International Journal of Health and Medical Information
Volume 7, Number 3, December 2024
ISSN: 2350-2169(Print) 2795-3068(Online)
Published By
International Centre for Integrated Development Research, Nigeria
In collaboration with
Copperstone University, Luanshya, Zambia

Electronic Health Records and Quality of Healthcare Services in Private Hospitals in Lagos State, Nigeria

Adeniran I.
Ayoola O.
Oketola R.
Department of Health Information Management,
Faculty of Information and Communication Sciences,
Lead City University, Ibadan, Nigeria.
E-mail: ayobami.adeniran@lcu.edu.ng, omolaraluv11@gmail.com, roketola2@gmail.com

ABSTRACT

A survey was conducted in Lagos State. The aim was to examine Electronic Health Records and Quality of Healthcare Services in private hospitals. The preliminary study indicated two private hospitals with functional Electronic Health Records and Quality Healthcare Services systems. The population consisted of 190 health information staff and 292 outpatients. Total enumeration was used in selecting the sample. The instruments used in the work are two structured questionnaires adapted from relevant theories for the two groups involved in the study. The data were analysed with the aid of the mean and standard variation. The hypothesis was analysed using simple regression. The results indicated that patients perceive the quality of healthcare services positively, and health professionals report EHR usage. The analysis revealed a significant correlation between EHR and enhanced quality of healthcare services. It concluded that effective use of EHR significantly influences healthcare quality. It therefore recommended that government hospitals adopt EHRs, organize educational forums for healthcare staff on EHR benefits, and promote knowledge exchange through workshops.

Keywords: *Electronic Health Records (EHRs), Quality Healthcare Services, Healthcare Professionals, Health Information Management, Private Hospitals.*

1.0 INTRODUCTION

The application of Information and Communication Technology (ICT) into health management records in healthcare organisations has led to Electronic Health Records. It collects digital versions of patients' information and communication among health professionals. Hospitals are healthcare institutions providing treatment to patients with adequate medical staff and equipment and delivering healthcare services 24 hours per day,

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7 days per week. They offer acute, convalescent and terminal care using diagnostic and curative services. The institutions focused on the management, prevention, and treatment of illness. Hospitals utilized a staff of medical and allied health professionals to provide medical, surgical, and psychiatric treatment along with emergency care and evaluation. The hospital is classified based on ownership (Government, Private, NGO or Semi-government) or the objectives of their establishments (Teaching/Tertiary; Specialist/Secondary, or PHCs). With a population of over 170 million, Nigeria is a populous Nation but weak in healthcare standards (NPC, 2013). Despite extensive investments, the country still has insufficient healthcare infrastructures, poor quality healthcare services, and unevenly distributed human resource capacity (Onwujekwe et al. (2019). These are reflected in its healthcare quality ranking of 187 out of 200 countries and listed among countries with some of the worst health indicators in the world (Okonofua et al. 2019).

Quality improvement at primary healthcare facilities is critical; however, efforts to address the quality of care as a contributory factor to the country's poor health outcomes receive less attention. According to Fromberg (1988), quality of health is the degree to which patient care services increase the probability of desired outcomes and reduce the possibility of undesired outcomes given the current state of knowledge. It is the degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge.

According to the definition of quality healthcare by the Institute of Medicine, quality healthcare involves optimum satisfaction of the consumers. Also, getting value for their resources can only be attained when measures to hasten the work rate of health practitioners are introduced; connectivity within the departments is encouraged and a paper-based record is replaced by an electronic health record (Nundy, Cooper & Mate, 2022). Paper-based is a well-known method that involves hard copies for storing health records. Electronic health records are a technology-developed method using electronic resources to store health records.

Paper-based records are information about a patient's health treatment produced, stored and accessed in paper format within a healthcare institution. Most Nigerian hospitals still store patients' information manually using traditional paper records. There are so many downsides to the use of paper records. The speedy need for Electronic Health Records for inefficacy and let-downs suffered from paper records. Ewing (2015) suggested that in today's healthcare systems, to receive the wrong medication or treatment in emergency medicine, especially when physicians do not have access to patients' documentation. The flexibility and environmental effect on paper records led to a loss of records, and it affected the lives of so many patients (Ewing, 2015). According to Córdova González (2022), the application of information and communication technology (ICT) in the management of health information in healthcare organizations has been labelled diverse names such as Electronic Medical Records (EMRs), Electronic Health Record (EHRs), Electronic Health

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Information Management Systems (EHIMs), Computer-based Patient Record (CBPR) and also Health Information Systems (HIS).

AlSadrah (2020) argues that health records have many potential benefits over paper records in the retrieval and storage of patients' data, instant availability of information to authorized practitioners, enhanced access to medical information and greater efficiency and the advantage of making information about patient care available, securely, to multiple authorized users. The amount and quality of information available to healthcare professionals in patient care impact the outcome and continuity of patient care. Furthermore, Yehualashet, Asemahagn & Tilahun (2015) opine that the medical information needed for clinical decision-making continues to increase, especially in developing countries. However, the organization and accessibility of medical information have remained poor, usually resulting in inappropriate decisions and medical errors (Yehualashet, Asemahagn & Tilahun (2015). Electronic health information management systems are therefore crucial for increasing accessibility and management of medical information.

The state of quality healthcare services in Nigeria is disheartening due to different factors like failure of the paper record to deliver desired tasks. The use of electronic health records is needed to fill gaps caused by paper-based records and improve quality healthcare services in Nigeria. A health record is a life saved, and electronic health records usage can deliver the safety of these records and expand quality healthcare services. This study wants to research the degree of use of electronic health records and its effect on quality healthcare services in private hospitals in Lagos State, Nigeria.

2.0 METHOD

2.1 Research Plan

A survey research design was adopted that centred on health information management professionals and patients at the outpatient clinics of the hospitals selected in Lagos State, Nigeria.

2.2 Study Population

S/N	Hospitals	No of HIMs and other health professionals	Average number of general outpatients per month
1.	St Nicholas Hospital	105	152
2.	Kupa Medical Centre Limited	85	165
	Total	**190**	**317**

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2.3 Sampling Technique

Total enumeration was employed. The entire population of 190 health information managers and health professionals and 317 outpatients in the selected hospitals were considered the sample.

2.4 Sampling Site

Two private hospitals in Lagos State, Nigeria, the St. Nicholas Hospital and the Kupa Medical Centre Limited, were understudied. The two hospitals have Electronic Health Records (EHRs) and were willing to participate in the research. The health information management personnel and health professionals participated in the study.

2.5 Data Collection Method and Instrument

To establish formal contact with the hospitals, and before sending the questionnaire, introduction letters were sent to the management at each hospital explaining the purpose of the study and requesting permission and participation. The questionnaire was validated by two experts in the Department of Health Information Management, Faculty of Information and Communication Sciences, Lead City University, Ibadan. Based on the location of both hospitals, the researcher employed services of health information manager personnel within the hospitals who assisted in administering copies of the questionnaire to the respondents and retracted all the copies. Out of 507 copies of the questionnaire administered, 482 copies were retrieved. It gives a 96% return rate of the administered questionnaire for this study.

2.6 Tool for Gathering Data

Two separate questionnaires, titled: Use of Electronic Health Records and Quality Healthcare Services Questionnaire were used. Each was divided into sections. The questionnaires were segmented into Sections A and B. Section A collected information on Socio-demographic characteristics. It collected information about the respondents' age, gender, marital status, education level, resident area, and religion. Section B differs for patients and healthcare professionals. Section B of the patients' questionnaire focused on the perception of the healthcare quality. However, that of the professional healthcare workers focuses on examining the degree of use of electronic health records and the challenges in delivering quality healthcare services.

2.7 Ethical Consideration

Ethical clearance was obtained from the Research Ethical Review Committee of NIMR and the Lead City University Ethical Review Committee. Informed consent was obtained from respondents. Confidentiality was ensured.

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2.8 Analysis of Data

The data collected were analyzed using descriptive and inferential statistics. The demographic variables were analyzed using frequency distribution tables. The research questions were analyzed using descriptive statistics: mean and standard deviation. The research hypothesis was tested using simple regression at a 0.05 significant level. These were calculated using the analytical software known as the International Business Machines Statistical Package for Social Sciences (IBMSPSS).

3.0 RESULTS AND DISCUSSION

Table 4.1: Demographic Characteristics

S/N	Items		Frequency N=190	Percent (%)
1	**Gender**	Male	83	43.7
		Female	107	56.3
		Total	190	100.0
2	**Age**	Below 30 years	55	29
		31-40 years	69	36.3
		41-50 years	44	23.1
		51-60 years	19	10
		Above 60years	3	1.6
		Total	190	100.0
3	**Highest Educational Qualification**	OND/HND	18	9.4
		Bachelors	51	26.8
		Masters	21	11.1
		MBBS	22	11.6
		RN	76	40
		PHD	2	1.1
		Total	190	100.0
4	**Years of experience in the medical field**	Less than 1 year	27	14.2
		1-5 years	83	43.7
		5-10 years	59	31
		More than 10 years	21	11.1
		Total	190	100.0
5	**Religion**	Christianity	116	61.1
		Islam	74	38.9
		Total	190	100.0

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Table 4.2: Demographic Data of Patients

S/N	Items		Frequency N=292	Percent (%)
1	**Gender**	Male	93	31.8
		Female	199	68.2
		Total	292	100.0
2	**Age**	Less than 30 years	15	5.1
		31-40 years	69	23.6
		41-50 years	162	55.5
		51-60 years	37	12.7
		61-70 years	9	3.1
		Total	292	100.0
3	**Marital status**	Single	91	31.2
		Married	201	68.8
		Total	292	100.0
4	**Religion**	Christianity	242	82.9
		Islam	50	17.1
		Total	292	100.0

Table 4.3: Patients' Perceptions of quality healthcare services

S/N	Tangibles	Strongly Agree	Agree	Disagree	Strongly Disagree	$\bar{x}$	SD
	Tangibles	**F(%)**	**F(%)**	**F(%)**	**F(%)**		
1.	There are facilities put in place for proper hea of patients	141(48.3)	137(47)	14(4.7)	-	3.44	.583
2.	The facilities are visually attractive.	123(42.1)	146(50)	23(7.9)	-	3.34	.620
3.	The hospital staffs are usually well dressed and neat.	95(32.5)	162(55.5)	31(10.8)	4(1.3)	3.19	.668
4.	The facilities in the hospital are used particul healthcare delivery	57(19.6)	126(43.1)	97(33.2)	12(4.1)	2.78	.804
	Average mean & SD					**3.18**	**.669**
	Responsiveness						
5.	I am usually informed about the exact time-fra healthcare delivery.	21(7.2)	96(33)	134(45.8)	41(14)	2.33	.805
6	I receive healthcare services required within th frame promised	66(22.6)	104(35.7)	112(38.3)	10(3.4)	2.78	.834
7.	The hospital staff usually get services right th time	175(60)	85(29.1)	22(7.5)	10(3.4)	3.45	.780
8.	The hospital staff are quick to rectify errors tha during healthcare Delivery	112(38.4)	120(41.1)	55(18.8)	5(1.7)	3.16	.781
9.	Staff working time and intensity are appropriate	30(10.2)	120(41.1)	91(31.2)	51(17.5)	2.42	.940
	Average mean & SD					**2.83**	**.828**
	Reliability						
10.	The hospital healthcare services are generally re	111(38)	142(48.6)	29(10)	10(3.4)	3.28	.866
11.	The hospital staff show sincere interest in atten me	67(22.9)	142(48.6)	52(17.8)	31(10.6)	2.84	.899
12.	The hospital staff provide me with satisfactory s at all times	44(15.1)	150(51.4)	84(28.8)	14(4.8)	2.77	.760
13.	My health records are always intact & accessi request	83(28.5)	144(49.4)	57(19.6)	7(2.5)	3.04	.762

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	Average mean & SD					**2.98**	**.821**
	Assurance						
14.	My health & health records are secure with the h staff	71(24.3)	180(61.6)	26(9)	15(5.1)	3.05	.733
15.	Hospital staff show me courtesy consi throughout the process of healthcare delivery	46(15.8)	150(51.4)	63(21.6)	33(11.3)	2.72	.864
16.	The hospital staff are knowledgeable enough to my questions	51(17.5)	149(51)	79(27.1)	13(4.5)	2.82	.769
17.	I feel safe interacting with hospital staff	90(30.8)	125(42.8)	66(22.6)	11(3.8)	3.01	.828
	Average mean & SD					**2.90**	**.798**
	Empathy						
18.	Hospital staff give me individual attention thro the process of healthcare delivery	47(16.1)	117(40.1)	106(36.3)	22(7.5)	2.65	.839
19.	Hospital staff have my best interest at heart interaction.	55(18.8)	113(38.7)	97(33.2)	27(9.2)	2.67	.886
20.	Hospital staff understand my specific nee healthcare delivery	145(49.6)	82(28)	54(18.5)	11(3.9)	3.23	.887
21.	Hospital staff are genuinely interested in s problems at work	42(14.4)	120(41.1)	87(29.8)	43(14.7)	2.55	.912
	Average mean & SD					**2.77**	**.881**
	Total Scale Weighted Average Mean					**2.93**	

Key: *SD = Standard Deviation; $\overline{x}$ = Mean. Decision Rule: if mean is ≤ 1.49 = Poor; 1.5 to 2.49 = Good; 2.5 to 3.49 = Very Good; 3.5 to 4.0 = Excellent.*

Table 4.4: Degree of use of Electronic Health Records

S/N	Degree of use of EHRs	VHD	HD	LD	VLD	$\overline{x}$	SD
	In terms of Health Information and data, to what extent is electronic health record in your hospital used to....						
1.	Analyse data	44(23.2)	71(37.3)	65(34.2)	10(5.3)	2.78	.856
2.	Compile information of health care users	43(22.6)	80(42)	59(31.2)	8(4.2)	2.83	.822
3.	Access information of health care users	88(46.3)	78(41.1)	24(12.6)	-	3.34	.690
	Mean and SD					**2.98**	**.789**
	In terms of Result Management, to what extent is electronic health record in your hospital used to.....						
1.	Access results of health care users	45(23.7)	96(50.5)	40(21.1)	9(4.7)	2.94	.788
2.	Oversee results of health care users	41(21.6)	101(53.2)	43(22.6)	5(2.6)	2.94	.730
3.	Link results of health care users within different health department	56(29.5)	103(54.2)	24(12.6)	7(3.7)	3.10	.743
	Mean and SD					**2.99**	**.753**
	In terms of Decision Support, to what extent does electronic health record…						
1.	Facilitate decisions regarding health care users	36(19)	112(58.9)	38(20)	4(2.1)	2.95	.685
2.	Enhance quick decision of health care users	33(17.4)	93(48.9)	52(27.4)	12(6.3)	2.70	.862
3.	Serve as reminders for the health professionals	33(17.4)	101(53.1)	53(27.9)	3(1.6)	2.84	.830
	Mean and SD					**2.83**	**.792**

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	In terms of Electronic communication and connectivity, to what extent is the electronic health records used for…						
1.	Sending mails within the hospital	29(15.3)	35(18.4)	110(57.9)	16(8.4)	2.41	.843
2.	Automatic alerts for health care users	23(12.1)	59(31)	102(53.7)	6(3.2)	2.53	.740
3.	Coordinating services given to health care users	42(22.1)	57(30)	82(43.2)	9(4.7)	2.70	.862
	Mean and SD					**2.54**	**.815**
	In terms of Administrative processes, to what extent is electronic health record used for…						
1.	Coding and billing process	45(23.7)	85(44.7)	54(28.4)	6(3.2)	2.90	.793
2.	Providing Patient demographics	107(56.3)	66(34.7)	14(7.4)	3(1.6)	3.47	.680
3.	Settling and countering claims regarding a health care user	49(25.8)	51(26.8)	83(43.7)	7(3.7)	2.75	.888
	Mean and SD					**3.04**	**.787**
	In terms of Reporting and Population health, to what extent is electronic health records use for…						
1.	Data analytics	45(23.7)	69(36.3)	67(35.3)	9(4.7)	2.80	.848
2.	Chart analysis	41(21.6)	61(32.1)	79(41.6)	9(4.7)	2.72	.851
3.	Health care reporting	48(25.3)	96(50.5)	35(18.4)	11(5.8)	2.97	.802
	Mean and SD					**2.83**	**.833**
	Overall mean					**2.87**	**.787**

***Key**: SD = Standard Deviation; $\overline{x}$ = Mean. Decision Rule: if mean is ≤ 1.49 = Very Low Degree (VLD); 1.5 to 2.49 = Low Degree (LD); 2.5 to 3.49 = High Degree (HD); 3.5 to 4.0 = Very High Degree (VHD).*

Table 4.5: Challenges facing the quality of healthcare services

S/N	Challenges facing quality healthcare services	Strongly Agree	Agree	Disagree	Strongly Disagree	$\overline{x}$	SD
1.	Lack of infrastructural facilities and financial resources	4(2.1)	6(3.1)	26(13.7)	154(81.1)	1.25	.605
2.	Paper record usage	18(9.5)	46(24.2)	70(36.8)	56(29.5)	2.13	.949
3.	Staff level of education	14(7.4)	46(24.2)	64(33.7)	66(34.7)	2.03	.931
4.	Inadequate of support from medical bodies	17(9)	56(29.5)	79(41.5)	38(20)	2.32	.893
5.	Lack of forums to educate patients	20(10.5)	45(23.7)	66(34.7)	59(31)	2.13	.973

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6.	Lack of adoption and inadequate use of EHRs	17(9)	57(30)	71(37.3)	45(23.7)	2.24	.920
7.	Lack of internet or network provider	18(9.5)	44(23.1)	76(40)	52(27.4)	2.16	.931
8.	Inadequate human resources in the health profession	18(9.5)	62(32.6)	63(33.2)	47(24.7)	2.27	.938
9.	Spiritless attitudes of the health professionals	19(10)	55(29)	68(35.8)	48(25.2)	2.25	.944
10.	Poor management by administrators	24(12.9)	56(29.4)	76(39.9)	34(17.8)	2.38	.922

3.2 Discussion of Findings

Patients' perception of the quality of health care service delivery by health professionals and Health information management personnel in the selected hospitals was high. Patients' perception of the quality of healthcare was positive. The patients averagely agreed to the items on the Tangibles subscale. It suggests they had a positive perception and the facilities used by health information management personnel and health professionals in healthcare delivery. The survey showed that health information management personnel and other healthcare personnel in the selected hospitals held that their degree of use of electronic health records was high. The study deduced that little or no challenges could hinder them from delivering quality healthcare. Some respondents agreed with some challenges that those challenges have very mild effects. The majority must have been deemed insignificant. The use of electronic health records influences the quality of health care services significantly in the selected hospitals in Lagos State, Nigeria.

4.0 Conclusion

The use of electronic health records influenced the quality of healthcare services and was reflected in the patients' responses regarding the quality of healthcare services. The patients reported a high level of quality healthcare services rendered to them in these selected hospitals. The health information management personnel and health professionals in the selected hospital disregarded the challenges of quality healthcare services.

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