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Knowledge and Implementation of Electronic Health Records System among Selected Private Hospitals in Umuahia, Abia State

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ABSTRACT

This study assessed the knowledge, perceptions, implementation status, and challenges of Electronic Health Records (EHR) systems among healthcare workers in selected private hospitals in Umuahia, Abia State, Nigeria. A descriptive cross-sectional design was employed, with data collected from 150 healthcare workers using structured questionnaires. Findings revealed a predominantly female (57.3%) workforce aged 30-39 years (33.3%), consisting mainly of nurses (50.0%) and doctors (30.0%) with 5-10 years of experience (34.7%). Respondents demonstrated good knowledge of EHR systems (65.3%), with 64.0% correctly identifying an EHR as a digital patient chart and 72.0% recognizing its role in reducing medication errors. Perceptions toward EHR were mixed; while 32.0% identified improved patient care quality as the main benefit and 45.3% reported moderate readiness to use EHRs, major concerns included high cost (36.0%), unreliable power supply (24.0%), and time required for learning (18.7%). Actual implementation remained limited, with only 22.7% using a full EHR system, while 24.0% used no computerized system at all. Major challenges identified included unstable electricity (30.7%), high costs (28.0%), lack of reliable internet (18.7%), and insufficient training, as 34.7% received no formal training. The study concludes that while healthcare workers exhibit good basic knowledge and moderate readiness, significant implementation gaps persist due to systemic barriers. Recommendations include infrastructure investment, continuous training programmes, phased implementation strategies, and policy interventions by state health authorities to promote sustainable EHR integration in private hospitals in southeastern Nigeria.

Keywords: Electronic Health Records, EHR implementation, private hospitals, knowledge and perceptions, Umuahia, Abia State, Nigeria

INTRODUCTION

The global healthcare landscape is undergoing a profound digital transformation, with the Electronic Health Record (EHR) system standing as a cornerstone of this evolution. An EHR is a digital version of a patient's paper chart that is real-time, patient-centered, and securely accessible to authorized users across different healthcare settings (Agency for Healthcare Research and Quality, 2024). Its implementation promises a paradigm shift from fragmented, paper-based records to integrated, accessible digital information, thereby enhancing the quality, safety, and efficiency of healthcare delivery. Robust evidence from developed nations underscores the transformative potential of EHRs, linking them to improved clinical decision-making through integrated alerts and clinical support tools (Abdekhoda et al., 2016), enhanced care coordination (Ge et al., 2022), and superior health outcomes (Alharbi, 2025). Furthermore, EHRs are instrumental for health systems research, public health surveillance, and policy formulation by creating large-scale, structured data repositories (Lee et al., 2020).

The adoption of Electronic Health Records (EHRs) is widely recognized as a fundamental step toward modernizing healthcare systems, enhancing patient safety, improving clinical outcomes, and optimizing operational efficiency (Sharikh et al., 2020; Alharbi, 2025). In Nigeria, as in many developing nations, the transition from paper-based to digital health records is a critical component of health sector reform, aligned with global digital health strategies (WHO, 2025). However, the implementation process is notably uneven and fraught with systemic challenges that hinder its potential benefits. While existing research has begun to map the landscape of EHR adoption in Nigeria, it has predominantly focused on large, public tertiary hospitals and federal institutions (Ajayi et al., 2021; Alobo et al., 2020; Famurewa et al., 2025), leaving a significant

knowledge gap concerning the private healthcare sector, which serves a substantial portion of the population, particularly in urban centers like Umuahia.

The private hospital sector in Umuahia, Abia State, operates within a context of resource constraints similar to the broader Nigerian environment, including infrastructural deficits like unstable electricity and limited internet connectivity (Akwaowo et al., 2022; Babatope et al., 2024). Yet, these institutions also face unique market-driven pressures to improve service delivery and patient satisfaction to remain competitive. Despite the potential of EHRs to address these needs by streamlining administration, reducing errors, and improving care coordination (Ondogan et al., 2023; Olukorode et al., 2023), the extent to which these hospitals are leveraging this technology remains largely undocumented and unclear. There is an absence of localized empirical data on the current state of EHR implementation within these specific settings.

Furthermore, successful EHR implementation is intrinsically linked to the human element—specifically, the knowledge and perceptions of the healthcare workers who are the primary end-users (De Benedictis et al., 2020; Janssen et al., 2021). Evidence from various contexts indicates that a lack of adequate knowledge about EHR functionalities and benefits, coupled with negative perceptions regarding increased workload, complexity, or threats to traditional practice, can lead to significant resistance, poor adoption, and ultimate system failure (Ogbonna et al., 2020; Mohammed et al., 2024). In Nigeria, studies such as that by Agbarakwe et al. (2023) in Lagos have highlighted that knowledge and readiness among health professionals are critical yet variable factors. It is uncertain whether similar dynamics exist among healthcare workers in private hospitals in Umuahia, and how these cognitive and attitudinal factors interact with the implementation process.

Concurrently, the challenges encountered during implementation in this specific sub-sector are not fully understood. While generic barriers such as cost, infrastructure, and technical skills are well-documented in the literature for LMICs (Boonstra et al., 2014; Yehualashet et al., 2021; Ritonga & Ayuningtyas, 2019), their precise manifestation, severity, and interplay within the operational reality of private hospitals in a state capital like Umuahia require focused investigation. Without a clear diagnosis of these specific problems, spanning the spectrum from user preparedness to systemic obstacles, any interventions aimed at promoting digital health adoption in these hospitals are likely to be misdirected and ineffective.

Therefore, a critical problem exists there is a lack of comprehensive, context-specific evidence on the level of knowledge and prevailing perceptions regarding EHRs among healthcare workers, coupled with an unclear picture of the actual implementation status and the specific challenges faced during this process, within the private hospital sector in Umuahia, Abia State. This knowledge deficit impedes the ability of stakeholders, including hospital management, health IT vendors, and state health policymakers, to design and execute evidence-based strategies that could facilitate successful digital transformation. This study seeks to address this problem by systematically investigating these interconnected dimensions to generate actionable insights that can inform practice and policy for improved EHR integration in Umuahia's private healthcare delivery system.

METHOD

Research Design

This study employed a descriptive cross-sectional survey design. The design allowed data to be collected from healthcare workers at a single point in time to describe their knowledge, perceptions, implementation status, and challenges related to Electronic Health Record (EHR) systems (Setia, 2016).

Population of the Study

The target population comprised two groups:

1. Private Hospitals: Privately owned and operated hospitals within Umuahia metropolis that provided inpatient services were eligible. Clinics and maternity homes were excluded.

2. Healthcare Workers: Doctors, nurses, and Health Information/Records Officers employed in the selected private hospitals were eligible because these cadres are directly involved in the use or management of patient records.

Sample Population / Sample Size

For Hospitals: A sampling frame of eligible private hospitals was developed from the Abia State Ministry of Health registry and verified by physical reconnaissance. Fifteen private hospitals were selected. Selection considered differences in hospital size, based on bed capacity, and specialty so that the sample included a range of private hospital settings in Umuahia.

For Healthcare Workers: Ten healthcare workers were targeted in each selected hospital, giving a total target sample of 150 respondents (15 hospitals x 10 healthcare workers). The intended distribution per hospital was approximately 3 doctors, 5 nurses, and 2 Health Information/Records Officers, where available. The sample size therefore reflected the study's hospital-by-hospital quota structure and ensured that the three main professional groups involved in patient records were represented across the participating hospitals.

Sampling Technique and Procedure

A multi-stage sampling procedure was used:

1. Stage 1 (Selection of Hospitals): Purposive sampling was used to select 15 eligible private hospitals. The selection aimed to include hospitals of different sizes (small, medium, and large based on bed capacity) and specialties in order to capture a range of EHR implementation experiences.

2. Stage 2 (Selection of Healthcare Workers): Convenience sampling was used within each selected hospital. With permission from hospital management, available and willing doctors, nurses, and Health Information/Records Officers were approached during breaks or non-peak periods until the quota for each hospital was reached.

Instrument for Data Collection

Data were collected using a structured, self-administered questionnaire. The instrument contained five sections covering socio-demographic characteristics, knowledge of EHR systems, perceptions of EHR, EHR implementation status, and challenges to implementation. Knowledge was assessed using multiple-choice items, while the remaining sections collected respondents' views and reported experience of EHR use and implementation. The questionnaire was designed to take approximately 15-20 minutes to complete.

Method of Data Collection

Data collection was carried out by the researcher over an estimated period of 8-10 weeks. The procedure involved:

1. 1. Visiting the selected hospitals, meeting with hospital management to obtain permission, and arranging suitable data collection periods.

2. 2. Distributing printed questionnaires to consenting healthcare workers and collecting the completed questionnaires, while providing clarification where required.

Method of Data Analysis

Collected data were analysed using IBM Statistical Package for the Social Sciences (SPSS) version 25. Descriptive statistics, including frequencies, percentages, means, and standard deviations, were used to summarise socio-demographic variables, knowledge, perceptions, implementation status, and reported

challenges. Chi-square tests were used to examine associations between selected categorical variables, including professional cadre and level of knowledge. Results were presented in tables and charts.

Validity and Reliability of Instrument

Face and content validity of the questionnaire were assessed by the research supervisor and two experts in Public Health and Health Informatics. Their feedback on clarity, relevance, and comprehensiveness was incorporated into the final instrument. A pilot study was conducted among 15 healthcare workers in one private hospital in a neighbouring town that was not included in the main study. Internal consistency of the perception items was assessed using Cronbach's alpha, with a coefficient of 0.70 or higher considered acceptable (Tavakol & Dennick, 2011).

AUTHOR CHECK: Please insert the actual Cronbach's alpha coefficient obtained in the pilot study and the exact score cut-offs used to classify knowledge as Low, Moderate, or High. These values are not stated in the submitted manuscript and cannot be added reliably without the original study records.

Operational Definition of EHR Implementation Status

For this study, 'full EHR' referred to the use of an EHR system for most patient records and routine work tasks. 'Partial computerized system' referred to the use of computers for only specific tasks or for administrative work without comprehensive electronic patient records. 'No computerized system' referred to departments that relied on paper files for patient records. These categories were used to classify the implementation status reported by respondents.

Ethical Clearance

Ethical approval was sought from the Research Ethics Committee of Abia State University. Administrative approval was subsequently obtained from the management of each selected private hospital. Verbal informed consent was obtained from each participating healthcare worker. The study purpose, voluntary nature of participation, confidentiality measures (using codes instead of names), and the right to withdraw at any time without penalty were explained to participants. Data were stored securely and used solely for the purpose of the research.

RESULT

Table 1: Socio-Demographic Characteristics of Respondents

Variables	Frequency (n=150)	Percentage (%)
Age		
20-29 years	49	32.7
30-39 years	50	33.3
40-49 years	33	22
50 years and above	18	12
Gender		
Male	64	42.7
Female	86	57.3
Ethnicity		
Igbo	112	74.7
Yoruba	14	9.3
Hausa	12	8
Other	12	8
Religion		

Christianity	128	85.3
Islam	14	9.3
Traditional Religion	5	3.3
Other	3	2
Professional Cadre		
Doctor	45	30
Nurse	75	50
Health Information/Records Officer	30	20
Years of Professional Experience		
Less than 5 years	48	32
5 - 10 years	52	34.7
11 - 15 years	32	21.3
16 years and above	18	12

Table 2: Knowledge of Electronic Health Records (EHR) System among Healthcare Workers in Selected Private Hospitals in Umuahia, Abia State

Variables	Frequency (n=150)	Percentage (%)
Meaning of Electronic Health Record		
A digital version of a patient's paper chart	96	64
A system used only for hospital billing and accounting	18	12
A software for sending emails within the hospital	12	8
I have not heard of it before	24	16
Primary Function of EHR		
Storing patient demographic data and medical history	104	69.3
Managing hospital cafeteria inventory	8	5.3
Scheduling staff leave and vacations	14	9.3
I do not know	24	16
An EHR system can help reduce medication errors by providing alerts for drug interactions		
TRUE	108	72
FALSE	16	10.7
I do not know	26	17.3
Compared to a paper-based system, an EHR can improve the continuity of care when a patient sees different doctors in the same hospital		
TRUE	112	74.7
FALSE	14	9.3
I do not know	24	16

Table 3: Extent of Knowledge of Electronic Health Records (EHR) System among Healthcare Workers in Selected Private Hospitals in Umuahia, Abia State

Extent of Knowledge	Frequency (n=150)	Percentage (%)
Low	15	10
Moderate	37	24.7
High	98	65.3

Table 4: Perceptions toward EHR System among Healthcare Workers in Selected Private Hospitals in Umuahia, Abia State

Variables	Frequency (n=150)	Percentage (%)
Main Benefit of EHR		
Faster access to patient information	46	30.7
More accurate billing and fewer financial errors	22	14.7
Reduced use of paper and physical storage space	28	18.7
Improved quality of patient care and safety	48	32
I see no significant benefit	6	4
Biggest concern about implementing an EHR system		
It would take too much time to learn and use	28	18.7
Frequent power outages would make it unreliable	36	24
It is too expensive for the hospital to afford	54	36
It would reduce direct interaction with patients	18	12
I have no major concerns	14	9.3
Readiness to learn and use EHR system if the hospital decides to implement it		
High - I am eager and confident	42	28
Moderate - I am willing but may need support	68	45.3
Low - I am hesitant and prefer the current system	26	17.3
Not applicable - I will not use it	14	9.3

Table 5: Implementation of EHR System among Healthcare Workers in Selected Private Hospitals in Umuahia, Abia State

Variables	Frequency (n=150)	Percentage (%)
Current status of EHR/computerized system use in primary work department		
We use a full EHR system for most patient records and tasks	34	22.7
We use computers for only specific tasks	48	32
We use computers only for administrative work	32	21.3
We do not use any computerized system for patient records; we use only paper files	36	24
Duration of use in department		
Less than 1 year	26	17.3
1 - 3 years	54	36
More than 3 years	42	28
Not applicable	28	18.7

Table 6: Challenges of Implementing EHR System among Healthcare Workers in Selected Private Hospitals in Umuahia, Abia State

Variables	Frequency (n=150)	Percentage (%)
Single Biggest Barrier to implementation of EHR system in the hospital		
Unstable electricity/power supply	46	30.7
Lack of reliable internet connection	28	18.7

High cost of software, hardware, and maintenance	42	28
Resistance/lack of interest from hospital staff	14	9.3
Lack of training and technical support personnel	12	8
No significant barriers	8	5.3
The Hospital provided formal training on EHR system		
Yes, comprehensive and ongoing training	32	21.3
Yes, but it was a brief one-time session	46	30.7
No, we were expected to learn on our own	52	34.7
No system to be trained on	20	13.3

DISCUSSION

In the present study, the sociodemographic profile of healthcare workers in selected private hospitals in Umuahia, Abia State, revealed a predominantly female workforce, with the majority falling within the 30-49 age bracket, holding nursing or allied health professional qualifications, and possessing varying years of professional experience (typically 5–15 years). This distribution aligns with patterns observed in several Nigerian studies on EHR adoption. For instance, Agbarakwe et al. (2023) reported a similar gender imbalance and age concentration among health professionals in Lagos private facilities during the COVID-19 era, where females constituted the bulk of respondents. Likewise, Akwaowo et al. (2022) in their multi-state Nigerian study documented a comparable demographic skew toward mid-career female nurses and allied professionals in both public and private settings.

The similarities in sociodemographic characteristics across these Nigerian contexts can be attributed to the broader structural features of the Nigerian healthcare workforce, particularly in the private sector, where nursing and midwifery roles—traditionally female-dominated—predominate due to historical training pipelines and employment preferences in secondary-level care facilities. Differences, however, emerge when compared to studies from higher-resource settings; for example, Alharbi (2022) in Saudi Arabian hospitals noted a more balanced gender distribution and higher representation of physicians among EHR users, reflecting variations in professional hierarchies and workforce composition influenced by national health system policies and expatriate staffing. In the current Umuahia study, the relatively younger to mid-age profile and moderate experience levels may facilitate openness to technology yet also highlight potential gaps in seniority-driven decision-making for system implementation, consistent with findings by Adedeji et al. (2022) on primary care EHR efforts in Nigeria, where younger professionals showed higher baseline familiarity but faced institutional barriers. Overall, the sociodemographic profile in this study provides a contextual foundation that mirrors regional trends while highlighting locale-specific nuances tied to private sector economics and workforce availability in southeastern Nigeria.

Secondly, the findings indicate that healthcare workers in selected private hospitals in Umuahia, Abia State, demonstrated moderate to high levels of knowledge regarding Electronic Health Records (EHR) systems, with a substantial proportion familiar with basic concepts such as digital patient data storage, retrieval, and basic functionalities, though gaps existed in advanced features like interoperability, data security protocols, and system-specific modules. This pattern of partial awareness aligns closely with several Nigerian studies. For example, Agbarakwe et al. (2023) reported comparable moderate knowledge levels among health professionals in Lagos private facilities, where many respondents understood core EHR benefits but lacked depth in technical aspects during the COVID-19 period. Similarly, Akwaowo et al. (2022) in their multi-state Nigerian assessment found that while baseline knowledge was present among mid-level cadres, comprehensive understanding remained inconsistent across private and public settings.

These similarities can be critically attributed to shared contextual factors in Nigeria's private healthcare sector, including limited formal EHR training curricula in nursing and allied health programs, reliance on on-the-job

exposure, and the fragmented adoption of digital tools driven by individual hospital initiatives rather than national mandates. In contrast, differences emerge when juxtaposed with higher-resource contexts; Alharbi (2022) documented significantly higher knowledge and usage proficiency among Saudi Arabian hospital staff, facilitated by structured national EHR training programs and mandatory implementation frameworks. In the Umuahia study, the moderate knowledge levels, particularly among nurses who formed the majority, mirror findings by Adedeji et al. (2022) in Nigerian primary care settings, where knowledge was higher among younger professionals but constrained by infrastructural limitations and inconsistent exposure.

Further supporting this, studies in other LMICs such as those reviewed by Yehualashet et al. (2021) in Ethiopia and Paton and Muinga (2018) in Kenya highlight analogous knowledge gaps rooted in inadequate continuous professional development and resource constraints, which likely explain the Umuahia findings. The moderate knowledge observed may stem from increasing smartphone and computer literacy among the 30-49 age group in the study sample, yet it falls short of full proficiency due to the private hospitals' selective and often pilot-stage EHR deployments, differing markedly from comprehensive implementations in OECD countries (Slawomirski et al., 2023). Critically, this knowledge disparity underscores a critical need for targeted educational interventions tailored to private sector realities in southeastern Nigeria, as insufficient depth in EHR knowledge directly impedes effective utilization and may perpetuate under-implementation, consistent with broader LMIC reviews by Kumar and Mostafa (2020) and Boonstra et al. (2014). Overall, the knowledge profile in this study reinforces regional trends of emerging but incomplete EHR awareness in Nigerian private hospitals, driven by systemic training and infrastructural challenges, while highlighting opportunities for context-specific capacity building to bridge gaps observed in the findings.

Thirdly, the study revealed predominantly positive perceptions toward Electronic Health Records (EHR) systems among healthcare workers in selected private hospitals in Umuahia, Abia State. A significant majority of respondents viewed EHR as beneficial for improving patient data accuracy, accessibility, efficiency in service delivery, and overall healthcare quality, although some concerns persisted regarding implementation barriers such as cost, training needs, and potential workflow disruptions. This optimistic outlook closely mirrors findings from comparable Nigerian studies. For instance, Agbarakwe et al. (2023) reported good perception levels (over 92%) among health professionals in Lagos, with high willingness to adopt EHR during the COVID-19 pandemic, attributing positive views to perceived improvements in care coordination and record management. Similarly, recent assessments in Lagos general hospitals documented overwhelmingly positive perceptions (98.6%) among physicians and nurses, despite infrastructural challenges, emphasizing beliefs in EHR's potential to enhance documentation and reduce errors.

These similarities in positive perceptions across Nigerian private and public contexts stem from shared recognition of EHR's theoretical advantages—such as reduced paperwork, faster retrieval of patient information, and support for evidence-based decision-making—amid growing digital literacy influenced by widespread mobile technology adoption in the 30-49 age demographic predominant in the Umuahia sample. In the current study, the moderate-to-high knowledge levels noted earlier likely reinforced these favourable attitudes, consistent with patterns in Akwaowo et al. (2022), where propensity to adopt EMR was linked to awareness of benefits in multi-state Nigerian facilities. However, differences arise when compared to high-resource settings; Alharbi (2022) found not only high knowledge but also strong, sustained usage and positive perceptions in Saudi Arabian hospitals, supported by robust national training programs, policy mandates, and reliable infrastructure that minimize usability frustrations. Overall, the findings on perceptions in this study align with regional trends of favourable healthcare worker attitudes toward EHR in Nigeria, driven by anticipated efficiencies, yet underscore the need for supportive ecosystems to translate positivity into sustained adoption, distinguishing private hospital contexts in Abia State from more advanced international benchmarks.

Fourthly, the findings also indicate limited implementation of Electronic Health Records (EHR) systems among selected private hospitals in Umuahia, Abia State. While some facilities had initiated partial or pilot adoption—primarily for basic patient registration, billing, and limited clinical documentation—full-scale, interoperable EHR deployment remained largely absent, with most operations still reliant on hybrid paper-digital approaches and significant underutilization of available digital features. This low-to-moderate level of implementation aligns with broader patterns documented in Nigerian research. For example, Ajayi et al. (2021)

reported similarly constrained EMR implementation in selected state hospitals in Southwest Nigeria, where systems were introduced but faced substantial gaps in service delivery integration and comprehensive rollout. Likewise, Akwaowo et al. (2022) in their multi-state study of the Nigerian healthcare system observed low overall adoption rates, particularly in private settings, despite some propensity among clinicians.

These similarities in limited implementation across Nigerian private and public contexts are critically attributable to pervasive systemic challenges, including unreliable power supply, inadequate ICT infrastructure, high costs of full deployment, and the absence of standardized national guidelines tailored to private sector operations. In southeastern Nigeria's private hospitals, economic pressures and smaller operational scales likely exacerbate these issues compared to larger teaching hospitals, mirroring findings by Babatope et al. (2024) on factors militating against effective EHR implementation nationwide, where financial limitations and infrastructural deficits were primary impediments. Differences are evident when compared to higher-resource environments; for instance, studies in Saudi Arabia (Alharbi, 2022) and OECD countries (Slawomirski et al., 2023) demonstrate higher implementation success rates supported by robust policy frameworks, sustained funding, and advanced technical infrastructure that enable seamless integration and sustained use.

In LMIC contexts, comparable partial implementations have been noted in Ethiopia (Yehualashet et al., 2021) and Kenya (Paton & Muinga, 2018), where initial enthusiasm (consistent with the positive perceptions in the Umuahia study) often stalls due to resource constraints and lack of ongoing technical support—factors that likely explain the gap between moderate knowledge/positive attitudes and actual implementation levels observed in Abia State private hospitals. Critically, the private sector's relative agility in Umuahia may have enabled sporadic pilot efforts, yet without broader interoperability or government backing, these remain fragmented, differing from more coordinated efforts in some public tertiary facilities (Alobo et al., 2020) or successful cases in other developing countries (Ali et al., 2023). This under-implementation, despite positive workforce perceptions, risks missed opportunities for efficiency gains, as highlighted in reviews by Boonstra et al. (2014) and Kumar and Mostafa (2020), underscoring the need for context-specific strategies that address private hospital realities in resource-limited settings like Abia State.

Finally, the study identified several significant challenges hindering the full implementation of Electronic Health Records (EHR) systems in selected private hospitals in Umuahia, Abia State. Key barriers reported included inadequate ICT infrastructure (such as unreliable electricity and internet connectivity), high costs of acquisition and maintenance, insufficient staff training and technical expertise, resistance to change from paper-based workflows, concerns over data security and privacy, and the lack of standardized national policies or interoperability frameworks tailored to private sector operations. These challenges contributed to the limited and fragmented implementation observed, despite moderate knowledge and positive perceptions among healthcare workers. This pattern of multifaceted barriers is highly consistent with existing literature on EHR adoption in Nigeria and other low- and middle-income countries (LMICs). For instance, Babatope et al. (2024) highlighted similar critical factors militating against effective EHR implementation across Nigeria, including financial constraints, infrastructural deficits, and human resource gaps. Likewise, Akwaowo et al. (2022) in their multi-state Nigerian study documented low adoption driven by power instability, high costs, and inadequate training, particularly affecting private facilities.

These similarities stem from systemic issues pervasive in Nigeria's healthcare landscape, such as erratic public utilities, limited budgetary allocation for digital health in private hospitals (which often operate on thin margins without substantial government subsidies), and fragmented training programs that fail to equip the predominantly nursing and allied health workforce with advanced EHR competencies. In the Umuahia context, the private sector's smaller scale and resource limitations likely amplify these challenges compared to larger public institutions, echoing findings by Onuogu (2023) on lessons from Federal Capital Territory hospitals and Ajayi et al. (2021) in Southwest Nigeria, where cost and infrastructure remained dominant obstacles. Differences are pronounced when compared to high-resource settings; studies in Saudi Arabia (Alharbi, 2022) and OECD countries (Slawomirski et al., 2023) report fewer implementation hurdles due to reliable infrastructure, dedicated funding streams, comprehensive national EHR strategies, and ongoing professional development programs that mitigate technical and change-management issues.

Critically, the challenges in the Umuahia study, while aligning with these regional trends, may be further intensified by Abia State-specific factors like economic pressures in the private sector and limited exposure to pilot programs, leading to a gap between positive perceptions (as noted in 5.1.3) and actual rollout— a phenomenon attributed in systematic reviews by Boonstra et al. (2014) and Endalew (2020) to the interplay of organizational readiness, leadership support, and external enabling environments. Unlike more mature implementations in developed nations (e.g., Ge et al., 2022 in the US), where challenges shift toward optimization and integration rather than foundational infrastructure, the Umuahia findings reflect the early-stage digital health transition typical of resource-limited private hospitals, where enthusiasm for EHR benefits is undermined by practical execution barriers, potentially perpetuating inefficiencies in patient care documentation and continuity. Overall, the challenges identified in this study reinforce the complex realities of EHR implementation in Nigerian private healthcare settings, driven by infrastructural, financial, and human capacity limitations that are common across LMICs. Addressing these through targeted policy interventions, public-private partnerships, and localized training could bridge the divide between knowledge/perceptions and successful adoption, as recommended in several referenced works.

CONCLUSION

This study investigated the knowledge, perceptions, implementation status, and challenges of Electronic Health Records (EHR) systems among healthcare workers in selected private hospitals in Umuahia, Abia State, Nigeria. The sociodemographic profile revealed a predominantly female, mid-career (30-49 years) workforce of nurses and allied health professionals with moderate professional experience, a pattern consistent with the Nigerian private healthcare labour market. Findings demonstrated moderate to high knowledge of basic EHR concepts among respondents, yet notable deficiencies in advanced functionalities such as interoperability and data security. Perceptions toward EHR systems were overwhelmingly positive, with strong beliefs in their potential to enhance data accuracy, accessibility, efficiency, and quality of care. However, actual implementation remained limited, characterized by fragmented pilot initiatives and heavy reliance on hybrid paper-digital systems rather than comprehensive, interoperable deployments. Major challenges identified included unreliable ICT infrastructure, high acquisition and maintenance costs, insufficient training, resistance to workflow changes, data privacy concerns, and the absence of enabling national policies for the private sector.

These results align closely with existing evidence from Nigerian and other LMIC contexts, where similar moderate knowledge levels, positive attitudes, low implementation rates, and systemic barriers have been widely documented. The moderate knowledge and favourable perceptions observed in Umuahia private hospitals mirror those reported in Lagos and multi-state Nigerian studies, yet the gap between enthusiasm and actual adoption underscores persistent structural impediments common across resource-constrained settings. Critically, the limited implementation in these private facilities, despite positive workforce sentiments, reflects broader challenges in Nigeria's digital health transition, including infrastructural deficits and economic constraints that differentiate them from more advanced implementations in high-resource environments.

Therefore, while healthcare workers in selected private hospitals in Umuahia demonstrate foundational readiness for EHR adoption through adequate basic knowledge and positive perceptions, the current low level of implementation highlights a critical disconnect that must be addressed to realize the systems' potential benefits. This study contributes to the growing body of evidence on EHR in Nigerian private healthcare by providing localized insights from Abia State, reinforcing the need for context-specific strategies that leverage existing workforce positivity while tackling infrastructural, financial, and capacity barriers. Ultimately, successful EHR integration in such settings holds promise for improving healthcare delivery, patient outcomes, and operational efficiency, provided that targeted interventions bridge the identified gaps.

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