

Research Article

Comparative Assessment of Health Information Management Efficiency Before and After Electronic Health Records Adoption in Tertiary Healthcare Facilities in Kogi State, Nigeria

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Abstract

The adoption of Electronic Health Records (EHRs) has been promoted globally as a strategy for improving healthcare delivery, yet challenges persist in Nigeria's public health facilities, particularly during the transition from paper-based to electronic systems. This study therefore investigated how the adoption of EHRs influences Health Information Management (HIM) practices in Tertiary Healthcare Facilities in Kogi State, Nigeria. The study was a facility-based cross-sectional study conducted among 327 healthcare workers across major professional categories. Data were collected using a structured, self-administered questionnaire. A stratified random sampling technique was used to select participants to ensure adequate precision across staff groups. Differences in Health Information Management practices before and after EHR adoption were examined using paired sample *t*-test and Wilcoxon Signed-Rank test. The results show that 30.31% of respondents were aged between 25–29 years old, 67.70% were female, 22.12% held an MSc degree, and 23.01% had more than 20 years of work experience. The mean overall HIM performance score improved from 3.55 ± 0.76 before EHR implementation to 4.54 ± 0.50 after implementation, with a mean difference of -0.99 (CI: -1.09 to -0.90). The mean overall accessibility score before implementation was 2.17 ± 0.86 , increasing to 2.83 ± 0.98 after implementation. Patient records were more easily accessible to authorized personnel after EHR adoption, with mean scores increasing from 1.813 ± 1.169 before adoption to 2.801 ± 1.449 after adoption. The difference was statistically significant ($Z = -8.2$, $p < 0.001$) and the effect size was large ($r = 0.45$). Timely retrieval of historical patient data for clinical decision-making improved, with mean scores rising from 2.147 ± 1.259 to 3.119 ± 1.330 . The study demonstrates that although healthcare professionals recognise substantial improvements in data management, accessibility, and service delivery following EHR adoption, structural and capacity-related constraints continue to hinder optimal utilisation. Strengthening digital infrastructure, expanding ICT training, and ensuring sustained technical support are essential for maximising EHR benefits and advancing digital health implementation in Nigeria.

Keywords

Health Information Management Practice, Tertiary Healthcare Facilities, Nigeria

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1. Introduction

The digitisation of health information systems has become a defining feature of contemporary healthcare delivery worldwide [1, 2]. Central to this transformation is the Electronic Health Record (EHR), which serves as a longitudinal digital repository of patient health information generated across multiple points of care [3]. EHRs typically integrate demographic details, clinical observations, laboratory and radiological results, medications, immunisation histories, and other essential health data into a unified platform, thereby supporting continuity of care across healthcare settings [3]. By enabling timely access to accurate and comprehensive patient information, EHR systems are designed to enhance clinical decision-making, improve quality of care, and support health system efficiency [4].

Beyond their role in routine patient care, EHRs facilitate a wide range of care-related and administrative functions, including evidence-based clinical decision support, quality assurance, outcomes reporting, and health research [3, 5]. In principle, these systems allow healthcare providers to retrieve and share patient information efficiently, reduce duplication of services, and minimise medical errors. However, the practical use of EHRs has not been without challenges. Empirical studies have reported concerns related to system downtime, slow response times, interoperability limitations, multiple authentication requirements, and increased documentation burden for clinicians [6]. In some contexts, excessive reliance on electronic systems has also been associated with reduced face-to-face communication among healthcare professionals, with potential implications for patient care quality [7].

Despite these challenges, the adoption of EHR systems continues to expand, driven by sustained policy support, global digital health initiatives, and the growing recognition of their long-term benefits [8]. Evidence suggests that effective EHR implementation can improve the accuracy and timeliness of health information, enhance provider productivity, and strengthen the foundation for clinical and public health research [4, 8, 9]. Moreover, EHRs have the potential to empower patients by improving access to personal health information through patient portals, thereby encouraging greater participation in care decisions and self-management of health conditions. When optimally utilised, these systems can support coordinated, patient-centred care and promote adherence to clinical best practices.

Health Information Management (HIM) occupies a critical position within this evolving digital health landscape [10]. HIM encompasses the systematic collection, storage, retrieval, and use of health information to support clinical care, administrative functions, policy formulation, and research [4, 11]. Historically, HIM practices in many healthcare facilities (particularly in low- and middle-income countries) have relied heavily on paper-based systems [12]. They further stated that, such systems are often characterised by fragmented records, susceptibility to loss or damage, delayed data retrieval, and

limited capacity for secondary data use [12]. These challenges have been widely documented as impediments to efficient service delivery, data-driven decision-making, and overall health system performance.

The transition from paper-based records to EHR systems represents a major paradigm shift in HIM practices [13]. While this shift promises improvements in data quality, accessibility, security, and interoperability, it also demands substantial financial investment, infrastructure development, and human capacity building. High implementation costs, uncertainty regarding return on investment, workflow disruptions during transition periods, and increased demand for technical support have been identified as significant barriers to successful adoption, particularly in resource-constrained settings [14, 15]. However, existing literature has largely focused on the technical benefits and general adoption patterns of EHR systems, with comparatively limited empirical attention to how the transition affects routine Health Information Management practices within specific institutional contexts in Nigeria.

In Nigeria, the adoption of EHR systems has progressed unevenly across states and healthcare institutions [15]. Despite increasing policy attention to digital health transformation, there remains limited context-specific evidence examining the operational changes associated with the transition from paper-based to electronic records within public healthcare facilities. Addressing this gap is important for understanding how EHR adoption influences health information management practices and healthcare delivery processes in real-world institutional settings. Therefore, this study investigates Health Information Management practices before and after the adoption of Electronic Health Records at Kogi State Specialist Hospital and Federal Teaching Hospital Lokoja, with the aim of providing empirical insights into the impact of digital health transformation on healthcare delivery in this setting.

2. Materials and Methods

2.1. Study Setting and Data Source

This study employed a facility-based, cross-sectional design using quantitative methods to examine Health Information Management (HIM) practices before and after the adoption of Electronic Health Records (EHR). The research was conducted in two tertiary healthcare institutions (Kogi State Specialist Hospital-KSSH and Federal Teaching Hospital Lokoja-FTHL) located in Lokoja, the capital city of Kogi State, North-Central Nigeria.

Lokoja occupies a strategic administrative and historical position in Nigeria, situated at the confluence of Rivers Niger and Benue. Both hospitals serve as major referral centres for Kogi State and neighbouring states, including Kwara, Niger, Nasarawa, Benue, and the Federal Capital Territory. In addition to providing specialised clinical services, the institutions

play key roles in medical training, research, and health system administration.

Federal Teaching Hospital Lokoja operates as a tertiary referral facility with departments such as internal medicine, surgery, obstetrics and gynaecology, paediatrics, family medicine, emergency medicine, and public health. The hospital also maintains dedicated support units critical to health information management, including the Health Information Management Department, Medical Records Unit, Information and Communication Technology (ICT) Department, and Legal Services Unit. Similarly, KSSH provides secondary and specialist healthcare services with structured departments responsible for patient documentation, record keeping, and information processing. These institutional characteristics made both facilities suitable for assessing HIM practices across pre- and post-EHR implementation periods.

Both hospitals operate under regulatory oversight from the Federal Ministry of Health and the Kogi State Ministry of Health, with professional guidance from statutory bodies such as the Medical and Dental Council of Nigeria, the Health Records Officers Registration Board of Nigeria, and provisions of the National Health Act. These frameworks ensure compliance with ethical standards, patient confidentiality, and lawful management of health information.

2.2. Study Population

The study population comprised healthcare professionals working in KSSH and FTHL who were involved in the use, management, and documentation of patient health information. This included Health Information Management personnel, nurses, medical doctors, pharmacists, and laboratory scientists who interact with patient records in the course of healthcare delivery. These professionals play complementary roles in generating, documenting, processing, and utilizing patient information within both manual and electronic health record systems.

2.3. Sample Size Determination

The sample size for the study was determined using the Taro Yamane formula for finite populations at a 5% margin of error:

$$n = \frac{N}{1 + N(e^2)} \quad (1)$$

where n is the required sample size, N is the total population (1,420), and e is the margin of error (0.05).

Substituting the values into the formula:

$$n = \frac{1420}{1 + 1420(0.05^2)} = \frac{1420}{4.55} \approx 312 \quad (2)$$

A minimum sample size of 312 respondents was therefore required. However, a total of 327 completed responses were obtained and included in the analysis.

2.4. Sampling Technique

A multistage sampling approach was adopted to ensure adequate representation of health information personnel across the two hospitals.

In the first stage, stratification was done by institution, with KSSH and FTHL serving as the primary strata. In the second stage, staff within each hospital were further stratified according to professional designation, including Health Information Management personnel, nurses, medical doctors, pharmacists, and laboratory scientists. This categorisation ensured that all cadres directly involved in patient record management and information processing were represented.

In the third stage, proportional allocation was applied such that the number of participants selected from each professional group reflected the relative size of that group within the hospital workforce. Finally, simple random sampling was used within each stratum to select eligible participants, giving all health records personnel an equal chance of inclusion.

2.5. Method of Data Collection

Data were collected through the administration of a structured questionnaire to eligible health information personnel in Kogi State Specialist Hospital (KSSH) and the Federal Teaching Hospital Lokoja (FTHL). The questionnaires were administered in person by the researcher with the support of a trained research assistant. Completed questionnaires were retrieved on the spot where possible to reduce the likelihood of non-response. All returned copies were reviewed for completeness and consistency before being prepared for coding and subsequent data analysis.

2.6. Data Analysis

Data were coded and analysed using the Statistical Package for the Social Sciences (SPSS) version 26. Descriptive statistics, including frequencies, percentages, means, and standard deviations, were used to summarise respondents' characteristics and to describe patterns of health information management (HIM) practices before and after the adoption of Electronic Health Records (EHR).

Inferential analyses were conducted to address the study objectives. Differences in HIM efficiency between the before EHR and after EHR periods were examined using a paired sample t -test. The paired sample t -test is expressed as:

$$t = \frac{\bar{D}}{S_D/\sqrt{n}} \quad (3)$$

where $\bar{D}$ represents the mean of the differences between paired observations (after EHR minus before-EHR scores), S_D is the standard deviation of the differences, and n is the number of paired observations. Statistical significance was set at $p < 0.05$.

HIM efficiency was measured using respondents' ratings of

statements relating to documentation, filing, record retrieval, and reporting on a four-point Likert scale ranging from strongly disagree (1) to strongly agree (5). Item scores were summed to generate an efficiency index, with higher scores indicating better HIM performance. Similar composite indices were generated for data accessibility and perceived challenges associated with EHR use.

The primary outcome variables in the analysis were HIM efficiency.

To assess whether Electronic Health Records (EHR) adoption led to a statistically significant improvement in data accessibility and retrieval, the Wilcoxon Signed-Rank Test was employed. This non-parametric test is appropriate because it compares paired observations (pre-adoption and post-adoption scores) without assuming that the data follow a normal distribution. The test evaluates whether the median difference between paired observations is significantly different from zero.

Wilcoxon Signed-Rank Test Formula

For paired observations (X_i, Y_i) : Compute the difference:

$$D_i = Y_i - X_i \quad (4)$$

Exclude pairs where $D_i = 0$.

- 1) Rank the absolute differences $|D_i|$, assigning average ranks for ties.
 - 2) Assign signs based on the direction of the difference:
 - 3) Positive rank if $D_i > 0$
 - 4) Negative rank if $D_i < 0$
- Computing the test statistic:

$$W = \min(W^+, W^-) \quad (5)$$

Where:

$$W^+ = \sum \text{positive signed ranks}$$

$$W^- = \sum \text{negative signed ranks}$$

The decision rule is based on comparing W with the critical value from the Wilcoxon Signed-Rank distribution or using the p-value obtained from the test.

Variables Used

- 1) X = Pre-adoption scores on data accessibility and retrieval
- 2) Y = Post-adoption scores on data accessibility and retrieval
- 3) D_i = Paired difference for each respondent
- 4) W = Test statistic indicating whether the changes are statistically significant

The Wilcoxon Signed-Rank Test was therefore used to determine whether the EHR system produced meaningful improvements in data accessibility and retrieval in the post-adoption phase compared to the pre-adoption phase.

2.7. Ethical Considerations

Ethical approval for the study was obtained from the relevant institutional ethics committees of KSSH and FTHL. Written informed consent was secured from all participants prior to data collection. Participation was voluntary, and respondents retained the right to withdraw at any stage without consequence. Anonymity and confidentiality were strictly maintained, and no personal identifiers were collected. The study adhered to the principles of beneficence, non-maleficence, autonomy, and respect for participants throughout the research process.

3. Results

Table 1 shows the socio-demographic and professional characteristics of the respondents in the study area. The data show that 30.31% of the respondents were aged 25–29 years, while 1.33%, and 1.33% were aged 45–49 years, and 50 years and above, respectively. Most of the respondents (67.70%) were females, while 32.30% were males. The majority (57.08%) were Christians, while 42.92% were Muslims. Similarly, a majority (76.99%) were married, while 23.01% were unmarried. The results also showed that most of the respondents (57.08%) had a Bachelor's degree, while 0.88% had a PhD, and 0.22% had Certificate qualifications. Furthermore, monthly income shows that 72.35% earned above ₦131,000, while 2.21% earned between ₦71,000–₦100,000. Professional cadre shows that 44.25% were Nurses/Midwives, 23.23% were Health Information/Records Officers, 19.25% were in other professional groups, and 13.27% were Medical Doctors. Additionally, most respondents (72.35%) were permanently employed, while 24.34% were temporary staff and 3.32% were on contract. Years of professional experience show that 23.01% had 20 years and above, 20.80% had less than 5 years, another 20.80% had 15–19 years, 19.03% had 10–14 years, and 16.37% had 5–9 years.

Use of the hospital registration system shows that 48.89% had used it for more than 6 years, 19.03% for 1–3 years, 18.14% for less than 1 year, and 13.94% for 4–6 years. More also, departmental distribution shows that 42.70% were from Medical Records, 22.79% from OPD, 16.59% from Nursing Station/Ward, 11.28% from Clinics, and 6.64% from Accident and Emergency.

Table 1. Socio-Demographic and Professional Characteristics of Respondents.

Variables	Frequency	Percentage (%)
Age (years)		
Less than 25	105	23.23
25–29	137	30.31

Variables	Frequency	Percentage (%)	Variables	Frequency	Percentage (%)
30–34	133	29.42	Years of Professional Experience		
35–39	52	11.50	Less than 5 years	94	20.80
40–44	13	2.88	5–9 years	74	16.37
45–49	6	1.33	10–14 years	86	19.03
50 and above	6	1.33	15–19 years	94	20.80
Sex			20 years and above	104	23.01
Female	306	67.70	Years Using Hospital Registration System		
Male	146	32.30	Less than 1 year	82	18.14
Religion			1–3 years	86	19.03
Christianity	258	57.08	4–6 years	63	13.94
Islam	194	42.92	More than 6 years	221	48.89
Marital Status			Years of Experience in Current Hospital		
Married	348	76.99	Less than 5 years	130	28.76
Unmarried	104	23.01	5–9 years	81	17.92
Highest Professional Qualification			10–14 years	62	13.72
Certificate	1	0.22	15 years and above	179	39.60
Diploma (ND/HND)	74	16.37	Primary Unit/Department		
Registered Nurse (RN)	9	1.99	Accident and Emergency	30	6.64
Registered Midwife (RM)	6	1.33	Clinics	51	11.28
Bachelor's Degree	258	57.08	Medical Records	193	42.70
Master's Degree	100	22.12	Nursing Station/Ward	75	16.59
Doctorate Degree (PhD)	4	0.88	Outpatient Department (OPD)	103	22.79
Monthly Income (₦)					
Below ₦70,000	73	16.15			
₦71,000 ₦100,000	10	2.21			
₦101,000 ₦130,000	42	9.29			
Above ₦131,000	327	72.35			
Professional Cadre					
Medical Doctor	60	13.27			
Nurse/Midwife	200	44.25			
Health Information/Records Officer	105	23.23			
Others	87	19.25			
Current Employment Status					
Permanent	327	72.35			
Contract	15	3.32			
Temporary	110	24.34			

Source: Field Survey, 2025.

Table 2 presents the distribution of efficiency of health management practices in the before-adoption phase. The data show that most respondents rated the efficiency of manual HIM processes positively, with 52.29% agreeing and 21.71% strongly agreeing, while 17.43% disagreed and 3.98% strongly disagreed. The accuracy of manual medical records followed a similar pattern, with 52.60% agreeing that records were accurate and 10.09% strongly agreeing, while 24.46% disagreed. Similarly, 38.84% agreed and 12.54% strongly agreed that retrieval was efficient, while 31.50% disagreed and 8.87% strongly disagreed. Furthermore, 42.81% agreed and 14.07% strongly agreed, while 29.05% disagreed and 5.50% strongly disagreed that communication under the manual system were efficient.

Table 2. Distribution of Efficiency of Health Management Practices in the before-Adoption Phase.

Characteristics	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Efficiency of manual HIM processes	71 (21.71%)	171 (52.29%)	15 (4.59%)	57 (17.43%)	13 (3.98%)
Accuracy of manual medical records	33 (10.09%)	172 (52.60%)	32 (9.79%)	80 (24.46%)	10 (3.06%)
Quick retrieval using manual records	41 (12.54%)	127 (38.84%)	27 (8.26%)	103 (31.50%)	29 (8.87%)
Manual system was error-prone	121 (37.00%)	166 (50.76%)	15 (4.59%)	22 (6.73%)	3 (0.92%)
Communication under manual system were efficient	46 (14.07%)	140 (42.81%)	28 (8.56%)	95 (29.05%)	18 (5.50%)

Source: Field work 2025

Table 3 show that most respondents rated the efficiency of the electronic system positively, with 61.47% strongly agreeing and 34.56% agreeing that EHR significantly improved operations, while only 2.14% disagreed after adoption. Similarly, a majority of respondents (66.36%) strongly agreed and 30.58% agreed that records were more accurate and reliable under EHR, while only 0.92% disagreed after EHR adoption. Most respondents

(55.05%) strongly agreed and 40.98% agreed that EHR enhanced communication, while 3.06% disagreed that HER enhanced communication after adoption. Furthermore, the reduction of errors and discrepancies in patient data was acknowledged by most respondents, with 57.19% strongly agreeing and 37.00% agreeing that EHR minimized errors, while 1.83% disagreed.

Table 3. Efficiency of Health Information Management Practices in After-Adoption Phase.

Characteristics	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Electronic health information management system has significantly improved the efficiency of our operations.	201 (61.47%)	113 (34.56%)	6 (1.83%)	7 (2.14%)	0 (0.00%)
EHR adoption has resulted in more accurate and reliable patient records compared to the manual system	217 (66.36%)	100 (30.58%)	4 (1.22%)	3 (0.92%)	3 (0.92%)
Electronic health records system has improved communication and collaboration among healthcare providers	180 (55.05%)	134 (40.98%)	3 (0.92%)	10 (3.06%)	0 (0.00%)
Electronic health records system allows for quick and seamless data entry and retrieval processes	200 (61.16%)	117 (35.78%)	7 (2.14%)	3 (0.92%)	0 (0.00%)
Electronic health records system has reduced the occurrence of errors and discrepancies in patient data	187 (57.19%)	121 (37.00%)	13 (3.98%)	6 (1.83%)	0 (0.00%)

Table 4 presents the paired t-test comparing pre- and post-implementation HIM scores. The mean overall HIM performance scores before implementation was 3.55 ± 0.76 , whereas

after implementation, it increased to 4.54 ± 0.50 . The mean difference of -0.99 (CI: -1.09 to -0.90). The paired t-test statistic was -20.30 (df=326) with a p-value <0.001 .

Table 4. Paired t-test Comparing before- and after-Implementation HIM Scores.

Measure	Before Implementation Mean $\pm$ SD	After Implementation Mean $\pm$ SD	Mean Difference (Before – After)	95% CI of Difference	t-value (df=326)	p-value
Overall performance score	3.55 ± 0.76	4.54 ± 0.50	-0.99	-1.09 to -0.90	-20.30	<0.001

Source: Field work 2025

Figure 1 presents a comparison of the mean accessibility scores before and after the adoption of the Electronic Health Records (EHR) system. The mean score for the before-adoption phase is approximately 2.2. In contrast, the after-adoption mean increases to about 2.8.

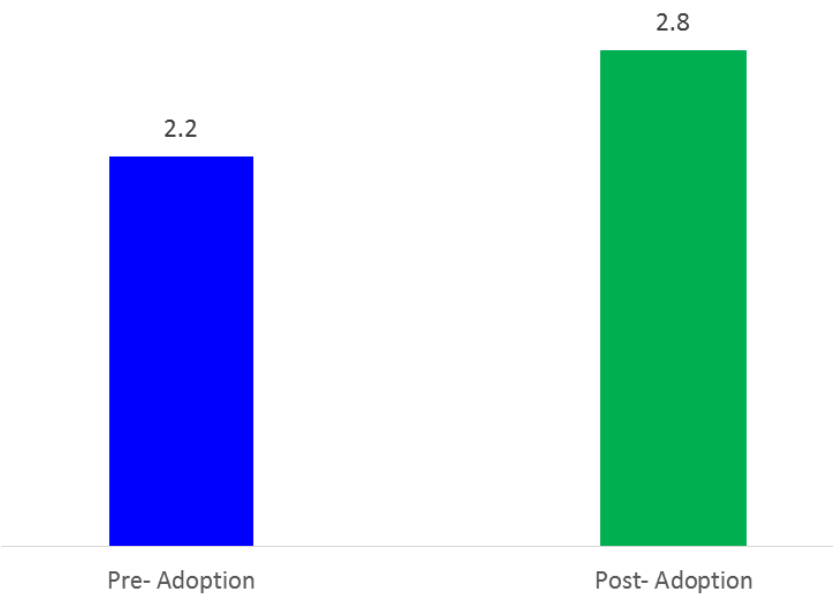


Figure 1. Mean Comparison of Pre and Post EHR Accessibility.

Table 5 presents the paired t-test comparing before - and after -implementation EHR Accessibility HIM scores. The mean overall accessibility score before implementation was

2.17±0.86, increasing to 2.83±0.98 after implementation. The mean difference of -0.66 (CI: -1.78 to -0.54). The paired t-test statistic was -10.59 (df=326) with a p-value of 0.00.

Table 5. t-Test Comparison of EHR Accessibility Scores Before and After Implementation.

Measure	Before Implemen- tation Mean ± SD	After Implementa- tion Mean ± SD	Mean Difference (Before – After)	95% CI of Differ- ence	t-value (df=326)	p- value
performance score	2.17±0.86	2.83±0.98	-0. 66	-1. 78 to -0. 54	- 10.59	0.00

Source: Field work 2025

Table 6 presents the results of the Wilcoxon signed-rank test comparing data accessibility and retrieval before and after EHR adoption. The findings show that patient records were more easily accessible to authorized personnel after EHR adoption, with mean scores increasing from 1.813 ± 1.169 before adoption to 2.801 ± 1.449 after adoption. The difference was statistically significant (Z = -8.2, p < 0.001) and the effect size was large (r = 0.45). Timely retrieval of historical patient data for clinical decision-making improved, with mean scores rising from 2.147 ± 1.259 to 3.119 ± 1.330. The difference was significant (Z = -7.6, p < 0.001) with a large effect size (r = 0.42).

Patient records were less prone to loss or misplacement after EHR adoption, increasing from a mean of 2.602 ± 1.497 to 3.043 ± 1.405, a significant improvement (Z = -4.3, p < 0.001) with a moderate effect size (r = 0.24). The ability to locate specific patient information within the record-keeping system also improved, with mean scores increasing from 2.116 ± 1.358 to 2.899 ± 1.390. The difference was significant (Z = -6.9, p < 0.001) with a moderate-to-large effect size (r = 0.38). The manual system’s hindrance to seamless exchange of health information between healthcare providers showed a slight improvement from 2.162 ± 1.337 to 2.272 ± 0.948, but the difference was not statistically significant (Z = -1.7, p = 0.089) and the effect size was very small (r = 0.09).

Table 6. Wilcoxon Signed-Rank Test of Data Accessibility and Retrieval Before and After EHR Adoption.

Characteristics	Before Mean (SD)	After Mean (SD)	Z	p	r
Patient records were easily accessible to authorized personnel before the adoption of HER	1.813 (1.169)	2.801 (1.449)	-8.2	<0.001	0.45
The manual system facilitated timely retrieval of historical patient data for clinical decision-making.	2.147 (1.259)	3.119 (1.330)	-7.6	<0.001	0.42
Patient records were prone to loss or misplacement in the manual system	2.602 (1.497)	3.043 (1.405)	-4.3	<0.001	0.24
It was challenging to locate specific patient information within the manual record-keeping system.	2.116 (1.358)	2.899 (1.390)	-6.9	<0.001	0.38
The manual system hindered the seamless exchange of health information between healthcare providers.	2.162 (1.337)	2.272 (0.948)	-1.7	0.089	0.09

Source: Field work 2025

4. Discussion

Results from this study indicate that many respondents perceived manual Health Information Management processes as relatively efficient prior to the adoption of EHR systems. This perception likely reflects the long-standing reliance on paper-based workflows across many healthcare facilities in Nigeria, where staff often develop familiarity and routine proficiency with manual documentation processes over time. Similar observations have been reported in Nigerian tertiary hospitals, where repeated exposure to manual procedures contributes to perceived efficiency among health information personnel [16]. Comparable findings have also been reported in Ethiopia and Uganda, where experienced record officers tend to view manual systems as dependable due to established work habits [17].

Despite these perceptions, evidence from several studies suggests that the accuracy of manual records often depends largely on staff diligence rather than system design. In resource-constrained settings, increasing workload can easily compromise documentation quality [17]. Studies from Kenya and other African health systems have documented frequent gaps in paper-based records, including incomplete documentation, missing patient files, and delays in retrieving information [18, 19]. These challenges highlight inherent limitations of manual systems, particularly in busy clinical environments where record management demands are high.

Manual record retrieval was also perceived less favorably. Delays in locating patient files, misplacement of records, and congestion in registry units have been widely documented as major limitations of paper-based systems [20, 21]. Because manual filing systems depend heavily on physical storage and human organization, they remain vulnerable to inefficiencies and operational delays.

Communication processes under manual systems were

viewed as moderately effective by many respondents, likely reflecting the influence of established documentation routines and long-standing teamwork practices. However, previous studies indicate that manual information exchange can slow clinical coordination, particularly when paper records must physically move across departments during busy service periods [22, 23].

Following the adoption of Electronic Health Records, respondents overwhelmingly reported improvements in Health Information Management practices. These findings are consistent with studies from Nigeria, Ghana, and other African countries showing that EHR implementation improves workflow organization, reduces paperwork duplication, and enhances access to patient information [2, 24, 29]. Evidence from South Africa, Kenya, Ethiopia, and Tanzania similarly indicates that digital systems improve documentation accuracy and reduce transcription errors through automated data handling and validation mechanisms [17, 25-28, 30, 31]. Collectively, these findings support the growing evidence that EHR systems can strengthen health information management processes when effectively implemented.

5. Conclusion

This study demonstrates that the adoption of Electronic Health Records is associated with measurable improvements in health information management practices in the selected tertiary hospitals in Kogi State. Compared with the before-EHR period, respondents reported better data accessibility, faster record retrieval, improved documentation processes, and enhanced coordination of information flow across units. These changes suggest that EHR implementation contributes positively to the efficiency and reliability of health information management activities that support clinical decision-making and service delivery.

Despite these gains, the results indicate that infrastructural limitations, gaps in user training, and organisational challenges continue to constrain the full realisation of EHR benefits. The study therefore highlights that while digital transition improves HIM performance, sustained institutional support and investment are required to optimise its effectiveness.

6. Strengths and Limitations

This study draws on primary data from health information personnel directly involved in patient record management, providing practical insight into experiences across the pre- and post-EHR periods. The use of both descriptive and inferential analyses allowed for a comprehensive assessment of changes in efficiency and identification of factors influencing EHR use.

However, the cross-sectional design limits causal interpretation of the observed associations. The reliance on self-reported responses introduces the possibility of recall and social desirability bias. In addition, the study was limited to two tertiary facilities, which may affect the generalisability of the findings to other healthcare settings with different levels of digital maturity and infrastructural capacity.

7. Practical Implications

The findings highlight the importance of continuous investment in ICT infrastructure, regular staff training, and institutional mechanisms for EHR support and maintenance. Strengthening these areas will enhance the efficiency gains associated with EHR adoption and improve the overall quality of health information management in tertiary healthcare facilities. Importantly, this study contributes context-specific evidence from Kogi State, offering insight into how the transition from paper-based systems to EHRs shapes routine health information management practices within tertiary hospitals in an underrepresented setting.

Abbreviations

EHR	EHR Electronic Health Record
HIM	Health Information Management
KSSH	Kogi State Specialist Hospital
FTHL	Federal Teaching Hospital Lokoja
ICT	Information and Communication Technology
OPD	Outpatient Department

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Conflicts of Interest

The authors have declared that no competing interests exist.

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