

Health Information Systems, Best Practices in Patient data Management for Effective Health Care Service Delivery in Hospitals. A case of Some Selected Tertiary Hospitals in Jigawa State of Nigeria

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ABSTRACT

The need for effective health care in Nigeria as in many other countries is face with growing demand for effective health care services due to growing population and higher standard for the quality of life, the study was conducted through cross-sectional design. It aim at assessing the best practices in patient data management for effective health care service delivery. Data was collected from Doctors, Nurses, medical laboratory staff, medical record staff and patients. Patients were interviewed in the selected tertiary hospitals of Jigawa state. A total of five hundred (500) medical personnel and patients were involved in the selected tertiary hospitals in Jigawa state of Nigeria. Data were analyzed using descriptive statistics. The Findings revealed manual method is the method used at the selected tertiary hospitals in capturing patient information. This finding is in agreement with study from Nigeria that showed that there was no awareness of the use of computers for record management in hospitals and this affected EMR technology adoption. It was concluded that the use of electronic health record will increase the efficiency of health if implemented according to the best practices.

Keywords: Best Practices, Data Management, Health Information Systems, Patient,

I. INTRODUCTION

Health care in Nigeria as in many other countries is face with growing need for effective health care services, [2], due to reasons such as a growing population and higher standard for the quality of life. Miller [3], say that health care has been an issue of growing importance for federal government. At every level of government health care plans have been developed in the past decades, in order to control the cost, quality and the

availability of health care for all citizens all the time. Brown ^[4], suggested that the implementation of best practices in patient data management has generated useful insight into the quality of data accuracy and health care provision in primary care settings. This is surely one of the adapted style and approach to data entry influenced by the design presented by the recent structure. They further emphasize, that there is a great need for improved education and protocols for consisting data entry in the (ECIS) and also subsequent follow up of patient clarification on the policy for duration and frequency drugs and treatment. Laubbel ^[5], define medical, health record, or medical documentation of a patient's medical history and care as "medical record" used both as the physical folder of patients and for the body of information which comprises the total of each patient's health history. Patient records are intensely personal document and there are many ethical and legal issues surrounding them such as the degree of authorized access and appropriate storage and disposal when needed. The key advantage of shifting to computer-based patient record is the opportunity to strengthen the link between the hospital records and management information system so that resources uses and quality of care can be analyzed using Hospital database which increase physician efficiency and reduce costs, as well as promote standardization of care.

II. TYPES OF RECORDS SYSTEM IN HOSPITAL

The health care record may be paper, electronic form or in both. Where a health care record exists in both paper and electronic form this is referred to as a hybrid record. Where PHOs maintain a hybrid record health care personnel must at all times have access to information that is included in each part. There is evidence that having electronic health records that are readily accessible can reduce treatment errors that result from gaps in knowledge regarding past medical history, allergies, or medications, especially when patients are being treated by multiple providers.

III. PAPER-BASED RECORD SYSTEM

Most of the patient and administrative information that flow throughout the health care system in Nigeria are still recorded on paper. According to an earlier report by cnnmoney.com, only about 8% of the nation 5,000 Hospital and 17% its 800,000 physician currently use the kind of common computerized record keeping system. Philadelphia (May 1, 2009) medicine part B spending on Imaging rose from \$6.80 billion in 2000 to \$ 14.11 billion in 2006 (web page, Wikipedia "Advantage of electronic medical records"). In totality, medical records may be on visualized media such as film (X-rays), paper (note) photographs, often of different sizes and shapes, physical storage of documents in problematic as not all document types fit in the same size folder or storage spaces. Currently global medical environments, patient are shopping for their styles, many patients travel from one country to the other for special treatment or to participate in clinical trial co-ordination this appointment via paper-based record is a time consuming procedure. Physical records usually requires significant amount of space to store to them, when physical records are no longer maintained, the large amount of storage space are no longer required paper film and other expensive physical media usage can be reduce by electronic record storage. Paper records are stored in different location, furthermore, collecting and transporting them to a single location for review by a health care provider is time consuming. Also when paper records are required in multiple location, copying, faxing and transporting cost are significant. In 2004, it was estimated that 1 in 7

hospitalizations occurred when medical records were not available. Additionally, 1 in 5 lab-tests were repeated because results were not available at the point of care. All these were as a result of paper-based medical records. Hand written paper medical records can be associated with poor legibility, which can contribute to medical errors. Paper-based patient record hinder flow according to ^[6], once information has been recorded within a set of bulky paper records, it may not be readily accessible later, effort to compile more complete paper records are likely to make this problem worse. Paper records can only be use in one place at a time. The data are only as secure as the paper itself and the entire records are individual page within a record can easily be misplace, damage lost or stolen. This research work focus on how to determine the best method can be improved through the automation of patient.

IV.COMPUTER RECORD SYSTEM

Laing ^[7] suggested that if all information in paper-based records were digitized and embedded within information system, that will provide rapid context sensitive access to the data and link to other information in the institution. The health care delivery could fully documented information using a variety of convectional and handheld computers equipment with keyboard, pen-based. Structured data entry or handwriting recognition illegible or consistent entries could be caught and corrected as they are entered in medical order, their results and all others internal transactions could be tracked automatically.

Though, ^[7], have made a significant contribution toward the development of a computerize medical records for medical institutions, however this project intends to look at how medical record of a hospital would be share only within the hospital by the staff and not across the institution. Health information could be stored as individual indexed items of information that could be abstracted into reports and compare among patients. Record could be accessed and easily duplicated when necessary. Information anywhere within the record could be access by minimal delay. Data could be located from any one delivery medium and digital device that access them could be designed with a wide variety of capability and capacity ^[8]. A page from a paper- base patient record could be stored electronically in many different ways. The information could be scanned and store as an image (much like a fax) that is the picture of a paper form but is not searchable or editable document imaging system are widely available that use computer and optical disk to store such image and make them available to clinicians on workstation with graphic terminals. These system reduces the amount of physical storage space require for patient record and they allow the record to be shared by clinicians and administrative officers without physically transporting the records. Handwritten medical record can be associated with poor legibility which can contribute to medical error, pre-printed firms, the standardization of abbreviation and standard for penmanship were encouraged to improve reliability of paper medical records. Electronic record help with the standardization of forms terminology and abbreviation and data input. Digitization of form facilitates the collection of data for epidemiology and clinical studies. Duplication of lab tests, diagnostic imaging, and other services can be prevented by good record-keeping of any type. However, because database records can be available at many locations at once, integration of services and awareness of duplication can be reduced. Database management system enable health organization to access old records instantly, thereby allowing the health work to send to another health organization in the event of an emergency.

V. THE NEED FOR EFFECTIVE MANAGEMENT OF HOSPITAL RECORDS

A Scientist^[9] developed a drugs database that improved the proper management and efficiency in order to eliminate drugs wastage through over stocking or expiring of drugs following a stock of inventory of Hyelada pharmaceutical. They intend to develop not only a database for drug but a computerized medical record that would encompass other related records of patients within the hospital and entire health sector.

VI. METHOD OF RECORD SYSTEM

Patient's record and procedure vary greatly according to patient data received and the extension of automation in processing data. These are some fundamental step which is common to patient record in all clinics and hospitals. According to^[10], some of these steps taken at each treatment of patient and assessment in clinical procedure include: [A] Patient Assessment: Is to get the information and the assessment of patient's symptom and signs.[B] Data entry: recording of data into a patient's folder (which may be a complex electronic data written records results etc) [C] Data extraction: extracting data for interpretation. [D] Information presentation and interpretation: governance of interpretation of individual patient data [E] utilization of existing knowledge and guidelines. Therefore, when these fields are put together they produce a medical record which is usually used for different purpose.

Health Information Management has much to offer in managing healthcare systems for effective health service delivery in hospitals.^[11].In addition to the embedded role of data management in clinical and diagnostics equipment are uniquely positioned to capture, store, process, and communicate timely information to decision makers for better coordination of healthcare at both the individual state and national levels. For example, effective data management and decision support capabilities can identify potential adverse events for an individual patient while also contributing to the entire nation's health by Providing insights into the causes of disease complications for effective health care service delivery.

Healthcare influences the quality of our lives and how we function within the society. If proper data management have serious consequences that can affect our ability to delivered effective health care services. Recent reports highlight the gravity of adverse events in hospitals and the dangers such events pose to individuals and the public^[12]. More generally, medical errors (a leading cause of adverse events and other ills) are expensive, increase patient hospital length of stay, and cost of medical services^[13]. At all levels of care, the failure to control infectious diseases can cause serious public health issues. Therefore, healthcare quality is diligently pursued and vigilantly executed, and management of patient's information can facilitate such pursuit by highlighting and monitoring irregularities at various stages service delivery in hospitals.

It is believed the use of proper data management will result in the prevention of cost and delay in services rendered because all of the providers involved in a patient's care could receive timely clinical data, accessible and readable by all, and that automated order entry systems and decision support systems would be able to prevent delays in health care service delivery and provide evidence-based clinical guidelines to aid health care providers in decision making at the point of care^[13]. There is evidence that management of patient records that are readily accessible can reduce treatment errors that result from gaps in knowledge regarding past medical history, allergies, or medications, especially when patients are being treated by multiple providers. Additionally, there is evidence that decision support tools can integrate electronic patient information directly into the

provision of care and can reduce errors of omission that result from gaps in provider knowledge or the failure to synthesize and apply that knowledge in clinical practice for effective health care services in hospitals^[14].

Furthermore, effective management of patient data will allow providers real time access to health records across health care settings, reduce duplication of services and help coordinate care during transitions of care. Through the standardization of information and processes in the delivery of care, there will be less opportunity for delay in service delivery and omissions that may lead to poor outcomes. A study that was conducted and found mixed findings of the benefits of management of patient data for effective health care service delivery adoption on improving care and/or reducing costs.^[15], performed a study among Florida hospitals and found that hospitals that adopted a proper management of patient data were significantly more likely to have better quality outcomes on certain inpatient quality indicator measures, as given by world health organization.

Best Patient Management Practices: patient-professional partnership, involving collaborative care and self-management education. Self-management education complements traditional patient education in supporting patients to live the best possible quality of life with their chronic condition. Whereas traditional patient education offers information and technical skills, self-management education teaches problem-solving skills. A central concept in self-management is self-efficacy—confidence to carry out a behavior necessary to reach a desired goal. Self-efficacy is enhanced when patients succeed in solving patient-identified problems. Evidence from controlled clinical trials suggests that^[16], programs teaching self-management skills are more effective than information-only patient education in improving clinical outcomes;^[15] in some circumstances, self-management education improves outcomes and can reduce costs for arthritis and probably for adult asthma patients; and in initial studies, a self-management education program bringing together patients with a variety of chronic conditions may improve outcomes and reduce costs. Self-management education for chronic illness may soon become an integral part of high-quality primary care.

VII. PURPOSE OF THE RESEARCH

Is to access all the practices used in keeping patient records and choose the best one that delivered effective health care services. In Nigeria, disclosure of patient information, lost to follow up similarly, Personnel spend more time looking for information than they would spend on health care provision.

Moreover, duplication of records resulting from multiple registration and misplacement of some of the records of patients make the situation for the patients worse and delays in proper care delivery.

VIII. OBJECTIVE OF THE RESEARCH

The research aims at assessing the health information systems, best practices for effective health care service delivery in hospitals.

IX. METHODOLOGY

The study was conducted through cross-sectional design because is the type of study that utilizes different groups of people who differ in the variable of interest. Data on was collected from Doctors, Nurses, medical laboratory staff, system users (medical record staff) and patients. Patients were interviewed as well as some medical personnel in the selected tertiary hospitals of Jigawa state. A total of one five hundred (500) medical

personnel, staff and patients were involved in the selected tertiary hospitals in Jigawa state of Nigeria in providing the required hospital information.

X. RESEARCH FINDINGS

1. Manual method was the method used at the selected tertiary hospitals in capturing patient information
2. Allowing only authorized staff access to patients' record, keeping patients' record under close supervision away from unauthorized staff, capturing patients data in timely manner and making patients data assessable when needed were the best practices for management in patient health information systems in the study area.
3. Patient's information supported effective health care service delivery at the selected tertiary hospitals.
4. Lack of fund, lack of qualified ICT personnel, unwillingness of the hospitals management to adopt digital record and poor management were the factors hindering the adoption of digital record at the selected tertiary hospitals.
5. Patient information is generated according to national standard in this hospital
6. The hospitals follow best practices for management of patient health information systems.
7. Management of patient information supported effective health care service delivery at the selected tertiary hospitals in Kano and Jigawa state.

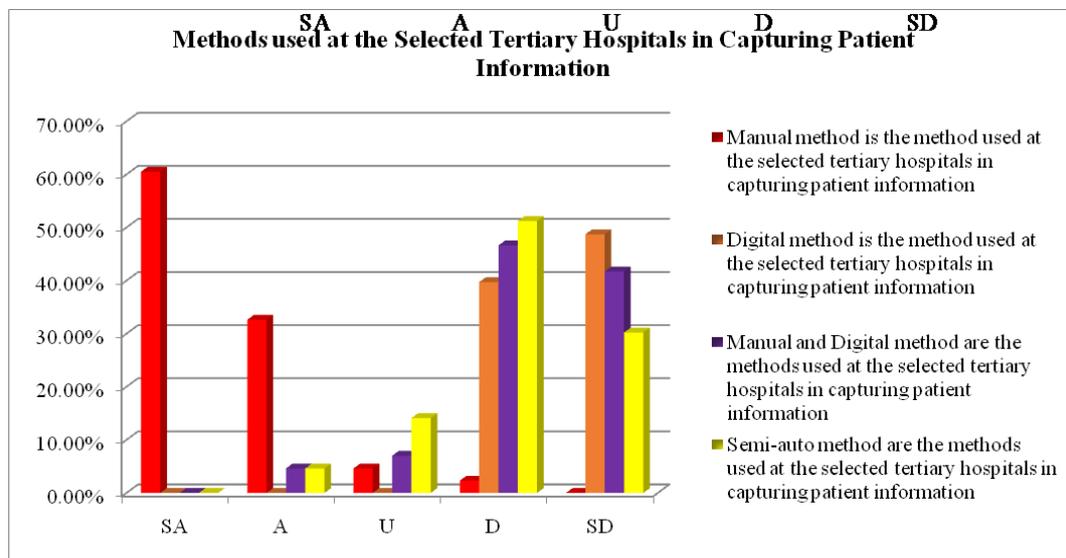
There was a significant relationship between health information management and effective health care delivery in the selected hospitals

S/N	Statement	SA	A	U	D	SD
1	Manual method is the method used at the selected tertiary hospitals in capturing patient information	602(60.5%)	324(32.6%)	46(4.6%)	23(2.3%)	0(0.0%)
2	Digital method is the method used at the selected tertiary hospitals in capturing patient information	0(0.0%)	0(0.0%)	0(0.0%)	395(39.7%)	485(48.7%)
3	Manual and Digital method are the methods used at the selected tertiary hospitals in capturing patient information	0(0.0%)	46(4.6%)	70(7.0%)	464(46.6%)	415(41.7%)
4	Semi-auto method are the methods used at the selected tertiary hospitals in capturing patient information	0(0.0%)	46(4.6%)	14(1.4%)	509(51.2%)	300(30.2%)

8. Source: SPSS computation sheet version 21.0

The table shows the methods used at the selected tertiary hospitals in capturing patient information. Item one above show that, (60.5%) and (32.6%) of the respondents strongly agreed and agreed respectively with the question, 4.6% were undecided, while 2.3% and 0.0% disagreed and strongly disagreed respectively with the question. One can conclude that Manual method is the method used at the selected tertiary hospitals in capturing patient information. From item two above, 0.0%

strongly agreed, 0.0% agreed, while 0.0% was undecided. Furthermore, (39.7%) disagreed and (48.7%) strongly disagreed with the research question respectively.



Best Practices for Management in Patient Health Information Systems

S/N	Statement	SA	A	U	D	SD
1.	Allowing only authorized staff access to patients file is one of the best practices adopted by the selected tertiary hospitals in patient health information systems	463(46.5%)	278(27.9%)	185(18.6%)	69(6.9%)	0(0.0%)
2.	Keeping patients record under close supervision away from unauthorized staff is one of the best practices adopted by the selected tertiary hospitals in patient health information systems	508(51.1%)	441(44.3%)	46(4.6)	0(0.0%)	0(0.0%)
3.	Implementing policies that guide staff on patient data management is one of the best	439(44.1%)	487(48.9%)	69(6.9%)	0(0.0%)	0(0.0%)

	practices adopted by the selected tertiary hospitals in patient health information systems					
4.	Capturing patients data in timely manner is one of the best practices adopted by the selected tertiary hospitals in patient health information systems	64(65.1%)	277(27.8%)	47(4.7%)	23(2.3%)	0(0.0%)
5.	Making patients data assessable when needed is one of the best practices adopted by the selected tertiary hospitals in patient health information systems	578(58.1%)	187(18.8%)	184(18.5%)	46(4.6%)	0(0.0%)

Source: SPSS computation sheet version 21.0

Table 4.3 shows the best practices for management in patient health information systems in the study area. Item one above shows that, (46.5%) and (27.9%) of the respondents strongly agreed and agreed respectively with the question, 18.6% were undecided, while 6.9% and 0.0% disagreed and with the question. strongly disagreed respectively .

One can conclude that allowing only authorized staff access to patients file is one of the best practices adopted by the selected tertiary hospitals in patient health information systems. From item two above, 51.1% strongly agreed, 44.3% agreed, while 4.6% was undecided. Furthermore, 0.0% disagreed and 0.0% strongly disagreed with the research question respectively. One can infer that keeping patients' record under close supervision away from unauthorized staff is one of the best practices adopted by the selected tertiary hospitals in patient health information systems. Item three above shows that, (44.1%) and (48.9%) of the respondents strongly agreed and agreed respectively with the question, 6.9% were undecided, while 0.0% and 0.0% disagreed and strongly disagreed respectively with the question. One can conclude that policies that guide staff on patient data management is one of the best practices adopted by the selected tertiary hospitals in patient health information systems. From item four above, 65.1% strongly agreed, 27.8% agreed, while 4.7% was undecided. Furthermore, 2.3% disagreed and 0.0% strongly disagreed with the research question.

XI. DISCUSSION OF FINDING

The finding revealed that manual method is the method used at the selected tertiary hospitals in capturing patient information. This finding is in agreement with J Senanu O et al^[1] study from Nigeria that showed that there was no awareness of the use of computers for record management in hospitals and this affected EMR technology adoption. Moreover, the respondents perceived that management commitment to EMR implementation; follow up by EMR vendors and training for health facilities staff on EMR technology usage was crucial for their function in hospitals. Coefficient results showed that among the four independent predictors studied, capacity building had significant positive effect (0.342, t=5.446 and p=0.001) on the adoption and utilization of EMR technology in public health facilities.

Similarly, it was revealed that patient's information supported effective health care service delivery at the selected tertiary hospitals. Aligning with this finding of Miller et al.^[3] examined data on enactment of state privacy laws regulating health information disclosure across the US and the adoption rates of EMR. They found that hospitals in states with privacy laws were 33% less likely to adopt an EMR system compatible with other neighboring hospitals.

Moreover, lack of fund/ high cost, lack of qualified ICT personnel, unwillingness of the hospitals management to adopt digital record and poor management were the factors hindering the adoption of digital record at the selected tertiary hospitals. This finding is supported by Jha, A. K., Bates et al. ^[17] who found out that adoption rate of EMR in hospitals has not been very high due to costs associated with its installation. However, research in India that showed ^[18], that the uptake and adoption of EMR technology was high. The findings also coincides with Boonstra et al. ^[19] research study that showed that startup costs for EMR system in purchase of hardware and software, selecting and contracting costs and installation expenses were major hindrance towards adoption.

In addition to that, patient information is generated according to national standard in this hospital. Agreement with this finding is a study by Keenan et al. (2006) found improvement in daily work and enhanced patient care. Conversely, management of patient information supported effective health care service delivery at selected tertiary hospitals in Jigawa state of Nigeria. Aligning with this finding is a study by [14] on hospital information systems and indicator data collection in Holland which was published in 2013, is of significant relevance.

XII .CONCLUSION

This study embarked on the different ways of keeping patient data which involve in every system of hospital records ranging from sorting, handling, searching, amending and keeping of patient medical records accordingly. This portrays the importance and indispensable nature of management of patient data and its application in the hospital setting. Accessing the best practices in patient data management aimed at reducing the time wasted by patients in the course of waiting for their files to be retrieved and rendering of other services in hospital .This also reduced the spaced occupied by the files and provide adequate security for patient s medical record. Cost of medical services. Based on the finding of this study, the design of hospital patient database record will be a solution to the problem being experienced by the current manual method of keeping patient medical records.

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