

CASE REPORT

KNOWLEDGE, SKILLS, AND UTILIZATION OF ELECTRONIC HEALTH RECORD IN IMPROVING THE QUALITY OF HEALTH CARE DELIVERY SYSTEM: A CASE STUDY OF USMANU DANFODIO UNIVERSITY TEACHING HOSPITAL (UDUTHS) SOKOTO, SOKOTO STATE, NIGERIA

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ABSTRACT:

Electronic health record is becoming the global standard for clinical practice. This provides the needed data for healthcare planning. It can also improve quality of care, accuracy of patient information and interdisciplinary communication among other benefits. The study therefore, aimed at evaluating electronic health record in improving the quality of healthcare delivery system among health staffin Usman Danfodiyo University Teaching Hospital Sokoto (UDUTHS).The target population was188 health records staffin UDUTHS. A descriptive survey was adopted for the study. Data was collected using questionnaire as the instrument for the study, which was validated and found reliable. Sample size of 150 was obtained using stratified and simple random sampling.150 questionnaires were distributed and only 106 were retrieved. This formed are sponse of 90%. Data generated from the study were analyzed and presented using descriptive statistic such as frequency table, percentage and the mean of age of respondent and inferential statistic were chisquare was used to test the hypothesis. Respondents profession are Health information manager shaving the highest number of frequency of (39) 36.8%, followed by Nursing (25)23.6%,laboratory science with(15)14.2%,physicians and others with (10)9.4% each, followed by ward servant (3)2.8%,followed by radiology and CHO with (2)1.9% each. Educational qualification of there spondents were14 (13.2%) had HND, and 20 (18.9%) had B.sc, followed by 64 (60.4%) had ND and8 (7.6%) had SSCE. On the question" ARE YOU A COMPUTERLITERATE?" the distribution of the respondents on computer literacy were 96 (90.6%), had said Yes andthose that said Nowere10 (9.4%).On the level of their computer knowledge the participants were70 (66.0) said average, followed by those that said lowest who were 22 (20.8%), and those that said highest are14 (13.2%). On computerization of their organization were those that said yes were 50 (47.2%), followed by those that said no have only 56 respondent (52.8%) On how long have the reorganization been computerized the responses are those that said2 years have 26 (24.5%),followed by those that said 5years 77 (72.6%) and those that said others had 3 (2.8%). The distribution of electronic health record available in their organization were those that said hospital care are 91(85.8%),and those that said others are15(14.2%).On the distribution of there spondent on whether information processing is effective, efficient and uptodate for decision making with EHRs were those that said yes are 99 (93.4%) and those that said no were 7 (6.6%).On the question"IS MANUAL SYSTEM OF HEALTH RECORD KEEPING EFFECTIVE THAN ELECTRONIC HEALTHRE CORDSYSTEMS?"the distribution of there spondent on the effective of manual and electronic health record system were those that said yes had 47(44.3%) and those that yes said no were 59 (55.7%).Conclusively, this work revealed that, the majority of the health workers that handle health record in the hospital have good under standing of the need for recording patients information electronically.

Keywords: Electronic Health Record, data, quality, healthcare

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1.1 INTRODUCTION

Health information record is the lifeblood of the health care delivery system. The medical record in manual or automated form, houses the medical information that describes all aspects of patient care. Physicians, nurses, and other health care providers require medical information for the treatment of patients. The health record serves as a communication link among caregivers. Documentation in the health record also serves to protect the legal interest of the patients, health care provider, and health care facility. Health records are important to the financial well-being of the facility as they substantiate reimbursement claims. Other uses of medical record include provision of data for medical research, education of health care providers, public health studies, and quality review (Adeyemi, 2012; Aljumah et al., 2013).

A major issue affecting Africa is inability to quantify and analyze the situation it have with credibility genuine data to use information in planning, and managing service delivery. Using a simple healthcare information electronic system that is managed from the lowest level of health system, for health sector reforms and management helps to make data more user friendly for local use (Adams, 2015).

A good health information system brings together a combo of partners to ensure accessibility, reliability, authoritativeness, usability, understandability, comparativeness, predictability, and simplicity. Electronic Health Record (EHR) is a meaningful use of information technology to store health records. It involves using electronic health technology to improve quality, safety, efficiency, reduce health disparities, engage patients and families; improve care and coordination, and population and public health; and maintain privacy and security of patient information (Adams, 2015; Edeki et al., 2021).

Electronic health record(EHR) is the systematized collection of patient and population electronically stored health information in a digital format. These record can be sheared across different health care setting. Records are sheared through network-connected, enterprise-wide information system or other information networks and exchanges. 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. A decade ago, electronic health records (EHRs) were tagged as key to

increasing of quality care. Today, providers are using data from patient records to improve quality outcomes through their care management programs. Combining multiple types of clinical data from the systems health records helped clinicians identify and stratify chronically ill patients. EHR can improve quality care by using the data and analytics to prevent hospitalizations among high-risk patient (Adams, 2015; Edeki et al., 2021).

EHR systems are designed to store data accurately and to capture the state of patient across time. It eliminates the need to track down a patients 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 mean the file is more likely up to date, and decrease risk of lost paper work. Due to the digital information being searchable and in a single file, EMRs (electronic medical records) are more effective when extracting medical data for the examination of possible trends and long term changes in a patient, population-based studies of medical records may also be facilitated by the widespread adoption of EHRs and EMRs (Ajoku and Ojediran, 2008; Alegbeleye, 2009).

Information technology has offered great advantages to improve efficiency and effective in work of many industrial fields, e.g commercial business, airline, manufactures, and so on. Despite well established evidence seen in other industries, the adoption of information technology in health care organizations has been growing slowly. Such delayed implimentation implies some certain obstacles are dismaying willingness of the health care provider to take part in this movement. However, despite the advantages of EHR, many health workers are reluctant to embrace the technology even in developed world, let alone in Nigeria, which is attributed to a greater extent to lack of training or lack of basic knowledge of computer skills (Adams, 2015; Yaya et al., 2015).

The general aim of this research work is to enhance the effectiveness of the healthcare delivery to the patients via qualities health record keeping and creation of a good working relationship. Objectives can be achieved through the fool wings:

1. To examined the knowledge and attribute of health workers towards health record keeping at UDUTH
2. To asses the methods and problem of health record keeping at UDUTH

3. To find out the possible solution on the effect of health workers attitude toward health record keeping at UDUTH
4. To evaluate the impact of health workers attitude on health care delivery at UDUTH
5. To determine the factors that influence their knowledge and attitude towards health record at UDUTH

2. MATERIAL AND METHODS

STUDY AREA

Usmanu Danfodio University Teaching Hospital Sokoto (UDUTHS), its history can be dated back to 1972/1973 financial year when the Federal Military Government authorized the release of funds (one million) each to 12 states of the federation for the development of specialist hospitals with teaching hospitals (teaching facilities). It is among the group of the teaching hospitals that were later established along with Calabar, Port Harcourt, Ilorin, Maiduguri and Jos. Seventeen years after precisely in the year 1989, the project was completed and commissioned by the then head of states Gen. Ibrahim Badamasi Babangida. The hospital, which started operating in the present Sokoto specialist hospital has witnessed transformation and growth since then. It is gratifying to note that its growth has translated into the provision of tertiary healthcare services to the entire North Western region and our neighbouring Niger Republic.

The hospital is located at Gawon Nama area of Wamakko local government area of Sokoto state, the hospital has a total of approximately 900 beds capacity and about 745 bed complements. It is linked to the Usmanu Danfodio University Sokoto (U.D.U.S), college of health sciences (CHS) for the training programs it also have about five schools inside of it which are: School of Health Information Management. SHIM School of Nursing. SON Community Health Officers. CHO, Post Basic Midwifery and Post Basic Pediatrics.

It also has a staff of over 2000 among there are consultants and also include the Chief Medical Director (CMD) Dr. Anas Sabir. The staff are distributed to various department/units of there specialization such as Medicine, Surgery, Records, Nursing, pharmacies, Med-lab scientist etc.

STUDY DESIGN

This is a cross sectional descriptive study involving health workers in UDUTHS, conducted between November 2019 to October 2020.

SAMPLE SIZE AND SAMPLING TECHNIQUES

SAMPLE TECHNIQUES

A stratified sampling and simple random sampling was used to select 150 health workers with a proportionate sample from different categories of health workers as follows: Medical/surgical doctors 15(10%), nursing 30 (20%), health records 40 (26.6%), investigation sections, laboratory 15(10%), x-ray 5(3%), community health workers 5(3%), words servants 10(6.6%), others 30(20%).

SAMPLE SIZE

The sample size of one hundred and fifty (150) health workers was selected from population of staff. One hundred and fifty questionnaires were distributed to eight categories of clinical health workers at UDUTH that is Medical Doctors, Nursing, Health Information Management Staff, Community Health Workers, Wards Servants, and others (physiotherapist and dieticians etc).

DATA COLLECTION INSTRUMENT

The instrument use for data collection during the research was questionnaire design by the researcher. The questionnaire has two section, section A and section B. Section A ask about the demographic data with questions, while section B ask about other variable.

VALIDITY AND RELIABILITY OF INSTRUMENT

The questionnaire was design by the researcher to collect appropriate data to be analyzed with percentage and obtain results.

METHOD OF DATA COLLECTION

Data were collected through questionnaires from various clinical and non-clinical units and other hospital units for processing.

DATA ANALYSIS

The data collected was analysed using percentage and Chi Square.

3. RESULTS AND DISCUSSION

This section deals with the analysis of the data collection, research findings implications for efficiency and productivity and testing of the hypothesis, the questionnaire consist of 13 questions on the knowledge and attitude of health workers towards health records. One hundred and fifty (150) questionnaires were distributed and one hundred and six (106) were recovered, those recovered will be analyzed as follows.

Table 1:- Age distribution of the respondent.

AGE GROUP OF THE RESPONDENT	FREQUENCY	PERCENTAGE
20 – 29	49	46.27%
30 – 39	50	47.17%
40 – 49	7	6.60%
50 – 59	0	0%
60 + above	0	0%
TOTAL	106	100%

Source:- field work

The table 1 indicates that the age distribution of the respondent in which the age group (30-39) has the highest number of percentage with (47.17%) followed by age (20-29) with (46.27%) (40 – 49) has (6.60%) (50 – 59) and 60 above has no respondent.

TABLE 2:- SEX DISTRIBUTION OF THE RESPONDENTS

GENDER OF THE RESPONDENT	FREQUENCY	PERCENTAGE
Male	58	54.7%
Female	48	45.3%
Total	106	100%

Source:- field work

The table 2 indicated the percentage of the respondents were 58(54.7%)males, followed by 48(45.3%)were females.

TABLE 3:- MARITAL STATUS OF THE RESPONDENTS

Marital status of the respondents	Frequency	Percentage
Married	50	47.2%
Single	42	39.6%
Divorce	11	10.4%
Widow	3	2.8%
Total	106	100%

Source:fieldwork

The table 3 show that 50 (47.2%) were married, followed by 42 (39.6%) were singles, followed by 11 (10.4%) were divorce and 3 (2.8%)were widows.

TABLE 4:- DISTRIBUTION OF RESPONDENT PROFESSION

Responds	Frequency	Percentage
Physicians	10	9.4%
Nursing	25	23.6%
HIM	39	36.8%
Lab sci	15	14.2%
Radiology	2	1.9%
Ward servant	3	2.8%
CHO	2	1.9%
Others	10	9.4%
Total	106	100%

Source: field work

The table 4 show the designation of the respondents and there corresponding number of their percentage with the health information managers having the highest number of frequency of (39) 36.8%, followed by Nursing (25) 23.6%, laboratory science with (15) 14.2%, physicians and others with(10) 9.4% each, followed by ward servant (3) 2.8%, followed by radiology and CHO with (2) 1.9% each.

TABLE 5:- DISTRIBUTION OF THE RESPONDENTS EDUCATION QUALIFICATION

Responds	Frequency	Percentage
SSCE	8	7.5%
ND	64	60.4%
HND	14	13.2%
Degree	20	18.9%
Total	106	100%

Source: field work

The table 5 shows the percentage of educational qualification of the respondents were by 14 (13.2%) had HND, and 20 (18.9%) had B.sc, followed by 64 (60.4%) had ND and 8 (7.6%) had SSCE

TABLE 6:- ARE YOU A COMPUTER LITERATE?

Responds	Frequency	Percentage
Yes	96	90.6%
No	10	9.4%
Total	106	100%

Source: field work

The table 6 shows the distribution of the respondents on computer literacy were 96(90.6%), had said Yes and those that said No were 10 (9.4%)

TABLE 7:- HOW WILL YOU RATE YOUR COMPUTER SKILLS?

Respond	Frequency	Percentage
Lowest	22	20.8%
Average	70	66.0%
Highest	14	13.2%
Total	106	100%

Source:fieldwork2020

The table 7 above show the distribution of respondents on the level of their computer knowledge were by 70 (66.0) said average, followed by those that said lowest who were 22 (20.8%), and those that said highest are 14 (13.2%)

TABLE 8:- IS YOUR ORGANIZATION COMPUTERIZED?

Responds	Frequency	Percentage
Yes	50	47.6%
No	56	52.8%
Total	106	100%

Source: field work

The table 8 above show the distribution of the respondents on computerization of their organization were those that said yes were 50 (47.2%), followed by those that said no have only 56 respondent (52.8%)

TABLE 9:- HOW LONG HAVE YOUR ORGANIZATION BEEN COMPUTERIZED?

Responds	Frequency	Percentage
2years	26	24.5%
5years	77	72.6%
Others	3	2.8%
Totals	106	100%

Source:-fieldwork

The table 9 above show the distribution of the respondent on how long have there organization been computerized were those that said 2years have 26 (24.5%), followed by those that said 5 years 77(72.6%) and those that said others had 3 (2.8%)

TABLE 10:-WHAT FORM OF ELECTRONICHEALTH RECORD IS AVAILABLE IN YOUR ORGANIZATION?

Responds	Frequency	Percentage
Hospital care	91	85.8%
Others	15	14.2%
Total	106	100%

Source: field work

The table 10 above show the distribution of the respondent in the form of electronic health record available in their organization were by those that said hospital care are91 (85.8%), and those that said others are 15(14.2%)

TABLE 11: IS INFORMATION PROCESSING WITH ELECTRONIC HEALTH RECORD SYSTEM EFFECTIVE, EFFICIENT AND UP TO DATE FOR DECISION MAKING?

Responds	Frequency	Percentage
Yes	99	93.4%
No	7	6.6%
Total	106	100%

Source:- field work

The table 11 above show the distribution of the respondent on whether information processing is effective, efficient and up to date for decision making with EHRs were those that said yes are 99 (93.4%) and those that said no were 7(6.6%)

TABLE 12:- IS MANUAL SYSTEM OF HEALTHRECORD KEEPING EFFECTIVE THAN ELECTRONIC HEALTH RECORD SYSTEMS?

Responds	Frequency	Percentage
Yes	47	44.3%
No	59	55.7%
Total	106	100%

Source; field work

The table 12 above show the distribution of the respondent on the effective of manual and electronic health record system were those that said yes had 47(44.3%) and those that said no were 59 (55.7%)

TABLE 13:- SO DO YOU HAVE AN IDEA ABOUT ELECTRONIC HEALTH RECORD SYSTEM?

Responds	Frequency	Percentage
Yes	86	81.1%
No	20	18.9%
Total	106	100%

Source: field work

The table 13 above shows the distribution of responses on the idea about the electronic health record keeping were those that said yes occupied 86 (81.1%), followed by those that said no were 20 (18.9%)

TESTING OF HYPOTHESIS

Hypothesis is the researcher expectation or assumption about the relationship existing between two or more variable, it is divided into

- A. H0:- Null hypothesis
- B. H1:- Alternative hypothesis

Testing the hypothesis using chi-square the formula is

$$X^2 = \sum_i^n \frac{(O_{ij} - E_{ij})^2}{E_{ij}}$$

$$X^2 = (\text{Observe value} - \text{Expected value})$$

Expected value

E= Which represent the expected value, the researcher divide the number of questionnaires retrieved by 2. Thus

$$E = \text{expected} = 106/2 = 53$$

CHI-SQUARE

The chi-square will be tested using table 11 and 12

Table 11 is the information processing with electronic health record system effective, efficient and upto date for decision making?

Table 12:- is manual systems of health record keeping effective, efficient and up to date than electronic health record system.

HYPOTHESIS FOR TABLE 11

Ho= Information processing with electronic health record system is not effective, efficient and up to date

Hi= Information processing with electronic health record system is effective, efficient and up to date for decision making.

HYPOTHESIS FOR TABLE 12.

Ho= Manual system of health record keeping is not effective than electronic health record system.

Hi= Manual system of health record keeping is effective than electronic health record system.

Table 11

O	E	(O-E)	(O - E) ²	$\frac{(O - E)^2}{e}$
99	53	46	2116	39.9
7	53	-46	2116	39.9
TOTAL				79.8

Degree of freedom

$$(N-1)$$

$$2-1=1$$

$$\text{Calculated} = 79.8$$

$$\text{Tabulated} = 3.84$$

Critical rule:- reject Ho if f calculated is greater than f tabulated or otherwise accept.

Therefore the researcher reject Ho in table 11 since calculated value is greater than tabulated which says “information processing with electronic health record system is not effective, efficient and up to date for decision making.”

Table 12

O	E	(O-E)	(O - E) ²	$\frac{(O - E)^2}{e}$
59	53	6	36	0.68
47	53	-6	36	0.68
TOTAL				1.36

Degree of freedom

(N - 1)

2-1=1

Calculated =1.36

Tabulated =3.84

Critical rule:- reject Ho if f calculated is greater than f tabulated or otherwise accept. In table 12 the reseacher accept Ho since the tabulated is greater than the calculated value which says “manual system of health record keeping is not effective than electronic health record system

4. CONCLUSION

It is concluded based on the data collected and analyzed that the majority of the health workers that handle health record in the hospital have good understanding of the need for recording patients information electronically, they also regard health records as profession adhering to its consent principles of releasing of patient information electronically.

5. RECOMMENDATIONS

1. The hospital authority should necessitate that every patients most register electronically before seeing doctors.
2. Computation of all information should be given more emphasis for accuracy and reliability
3. All health personnels should be train on how to operate computer and how to compute software effectively for easy retrieval to further patient treatment care.
4. The hospital should provide adeqaute facilities(such as constant power supply, more manpower) etc for efficient health record keeping.
5. Hospital authority should ensure maintenance of good working relationship among health workers.
6. There should be programs within the hospital on health record practice that will involved all health workers so also create awareness on electronic health record.

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