of health records is a priority of health information managers so that unauthorized persons do not have access to patient health records.

Illiteracy – one of the challenges being faced by health records professionals in Nigeria is illiteracy to information technology, most of the people do not understand what EHR is, and they get scared when you tell them that their medical records can be accessed from anywhere.

Lack of funding by the government is another challenge being faced by the EHR, private hospital and community hospitals cannot afford to set up the EHR on their own.

Lack of infrastructural facility such as space for inputting, storing and retrieving of data.

Implementation of Electronic Health Record

Most healthcare providers have moved past the implementation phase of EHRs and are focusing on the continuous optimization of them. From this point on, all workflows related to a patient's care are expected to be handled by EHRs. These workflows include handling external documents, messages and general communication with patients. Patients should only need to log into one patient portal to access all of their physicians and communicate with them.

EHRs will also need to provide open access to internal data. Clinical quality measures, demand that will affect staffing levels and disease trends are all good examples of reports that healthcare providers will want to have access to. Essentially, the role of EHRs as repositories for patient data will slowly go away.

The future of EHRs is all about expanding the interconnection between patients and their healthcare providers. Patients' health data should be connected across all of the places where care is sought. Readily available information, as well as direct access to communication with any healthcare provider, should always be just a click or a swipe away.

According to WHO, the context category of an Electronic Health Record implementation process includes both internal variables such as resources, capabilities, culture and politics and external variables such as economic, political and social variables?

The presence of hospital staff with previous experience of health information technology increase the likelihood of EHR implementation as less uncertainty of experienced by the end-users, in order to be able to work with an EHR system.

Health Information Managers must be capable of using information technology such as computer and have adequate typing skills. Knowledge of previous experience with EHR system or other medical information system reduce uncertainty and disturbance for users (health information managers) and this results in a more positive attitude towards the EHR system.

Creating a fit by adopting both the technology and work practice is a key factor in the implementation of Electronic Health Record.

Electronic Health Record implementation is not just a technical project. It is a gradual process that involves change that existing work practices will change due to the new system by customizing and

adopting the system to meet specific needs, users will become more open to using it.

Hardware availability and system reliability in terms of speed, availability and a lack of failure are necessary to ensure EHR use. The importance of having sufficient hardware is important to the use of Electronic Health Record.

A system can only be used if it is available to the users and a system will only be used if its hardware is available. System must be logically structured, reliable and provide safe information access.

To ensure EHR Implementation, the software needs to be user friendly with regards to ease of use, efficiency in use and functionality. Technical availability and reliability and user friendliness of the software provided should be reliable to use. It should also be easy and efficient in use and provide the functionality required for hospital and medical staff to give good care to the patient.

An EHR implementation should contain adequate safeguard for patient privacy and confidentiality are recognized in the implementation of EHR.

Resistance of clinical staff in particular of physicians in a major barrier to EHR implementation but can be reduced by addressing their concerns.

Clinical staff attitudes are a crucial factor in EHR implementation; particular physicians constitute an important group in hospitals. As such their possible resistance to HER implementation will form a major barrier and may lead to work around. Whether physicians accept or reject and EHR implementation depends on their acceptance of their work practices being transformed. The likelihood of acceptance will be increased if implementers address the concerns of physicians but also of other members of clinical staff.

The Meaningful Use of Electronic Health Records

Meaningful use is using certified electronic health record (EHR) technology to:

- Improve quality, safety, efficiency, and reduce health disparities
- Engage patients and family
- Improve care coordination, and population and public health
- Maintain privacy and security of patient health information

- Ultimately, it is hoped that the meaningful use compliance will result in:
- Better clinical outcomes
- Improved population health outcomes
- Increased transparency and efficiency
- Empowered individuals
- More robust research data on health systems

Meaningful use sets specific objectives that eligible professionals (EPs) and hospitals must achieve to qualify for Centers for Medicare & Medicaid Services (CMS) Incentive Programs.

The Medicare and Medicaid EHR Incentive Programs provide a financial incentive for achieving "meaningful use", which is the use of certified EHR technology to achieve health and efficiency goals.

The meaningful use objectives are grouped into five patient-driven domains that relate to health outcomes policy priorities. As depicted in the dashboards below, each core and menu objective is aligned to one of the following domains:

- Improve Quality, Safety, Efficiency
- Engage Patients & Families
- Improve Care Coordination
- Improve Public and Population Health
- Ensure Privacy and Security for Personal Health Information

Thus, clinicians can see EHRs that have more sophisticated analytic, increased standardization, enhanced interoperability, and tight linkages with more sophisticated patient portals in future (Hoyt, 2014).

Improvement of EHRs for Effective Healthcare Delivery

Irving, (2015) said that the usability and workflow of today's Electronic Health Records system have been thorns in the side of many physicians group. But it does not have be that ways for years to come, rather health care providers should help define and prioritized the roles that EHR generated clinical documentation serves in improving overall quality of care.

The ways in which EHR system would support today's healthcare delivery are:

Some of the computer system is sub-standard, so they require appropriate safety testing of the products before they are used.

Before the systems are installed, care providers should be given the ability to assess how well the products protect patient safety

Ensures that any lessons learned are disseminated across the healthcare system,

EHR system should facilitate longitudinal care delivery as well as care that involve teams of clinicians. Because the primary purpose of a health record is to support care delivery over time and across all venues including decision making, care coordination and high value care.

Documentation contained in EHR systems must support healthcare givers cognitive process during documentation. Clinicians must be able to view related information without having to navigate away from a window in which they are working.

EHRs must support “write-once, reuse-many times” and embed tags to identify the original source of information when used subsequent to its creation. That is, EHRs system must allow clinicians to easily search available data during not writing and give the option of linking content from prior entries or copying/pasting with appropriate tags. This will decrease the need to collect additional data for secondary purposes

There should be consistent power supply to enhance the effectiveness of Electronic Health Records in healthcare delivery.

Patient Management components; this component is required for patient registration, admission, transfer and discharge (ADT) functionality. Patient registration includes key patient information such as demographics, insurance of information, contact information etc.

When a patient is registered in an EHR for the first time, a unique ID (often called “Medical Records Number) is generated. EHR environment may also generate a master patient name index (MPI).

Clinical component – this component can house multiple sub-components e.g. computerized provider order entry (CPOE), electronic documentation, nursing components etc.

“CPOE” allow providers to enter orders that are needed for patient management directly in the computer

Electronic documentation by providers allow them to documentation by providers allow them to

document notes such as history and physical, consults, discharge summaries, operative notes etc.

The pharmacy system allows for maintaining a drug formulary, filling prescriptions and cross checking any orders that are placed by providers in the EHR.

Nursing components allows for collection of key patient information such as vital signs, input and output to enhance medication administration record.

Laboratory components – this can be capturing results from laboratory machines and integration with EHR or exist as a standalone product.

Radiology Information System – radiology Information System (RIS) and picture Archiving Communication System (PACS) are used to manage patient workflow, ordering process, results and the image themselves.

Billing system – the billing system (hospital and professional billing) is used to capture all charges in the process of taking care of patients.

Electronic Health Records Adoption Predictors

Most of the studies also reported EHR adoption levels in the clinical setting studies. The following list include key factors that were associated with a higher level of EHR adoption with health practitioners

Practice size and type – Health Practitioners practicing in larger group’s tertiary hospitals or medical centers seem to be driving EHR adoption. It was suggested that this reflects the greater availability of the financial resources required to acquire an EHR system at these sites.

Understanding the benefit – Health professionals that had a good understanding of the quality of care improvements resulting from EHR use and those involved in IT planning is more likely to be high users of EHR system. Organizational engagement in quality improvement is also a predictor of EHR adoption.

Technology readings – positive attitude about the influence of computers on healthcare and experience with existing system positively influence EHR adoption. Those health practitioners who are already using online scheduling and billing system show less resistance to technology related changes.

Placement of strategic importance on IT by the tertiary hospitals will likely result in higher EHR adoption.

Age - Younger health professionals are generally more likely to adopt EHR system; a study reported that they are more likely to become higher users of the HER once adopted.

Experience – Studies have shown that resident and recent graduates have more positive attitude toward EHR system and practice.

Financial resources – Health practitioners with an increased number of patients on Medicare were significantly more likely to adopt EHR than those with low volume of Medicare patient.

Different financial considerations exist in private hospitals and government funded hospitals (tertiary hospitals). Initial and ongoing maintenance cost is a big issue that policy makers in the hospitals have to consider.

REVIEW OF LITERATURE GAP

Despite the growing literature on benefits of various EHRs functionalities, some authors have identified potential disadvantages associated with this technology. These include financial uses, changes in workflow, temporary loss of productivity associated with Electronic Health Records adoption, privacy and security concerns, and several unintended consequences. To balance the generally positive findings of the aforementioned studies, Chaudhry noted that a large proportion of the studies that found benefits from Electronic Health Records were conducted in a selected member of academic centers. This raises the question about whether or not many of the benefits identified can be generalized to other setting of care that do not have similar financial and human resources more a decade – long commitment to health information technology.

More research on the varying types and degrees of benefits associated with Electronic Health Records is warranted, especially in community settings such as physician practices and non-academic hospital settings.

Since introduction of electronic health records system, however, there has been no documented study carried out to assess whether there has been any improvement in effectiveness of patient

healthcare delivery and its role health care setting in Nigeria.

How electronic health record system can be benefit every Nigerian, both the patient, healthcare providers and health care setting.

How to improve electronic health records in healthcare system in Nigeria especially in Nnamdi Azikiwe University Teaching Hospital Nnewi.

How health care providers will be trained and retrained on the new technologies for effective healthcare services.

RESEARCH QUESTIONS

From the analysis of table 4, question 12 , 69 respondents representing 29.1% agreed that there are current challenges facing health information managers in the use of electronic health record, 63respondents representing 26.6% strongly agreed, 52 representing 21.9% disagreed, while 53 representing 22.4% strongly disagreed that there is current challenges facing health information managers in the use of electronic health record.

From the analysis of table 4, question 11, 59 respondents representing 24.9% agreed that electronic health records have replacing paper-base health record in Nnamdi Azikiwe University Teaching Hospital Nnewi. 61 respondents representing 25.7% strongly agreed, 60 representing 25.3% disagreed, while 57 representing 24.1% strongly disagreed that electronic health records have replacing paper-base health record in Nnamdi Azikiwe University Teaching Hospital Nnewi.

From the analysis of table4, question 19, 8 respondents representing 3.4% agreed that there is suitable process towards the implementation of electronic health record, 190 respondents representing 80% strongly agreed, 5 representing 2.1% disagreed, while 34 representing 14.3% strongly disagreed that there is suitable process towards the implementation of electronic health record.

RESEARCH HYPOTHESIS

Ho: There is no significant relationship between electronic health records and effective healthcare delivery.

Hi: There is significant relationship between electronic health records and effective healthcare delivery.

Table 1: Responses to questions

S/N	Questions	Strongly Agreed	Agreed	Disagreed	Strongly Disagreed	total
1.	There is relationship between electronic health records and effective health care delivery?	63	69	40	65	237
2.	Is there current challenges facing health information managers in the use of electronic health record.	69	63	52	53	237
3.	Is electronic health record full implemented Nnamdi Azikiwe University Teaching Hospital, Nnewi.	50	55	63	69	237
4.	Is there suitable process towards the implementation of electronic health record?	8	190	5	34	237
5.	Are there threats facing in Nnamdi Azikiwe University Teaching Hospital, Nnewi towards Electronic Health Record existence.	69	63	50	55	237
6.	Staff are trained and re-trained on computer usage and electronic health record in Nnamdi Azikiwe University Teaching Hospital, Nnewi?	65	80	50	42	237
7.	Is there Electronic Health Records across various departments for the effective patient healthcare delivery	10	150	30	47	237
TOTAL		334	670	290	365	1659

Calculation for expected frequencies (fe)

$$\text{Formulae} = \frac{\text{Row Total} \times \text{Column Total}}{\text{Grand Total}}$$

$$\text{Fe}_{1, 1} = \frac{237 \times 334}{1659} = 48$$

$$\text{Fe}_{1, 2} = \frac{237 \times 670}{1659} = 96$$

$$\text{Fe}_{1, 3} = \frac{237 \times 290}{1659} = 41$$

$$\text{Fe}_{1, 4} = \frac{237 \times 365}{1659} = 52$$

$$\text{Fe}_{2, 1} = \frac{237 \times 334}{1659} = 48$$

$$\text{Fe}_{2, 2} = \frac{237 \times 670}{1659} = 96$$

$$\text{Fe}_{2, 3} = \frac{237 \times 290}{1659} = 41$$

$$\begin{array}{l}
 \text{Fe2, 4 } \frac{237 \times 365}{1659} = 52 \\
 \text{Fe3, 1 } \frac{237 \times 334}{1659} = 48 \\
 \text{Fe3, 2 } \frac{237 \times 670}{1659} = 96 \\
 \text{Fe3, 3 } \frac{237 \times 290}{1659} = 41 \\
 \text{Fe3, 4 } \frac{237 \times 365}{1659} = 52 \\
 \text{Fe4, 1 } \frac{237 \times 334}{1659} = 48 \\
 \text{Fe4, 2 } \frac{237 \times 670}{1659} = 96 \\
 \text{Fe4, 3 } \frac{237 \times 290}{1659} = 41 \\
 \text{Fe4, 4 } \frac{237 \times 365}{1659} = 52
 \end{array}$$

Table 2: Chi-square testing of observed and expected frequency

FO	Fe	FO-Fe	(FO - Fe) ²	$\frac{(FO - Fe)^2}{Fe}$
63	48	15	225	4.6875
69	96	-27	729	7.5938
40	41	-1	1	0.0244
65	52	13	169	3.2500
69	48	21	441	9.1875
63	96	-33	1089	11.3438
52	41	11	121	2.9512
53	52	1	1	0.0192
50	48	2	4	0.0833
55	96	-41	1681	17.5104
63	41	22	484	11.8049
69	52	17	289	5.5577
8	48	-40	1600	33.3333
190	96	94	8836	92.0417
34	41	-7	49	1.1951
69	52	17	289	5.5577
Total				206.1223

Decision Rule: Reject the null hypothesis (Ho) if χ^2 calculated value \geq (χ^2) tabulated value and if otherwise accept.

$$\begin{aligned}
 df &= (r - 1) (c - 1) \\
 &= (7 - 1) (4 - 1) \\
 &= (6) (3) \\
 \chi^2 \text{ tabulated} &= 28.87 \\
 \text{Calculated value} &= 206.12
 \end{aligned}$$

RESEARCH METHODOLOGY

This study focuses on the methods and design by which the researcher used in carrying out this research work. This chapter discussed under the following subheadings, It includes the following:

- Research design
- Area of study
- Population of study
- Sample size and sampling techniques
- Data collection instruments
- Reliability and validity of instruments
- Data collection procedure
- Method of data analysis.

RESEARCH DESIGN

The study research design adopted for this research work is the survey research design. The ions and feelings of the population from which the sample was drawn as well as comparing the attitude of members of the different population and look for the changes in the attitude overtime.

This design allows the researcher to obtain a true picture of the particular phenomena (Isangedight, *et al.*, 2015).It also focuses on the sample describing its relationship existing between the variables under study.

A stratified and simple random sampling technique was used to select the population needed for the study.

AREA OF STUDY

This study was carried out at Nnamdi Azikiwe University Hospital (NAUTH) Nnewi. Nnamdi Azikiwe University Hospital (NAUTH) Nnewi is situated along old Onitsha- Nnewi road, Nnewichi in Nnewi north local Government Area Nnewi Anambra state. It is consist of different department

which includes medical records department, radiology department, Doctors, Nurses, Laboratory department, pharmacy department and physiotherapy department.

Population of Study

This study will be carried out at Nnamdi Azikiwe University Teaching Hospital Nnewi, for any survey design to be carried out, three important issues must be considered and among this the first is that the study population needs to be defined or determined. For this study, the target population is the populace working in Nnamdi Azikiwe University Teaching Hospital Nnewi which consists of 400 people. This population was drawn from six departments, 50 staff from medical record department, 76 doctors, and 80 nurses, 66 staff from pharmacy department, 62 from laboratory department and 66 from radiology department. Thus the specific target population is the entire 400 projected populace in NAUTH Nnewi.

Sampling Size and Sampling Techniques

Sampling Size

The population constitutes the entire 400 staff from the six departments as the group that makes use of electronic health record in providing health care services. The sample size reflects to some degree a major of proportionality with the size of the population of each department based on this, the sampling of the number of respondent took into consideration their distribution into their various unit.

However, an appropriate sample size can produce accuracy of result; moreover, 5the result from a small sample size will be questionable.

Using the standard formula for determining Sample size

$$N = N \times \frac{Z^2 \times P \times (1-P)}{e^2} \div \left(\frac{N-1}{N} + \frac{Z^2 \times P \times (1-P)}{e^2} \right)$$

Where n = sample size

N= population size

Z= Critical value of the normal distribution at the required confidence level at (95%= 1.96)

P= sample propotion at 0.5

E= margin of error at 4%= 0.04

$$\frac{400 \times 1.962 \times 0.5(1-0.5)}{0.042}$$

$$\frac{|400 - 1 + 1.962 \times 0.5(1-0.5)|}{0.042}$$

$$\frac{400 \times 3.8416 \times 0.5(0.5)}{0.0016}$$

$$\frac{399 + 3.8416 \times 0.25}{0.0016}$$

$$\frac{400 \times 600.25}{399 + 600.25}$$

$$\frac{400 \times 600.25}{999.25}$$

$$400 \times 0.6007$$

$$= 240.28$$

$$= 240 \text{ respondent}$$

The 240 respondent sampled were adequate to represent the entire population based on the formular. Thus the units under study were sampled according to their proportion, medical records officers were 30 respondent, doctors were 45 respondent, nurses were 48 respondent, pharmacy were 40 respondent, laboratory scientist were 37 respondent and radiology were 40 respondent.

Sample Techniques

This study adopted purposive, simple random and stratified sampling techniques this means that the population is first of all classified into different groups (strata) and within each stratum, a simple random sampling method is adopted for this study, the purposive sampling techniques was applied in selecting Nnamdi Azikiwe University Teaching Hospital as the study area.

Also purposive decision was applied in selecting the units studied as the basic sampling units for this study. The numbers of respondent were determined based on proportional stratified sampling.

- Medical records officers 30
- Doctors 45
- Nurses 48
- Laboratory scientist 37
- Radiology 40
- Pharmacy 40

Data Collection Instrument

The major instrument used for the collection of information was structured questionnaire to obtain relevant data regarding this study.

The questionnaires was designed by the researcher to elicit information from the respondent based on the study. 400 questionnaire was shared, the questionnaire were divided into 2 sections, section A and section B, section A consist of bio-data of the respondents, section B was designed for the collection of information of the various variables for the purpose of the study.

Reliability and Validity of the Instrument

This is the application of an instrument in measuring what is intended to measure, reliability is the consistency of a text instrument in measuring what it suppose to measure. In order to ascertain the context of appropriate a self designed instrument (questionnaire) was presented to the researcher’s supervisor for content validation.

All corrections made were affected; this shows that the instrument used for this research is reliable.

DATA COLLECTION PROCEDURE

The researcher administered the questionnaire to the respondent selected for the study, the questionnaire were taken to the respondents in their various department. The questionnaire contains fifteen (15) questions. Two hundred and forty (240) copies of the questionnaire were distributed to the respondents, 30 copies were administered in the medical records department and were returned, and 45 copied were administered in the medical department 44 copies were returned, 48 copies were shared in the nursing department and 46 were returned, 37 copies were shared in the laboratory department, and was returned, 40 copies were shared in the

pharmacology department and were returned, 40 were administered to radiology department and were, three (3) copies of the questionnaire were not returned.

METHOD OF DATA ANALYSIS

The data collection was selected, arranged and calculated using simple percentage which chi-square was used to test the hypothesis and the degree of freedom of (0.05) level of significance was used

RESULT AND DISCUSSION

- Demographic information of respondent.
- Analysis of findings

Demographic Information of the Respondents

Table 3: Gender Distribution of the Respondents

GENDER	FREQUENCY	PERCENTAGE %
Male	30	12.7%
Female	207	87.3%
TOTAL	237	100%
TOTAL	237	100%

Source: Field Survey, 2020

Table 3 shows the gender distribution of the respondents, revealing that 30 respondents representing 12.7% are males, while 207 respondents representing 87.3% are largely females.

Table 4 Distribution of the Respondents by Age

YEARS OF WORK EXPERIENCE	FREQUENCY	PERCENTAGE %
18-30 years	59	24.9
31-40 years	55	23.2
41-50 years	66	27.8
51-60years	50	21.1
61 and above	7	3.0
TOTAL	237	100 %

Source: Field Survey, 2020

In table 4 above, 59 respondents representing 24.9% are between the age of 18-30 years in the hospital, 55 respondents presenting 23.2% 31-40 years, are between the age of 66 respondents representing 27.8% are between the age of 41-50 years, 50 respondents representing 21.1% are between the age of 51-60, while 7 respondent representing 3.0% are between the age of 61 and above.

Table 5 Marital Status of the Respondents

MARITAL STATUS	FREQUENCY	PERCENTAGE %
Single	100	42.2%
Married	137	57.8%
Divorce	-	-
TOTAL	237	100

Source: Field Survey, 2020

The table 5 shows the marital status of the respondents, 100 respondents representing 42.2% are married, while 137 respondents representing 57.8% are single and none divorced.

- Research questions
- Research hypothesis
- Discussion of findings

A total of 240 hundred questionnaires were administered to the staff in various departments across Nnamdi Azikiwe University Teaching Hospital, Nnewi with consideration on the interest of this study such as Health Records Department, Doctors, Nursing, Pharmacy, Laboratory, Radiology departments. One hundred and ninety eight (237) questionnaires were completed and returned representing 99% returned, while two (3) questionnaires were not returned representing 1% unreturned.

Table 6 Educational Qualification of the respondents

EDUCATIONAL QUALIFICATION	FREQUENCY	PERCENTAGE %
OND	25	10.5
HND	57	24.1
B.Sc	100	42.2
M.Sc	35	14.8
PH.D	20	8.4
TOTAL	237	100%

Source: Field Survey, 2020

From table 6, it shows that in the educational qualification of the respondents, 25 respondents representing 10.5% are OND holders, 57 respondents representing 24.1% are HND holders,

and 100 respondents representing 42.2% are BSc. Holders, while 35 respondents representing 14.8 % are MSc holders while 20 respondent representing 8.4% are PH.D holders.

Table 7 Professional status of the Respondents

PROFESSIONAL STATUS	FREQUENCY	PERCENTAGE %
Medical Record Officer	30	12.6
Medical Doctor	45	18.9
Nurse	48	20.3
Pharmacist	40	16.9
Laboratory	37	15.6
Radiology	40	16.9
TOTAL	237	100%

Source: Field Survey, 2020

The above table shows that 30 respondents representing 12.6% are medical records officers in Medical Records Department, 45 respondents representing 18.9% are medical doctors in medicine department, 48 respondents representing

20.3% are Nurses in nursing services, 40 respondents representing 16.9% are pharmacist, 37 respondents representing 15.6% are Laboratory, while 40 respondents representing 16.9% are Radiology.

Table 8 Distribution of the Respondents by years of working experience

YEARS OF WORK EXPERIENCE	FREQUENCY	PERCENTAGE %
1-5 years	40	16.9
6-10 years	50	21.1
11-15 years	70	29.5
16 -20 years	38	16.0
21 and above	39	16.5
TOTAL	237	100 %

Source: Field Survey, 2020

In table 4.6 above, 40 respondents representing 16.9% have worked between 1-5 years in the hospital, 50 respondents presenting 21.1% have worked between 6-10 years, 70 respondents representing 29.5% have worked between 11-5 years, 38 respondents representing 16.0% have worked for 16-20 years, while 39 respondents representing 16.5% have worked for 21 and above.

SUMMARY OF FINDINGS

With passage of the Patient Protection and Affordable Healthcare Act, Electronic Health Records has been widely adopted across healthcare organizations large and small. While there are many potential benefits to EHRs, clinical,

organizational and societal outcomes and others: clinical decision support system, computerized order entry system, and health information exchange. There are inherent problems in adopting this technology.

An EHR is only as good as the processes that it supports. If the technology is not supported with well thought processes, hospital may invest in complicated and expensive technologies that create more waste in a system already fraught with inefficiency.

When adopting new technology, vendors and healthcare providers from the early stages of EHR

planning need to identify and eliminate waste in process that involve the use of EHRs to ensure positive outcomes., when an EHR is implemented, unnecessary waste is often eliminated.

However, if the system is flawed, implementing new technology can create more problems and the result can be “bad” or “worse” or “ugly”. It is imperative that healthcare executives understand the benefits and challenges of EHRs and what can be done to eliminate them.

ANALYSIS OF FINDINGS

Table 9 Have you heard of Electronic Health Records?

RESPONSES	FREQUENCY	PERCENTAGE%
Yes	230	97
No	7	3
TOTAL	237	100 %

Source: Field Survey, 2020

From the above table, 230 respondents representing 97% agreed that they have heard about Electronic Health Records Management,

while 7 respondents representing 3% have not heard of Electronic Health Records.

Table 10 Do you know what Electronic Health Records is all about?

RESPONSES	FREQUENCY	PERCENTAGE %
Yes	200	84
No	37	16
TOTAL	237	100 %

Source: Field Survey, 2020

In above table, 200 respondents representing 84% agreed that they know what Electronic Health Records is all about, while 37 respondents

representing 16% responded that they have no idea of what Electronic Health Records is all about.

Table 11 Do you think that Electronic Health Records is of important?

RESPONSES	FREQUENCY	PERCENTAGE%
Yes	200	84
No	37	16
TOTAL	198	100 %

Source: Field Survey, 2020

In above table 200 respondents representing 84% agreed that Electronic Health Records is of important, while 37 respondents representing 16%

responded that Electronic Health Records is of no important.

Table 12: Electronic Health Records Management reduces patients’ waiting time in the health care setting?

RESPONSES	FREQUENCY	PERCENTAGE %
Agreed	63	26.6
Strongly agreed	69	29.1
Disagreed	40	16.9
Strongly disagreed	65	27.4
TOTAL	237	100 %

Source: Field Survey, 2020

In above table, 63 respondents representing 26.6% agreed that electronic health records management reduces patients’ waiting time in the hospital. 69 respondents representing 29.1% strongly agreed,

40 representing 16.9% disagreed, while 65 representing 27.4% strongly disagreed that electronic health records management reduces patients’ waiting time in the health care setting.

Table 13: Electronic health record has replacing paper-base health record in Nnamdi Azikiwe University Teaching Hospital, Nnewi?

RESPONSES	FREQUENCY	PERCENTAGE %
Agreed	59	24.9
Strongly agreed	61	25.7
Disagreed	60	25.3
Strongly disagreed	57	24.1
TOTAL	237	100 %

Source: Field Survey, 2020

In above table, 59 respondents representing 24.9% agreed that electronic health records have replacing paper-base health record in Nnamdi Azikiwe University Teaching Hospital Nnewi. 61 respondents representing 25.7% strongly agreed,

60 representing 25.3% disagreed, while 57 representing 24.1% strongly disagreed that electronic health records have replacing paper-base health record in Nnamdi Azikiwe University Teaching Hospital Nnewi.

Table 14 Is there current challenges facing health information managers in the use of electronic health record?

RESPONSES	FREQUENCY	PERCENTAGE %
Agreed	69	29.1
Strongly agreed	63	26.6
Disagreed	52	21.9
Strongly disagreed	53	22.4
TOTAL	237	100 %

Source: Field Survey, 2020

In above table, 69 respondents representing 29.1% agreed that there are current challenges facing health information managers in the use of electronic health record, 63 respondents representing 26.6% strongly agreed, 52

representing 21.9% disagreed, while 53 representing 22.4% strongly disagreed that there is current challenges facing health information managers in the use of electronic health record.

Table 15 Electronic Health Records is fully implemented in Nnamdi Azikiwe University Teaching Hospital, Nnewi?

RESPONSES	FREQUENCY	PERCENTAGE %
Agreed	50	21.1
Strongly agreed	55	23.2
Disagreed	63	26.6
Strongly disagreed	69	29.1
TOTAL	237	100 %

Source: Field Survey, 2020

In above table, 50 respondents representing 21.2% agreed that electronic health record is fully implemented in Nnamdi Azikiwe University Teaching Hospital Nnewi. 55 respondents representing 23.2% strongly agreed, 63

representing 26.6% disagreed, while 69 representing 29.1% strongly disagreed that electronic health record is fully implemented in Nnamdi Azikiwe University Teaching Hospital Nnewi.

Table 16 There is relationship between electronic health records and effective health care delivery?

RESPONSES	FREQUENCY	PERCENTAGE %
Agreed	63	26.6
Strongly agreed	69	29.1
Disagreed	40	16.9
Strongly disagreed	65	27.4
TOTAL	237	100 %

Source: Field Survey, 2020

In above table, 63 respondents representing 26.6% agreed that there is relationship between electronic health records and effective health care delivery 69 respondents representing 29.1% strongly agreed,

40 representing 16.9% disagreed, while 65 representing 27.4% strongly disagreed that there is relationship between electronic health records and effective health care delivery.

Table 17: Electronic health record is more tasking and ambiguous in collecting patient data in Nnamdi Azikiwe University Teaching Hospital, Nnewi?

RESPONSES	FREQUENCY	PERCENTAGE %
Agreed	70	29.5
Strongly agreed	63	26.6
Disagreed	35	14.77
Strongly disagreed	69	29.1
TOTAL	237	100 %

Source: Field Survey, 2020

From the above table, 70 respondents representing 29.5% agreed that Electronic health record is more tasking and ambiguous in collecting patient data in Nnamdi Azikiwe University Teaching Hospital, Nnewi, 63 respondents representing 26.6% strongly agreed, 35 representing 14.77%

disagreed, while 69 respondent representing 29.1% strongly disagreed Electronic health record is more tasking and ambiguous in collecting patient data in Nnamdi Azikiwe University Teaching Hospital, Nnewi.

Table 18 Sometimes, electronic health record systems fails to run event as patients have to receive healthcare services through paper-based care?

RESPONSES	FREQUENCY	PERCENTAGE %
Agreed	58	24.5
Strongly agreed	71	30
Disagreed	63	26.6
Strongly disagreed	45	18.9
TOTAL	237	100 %

Source: Field Survey, 2020

In above table, 58 respondents representing 24.5% agreed that sometimes electronic health records system fails to run event as patients have to receive healthcare services through paper-based care, 71 respondents representing 30% strongly agreed, 63

representing 26.6% disagreed, while 45 representing 18.9% strongly disagreed that sometimes electronic health records system fails to run event as patients have to receive healthcare services through paper-based care.

Table 19 Staff are trained and re-trained on computer usage and electronic health record in Nnamdi Azikiwe University Teaching Hospital, Nnewi?

RESPONSES	FREQUENCY	PERCENTAGE %
Agreed	65	27.4
Strongly agreed	80	33.8
Disagreed	50	21.1
Strongly disagreed	42	17.7
TOTAL	237	100 %

Source: Field Survey, 2020

In above table, 65 respondents representing 27.4% agreed that staff are trained and re-trained on computer usage and electronic health records in Nnamdi Azikiwe University Teaching Hospital Nnewi. 80 respondents representing 33.8%

strongly agreed, 50 representing 21.1% disagreed, while 42 representing 17.7% strongly disagreed staff are trained and re-trained on computer usage and electronic health records in Nnamdi Azikiwe University Teaching Hospital Nnewi.

Table 20 Is there Electronic Health Records across various departments for the effective patient healthcare delivery?

RESPONSES	FREQUENCY	PERCENTAGE %
Agreed	10	4.2
Strongly agreed	150	63.3
Disagreed	30	12.7
Strongly disagreed	47	19.8
TOTAL	237	100 %

Source: Field Survey, 2020

From the above table, 10 respondents representing 4.2% agreed that electronic health record system across various departments for the effective patient healthcare delivery, 150 respondents representing 63.3% strongly agreed, 30 representing 12.7%

disagreed, while 47 representing 19.8% strongly disagreed that that electronic health record system across various departments for the effective patient healthcare delivery.

Table 21 Is there suitable process towards the implementation of electronic health record?

RESPONSES	FREQUENCY	PERCENTAGE %
Agreed	8	3.4
Strongly agreed	190	80
Disagreed	5	2.1
Strongly disagreed	34	14.3
TOTAL	237	100 %

Source: Field Survey, 2020

From the above table, 8 respondents representing 3.4% agreed that there is suitable process towards the implementation of electronic health record, 190 respondents representing 80% strongly agreed, 5 representing 2.1% disagreed, while 34 representing 14.3% strongly disagreed that there is suitable process towards the implementation of electronic health record.

In the above table, 69 respondents representing 29.1% agreed there are threats emanating from the existence of electronic health records in Nnamdi Azikiwe University Teaching, Hospital, Nnewi, 63 respondents representing 26.6% strongly agreed, 50 representing 21.1% disagreed, while 55 representing 23.2% strongly disagreed.

Table 22 There is reliable power source for the system effectiveness on patient health care delivery?

RESPONSES	FREQUENCY	PERCENTAGE %
Agreed	8	3.4
Strongly agreed	39	16.4
Disagreed	100	42.2
Strongly disagreed	90	38
TOTAL	237	100 %

Source: Field Survey, 2020

From the above table, 8 respondents representing 3.4% agreed that there is reliable power source for the system effectiveness on patient health care delivery, 39 respondents representing 16.4% strongly agreed, 100 representing 42.2% disagreed, while 90 representing 38% strongly disagreed that there is reliable power source for the system effectiveness on patient health care delivery

well as supporting other care related activities directly or indirectly via interface including evidence based decision support, quality management and outcome reporting.

From the objectives of the study, it was noted that 29.1% agreed that there are current challenges facing health information managers in the use of electronic health record, 26.6% strongly agreed, 21.9% disagreed, while 22.4% strongly disagreed that there are current challenges facing health information managers in the use of electronic health record.

DISCUSSION OF FINDINGS

Electronics health record has the ability to generate a complete record of a clinical patient encounter as

59 respondents representing 24.9% agreed that electronic health records have replacing paper-base health record in Nnamdi Azikiwe University Teaching Hospital Nnewi. 61 respondents representing 25.7% strongly agreed, 60 representing 25.3% disagreed, while 57 representing 24.1% strongly disagreed that electronic health records have replacing paper-base health record in Nnamdi Azikiwe University Teaching Hospital Nnewi.

8 respondents representing 3.4% agreed that there is suitable process towards the implementation of electronic health record, 190 respondents representing 80% strongly agreed, 5 representing 2.1% disagreed, while 34 representing 14.3% strongly disagreed that there is suitable process towards the implementation of electronic health record Nnamdi Azikiwe University Teaching Hospital Nnewi.

At 0.05 level of significant of tabulated value 28.87 and calculated value 206.12, we accept alternate hypothesis which states that there is a significance relationship between electronic health records and effective healthcare delivery Nnamdi Azikiwe University Teaching Hospital Nnewi.

(Canada health info way 2018) states that a nationwide electronic health records is an integrated patient centered health record with provision of age of an individual key health history and care, including physician's visits, hospitalization, diagnostic images and reports, laboratory test result, prescribed drugs and immunization.

The researcher found out that many of the health information managers have the knowledge of electronic health records and also know how to use EHR system in collecting patient health information (clerking of patients, but lack of adequate use of computer system and the personal training on how to use the EHR system. The physicians have accepted and adopted the use of electronic health records, believing that it is more useful, more beneficial and accurate than paper-based method for the collection of patients' data and record is also more reliable for statistical purposes. Health officers sometimes experience system/technical failure while using EHR system and most importantly, that EHR system do not often reduce patient waiting time in the hospital, due to the fact that there is not enough good available computer system to use.

The major challenges faced by health officers were epileptic power supply, system and network failure, error during documentation of patient information into EHR system, lack of funding, cost of maintenance of EHR system, and adequate trained personnel to handle the system.

The researcher also observed that there are threats to EHR towards its existences such as virus attack on the system.

The researcher therefore recommends that EHR should be adopted and adequately funding and good computer system provided and also training should be provided for the health officers for smooth, efficient and effective running of the system to serve its unique purpose for increased output and productivity.

CONCLUSION AND RECOMMENDATION

From the findings of the research, it is clear that electronic health records is not fully implemented in Nnamdi Azikiwe University Teaching Hospital, Nnewi, however, there is existence of the electronic health record as it is being utilized at its level in promoting healthcare management in Nnamdi Azikiwe University Teaching Hospital, Nnewi. From the hypothesis tested at (0.05) level of significance at 2 degree of freedom (df), it is clear that electronic health record plays a vital role as it enhances patient care therefore, considering electronic health records as a valuable innovation tool in effective care management.

It is obvious that there are no sufficient computer terminals in the departments, units and sections where electronic health records should be accessed, with the fact that many staff has little knowledge of computer and how to operate it.

The effectiveness of electronic health record when compared to manual base oriented could be viewed from different perspectives, in the sense that electronic health record is important because it can decrease the fragmentation of care by improving care coordination. Electronic Health Record has the potential to integrate and organize patient health information and facilitate its instant distribution among all authorized providers involved in a patient's care. Also for effective utilization of the system, irrespective of the level of implementation, staff should be trained and re-trained in order to maintain consistency and proper utilization of the system holistically.

RECOMMENDATIONS

From the research findings, the researcher hereby makes the following recommendations:

1. Lack of technical training and support from electronic health record vendors has been reported as a barrier to effective implementation of EHR. Therefore, the quality of vendors of electronic health record is crucial in health institution.
2. Government through the hospital management board should provide computer system, backup system, Internet facilities, constant power supply, I.T support staff and strategies on ways to fund and train staff of Health Information Management on the efficient and effective use of electronic health record system.
3. Electronic Health Record should be accessible from offices to locations where health facilities are sited and provide easy access for retrieval of health records, the use of electronic health records in home care is likely to improve communication and access to patient health information and lead to better health decision making and outcomes.
4. Federal government in conjunction with the hospital management should make every arrangement to computerize the record department and keep it in good working condition

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