

Harmonizing Computer-Based Medical Records Database System in Selected Primary Healthcare Centres in Adavi, Okehi, and Okene LGAs, Kogi State

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ABSTRACT

Primary healthcare centres (PHCs) in Adavi, Okehi and Okene Local Government Areas (LGAs) of Kogi State, Nigeria, continue to rely on fragmented, paper based medical record systems that compromise data quality, hinder continuity of care and obstruct healthcare planning. The study examined the current state of medical record management in PHCs across the three LGAs and proposes a framework for harmonizing medical record database systems to improve healthcare delivery. A descriptive cross-sectional survey was adopted, combining structured questionnaires and observational checklists administered to 312 healthcare workers across 45 PHCs in the three LGAs. Descriptive Statistics and chi square tests were used for analysis. Findings revealed that 82% of surveyed PHCs relied entirely on paper-based records, 71% reported frequent loss or misplacement of Patient files and only 11.3% had any form of electronic data capture. The findings from checklist revealed infrastructure deficit in all primary healthcare centres in selected LGAs of Kogi State. Health workers expressed strong willingness (89.4%) to adopt a unified electronic medical record system if supported with training and infrastructure. Significant variations in record keeping formats were observed across the three LGAs ($P < 0.05$), with no standardized patient identification system in operation. A homogenized medical record database system, built upon open source platforms such as DHIS2 or Open MRS and aligned with Nigeria's National Health Management Information System standards, would address the fragmentation in Primary Healthcare data.

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INTRODUCTION

The healthcare delivery system in Nigeria operates across three tiers: primary, secondary and tertiary with primary healthcare centers (PHCs) positioned as the entry point for the majority of the population. The National Primary Health Care Development Agency (NPHCDA) estimates approximately 70% of Nigerians depend on primary health facilities for their routine healthcare needs (Alenoghena et al., 2014). As at 2023 Nigeria maintained 34,076 registered PHCs, although only about 20% of these facilities were classified as fully functional (Foundation, 2022). This statistics alone signals the depth of structural challenges confronting grassroots health service delivery across the country.

In Kogi State, the situation is consistent with the national pattern. The Kogi Primary Health Care Development Agency (KPHCDA) has documented 838 PHCs distributed across the state's 21 Local Government Areas (LGAs) of which approximately 780 were reported as operational in 2023 (Yakubu, 2023). Among these, the PHCs located in Adavi, Okehi and Okene LGAs all situated within the central senatorial district of the State, and serve a combined population exceeding 700,000 residents. These three LGAs share geographical proximity, overlapping patient populations and referral pathways making them a natural cluster for integrated health information management. Yet their medical records systems remain disjointed, with each

facility maintaining its own idiosyncratic filing conventions, register formats and data reporting procedures.

Medical records constitute the backbone of healthcare delivery. They document clinical encounters, support diagnostic continuity, facilitate referral processes and generate the aggregate data upon which public health planning depends (Akanbi et al., 2012). When these records are fragmented, inconsistent or inaccessible, the consequences extend beyond administrative inconvenience. Misdiagnosis, medication errors, duplicated treatments and the inability to conduct epidemiological surveillance are all direct outcomes of poor record management (Ojo and Popoola, 2015). In the context of PHCs that serve as the first contact point for rural and semi urban populations these failures carry disproportionate weight.

The concept of harmonization as applied here refers to the process of standardized structure, format, content, and storage medium of medical records across multiple health facilities within a defined geographical or administrative boundary. It does not imply erasing local clinical nuance or imposing rigid templates that ignore context specific realities. Rather it envisions a common database architecture that allows patient information to flow seamlessly between facilities, supports consistent data entry protocols and generates outputs compatible with state and national reporting systems such as the District Health Information System version 2 (DHIS2).

Nigeria adopted DHIS2 in 2010 as the platform for its National Health Management Information System (NHMIS) with the National Council on Health formally endorsing it in 2013 as the single electronic platform for healthcare data (Shuaib et al., 2020). The system has since been implemented across all 36 states and the Federal Capital Territory. However, the transition from paper-based data collection at the facility level to electronic reporting at the LGA and state levels remains incomplete in many parts of the country, particularly in States like Kogi where infrastructure deficits and human resource shortages persist (Bhattacharya et al., 2019). This paper investigates the current state of medical record management in PHCs across Adavi, Okehi and Okene LGAs, and articulates a framework for harmonizing their record systems. The study draws on primary survey data, secondary DHIS2 reporting statistics and comparative analysis of electronic health record implementations in comparable low resource settings. The overarching aim is to produce evidence that can inform policy decisions by Kogi State Government, the KPHCDA and development partners working to strengthen primary healthcare delivery in the State. The specific objectives are to:

- i. Assess current medical record keeping practices in selected PHCs in Adavi, Okehi, and Okene LGAs of Kogi State.
- ii. Find out challenges threatening harmonization of computer-based medical record database system in selected PHCs in Adavi, Okehi, and Okene LGAs of Kogi State.
- iii. Ascertain facilities available for harmonizing computer-based medical record database system in selected PHCs in Adavi, Okehi, and Okene LGAs of Kogi State
- iv. Determine association between LGA and Record Management Variables for harmonizing computer-based medical record database system in selected PHCs in Adavi, Okehi, and Okene LGAs of Kogi State

The management of medical records in Nigeria PHCs has been documented as one of the weakest components of the health system. Ayanlade (2018) characterized electronic medical record system as a central ICT tool for quality healthcare services in Nigeria, noting that most facilities still relied on manual record keeping. The paper-based system that predominates at the primary care level involves the use of patient attendance registers, individual patient cards, tally sheets and monthly summary forms. These records are typically stored in metal cabinets or wooden shelves, often without systematic filing or indexing and are vulnerable to damage from moisture, pests and handling (Ojo and Popoola, 2015).

A study by Onigbogi et al. (2018) at the Lagos University Teaching Hospital found that although doctors expressed positive attitudes towards electronic medical records, fewer than 15% had practical experience with any EMR system. This gap between willingness and capacity has been replicated in findings from other Nigerian states. The study of Mu'awiyah et al. (2021) reported that healthcare workers at Ahmadu Bello University Teaching Hospital in Kaduna exhibited reasonable knowledge of EMR concepts but lacked hands on training. At the primary care level where staffing is thinner and educational backgrounds are varied; the gap is predictably wider.

The consequences of poor medical record management for data quality in Nigeria are quantifiable. According to Olukorode et al. (2024), in a systematic review of the impact

of electronic medical records on healthcare delivery in Nigeria, found that the introduction of EMR systems was associated with a pooled improvement of 142% in data quality (95% CI: 82% to 203%, $p < 0.001$). This finding, derived from four facility level studies, suggests that the baseline data quality in facilities operating paper-based systems is extremely low and even modest electronic intervention can produce measurable gains.

The District Health Information System version 2 (DHIS2) is an open-source software platform used in over 70 low middle income countries for health data management and monitoring (Farnham et al., 2023). Nigeria's adoption of DHIS2 began in 2010; with the platform gradually replacing the earlier paper based National Health Management System. By 2017, the DHIS2 Routine Immunization module had achieved national scale deployment across all 774 LGAs (Shuaib et al., 2020). Despite this achievement, data quality within DHIS2 remains a concern. According to Bhattacharya et al. (2019) in a case study from Gombe State, found that while DHIS2 offered high potential for monitoring maternal and neonatal health indicators, facility level reporting completeness varied considerably and discrepancies between paper register data and DHIS2 entries were common. Coordinated action across multiple tiers of the health system, including regular data quality reviews, feedback mechanisms and supervision was identified as necessary for DHIS2 to fulfil its monitoring function.

In Kogi State specifically, the data reporting rate via DHIS2 was estimated at between 45% and 60% as of 2020 (Alobo et al., 2020). This figure suggests that a significant proportion of health service delivery data generated at the facility level never reaches the state or national databases, rendering any planning based on DHIS2 outputs incomplete. The reasons are structural: many PHCs lack internet connectivity, the staff responsible for data entry often have competing clinical responsibilities and the transition from paper registers to electronic forms has not been accompanied by adequate training or equipment.

The adoption of electronic health records (EHRs) in sub-Saharan Africa has been characterized by pilot projects, donor funded initiatives and localized implementation that rarely achieve sustainability or scalability (Mugauri et al., 2025). A multi-state study of EMR adoption in Nigeria by Akwaowo et al. (2022) found that perceived usefulness was the strongest predictor of adoption, followed by awareness and relative advantage. Infrastructure availability and ease of use, while important, did not reach statistical significance in the model. The study concluded that the Nigerian healthcare system demonstrated readiness for EMR adoption, provided that implementation addressed contextual factors including training data security concerns and workflow integration.

The Kogi State Specialist Hospital represents one of the few Nigerian health facilities operating an integrated electronic health record system. Deployment of Care Plus EMR system at the hospital in 2013 incorporated features such as electronic prescriptions, laboratory management and WHO ICD 10 based diagnosis coding (Alobo et al., 2020). This experience, though situated at the tertiary level, offers proof of concept for electronic record management within the Kogi State health system.

Interoperability refers to the ability of different information systems, devices or applications to access, exchange and cooperatively use data in a coordinated manner (Bank, 2023). In healthcare, interoperability enables patient records created at one facility to be accessed and interpreted at another, provided both systems adhere to shared data standards. The World Health Organisation and the African Union have both

signed guidelines emphasizing the need for harmonized health information exchange across the continent (Mamuye et al., 2022). At the global level, standards such as Health Level Seven Fast Healthcare Interoperability Resources (HL&FHIR), Systematized Nomenclature of Medicine Clinical Terms (SNOMED CT), and Logical Observation Identifiers Names and Codes (LOINC) provide the technical vocabulary for interoperable health data exchange. By 2023, the number of countries utilizing SNOMED CT had grown to 48, up from 9 in 2007 (Kwon et al., 2024). However, the adoption of these standards in African countries remains limited with most health facilities operating propriety or locally developed systems that cannot communicate with one another (Alunyu et al., 2024). For PHCs in Adavi, Okehi and Okene LGAs, the interoperability challenges manifest at the most basic level: different facilities use different register formats, different patient numbering systems and different definitions of reportable data elements. A patient who visits a PHC in Okene and subsequently seeks care at a facility in Adavi has no transferable record, no common identifier and no assurance that the receiving facility will have access to their clinical history. Harmonization of the database system would address this gap at the local level positioning the facilities for eventual integration with state and national systems.

MATERIALS AND METHODS

The study adopted a descriptive cross sectional survey design. This design was selected because the research aimed to assess the current state of medical record management practices across multiple facilities at a single point in time, without experimental manipulation of any variable. Cross sectional designs are well established in health systems research for describing the distribution of conditions, practices or resources across populations or institutions (Creswell and Creswell, 2018). The study was conducted in Adavi, Okehi and Okene Local Government Areas of Kogi State, Nigeria. These three LGAs are located within the State Central Senatorial District and share borders with one another. Okene serves as the administrative headquarters of the Ebira ethnic group and hosts the largest concentration of health facilities among the three LGAs. Adavi LGA, with its headquarters in Ogaminana and Okehi LGA, headquarters in Obangede are predominantly rural with scattered settlements. Together, the three LGAs contain an estimated 156 registered PHCs, including primary health posts, primary health clinics and primary health centres of varying capacities.

Table 1: Profile of the Study Area

LGA	Headquarters	Estimated Population	Number of Registered PHCs	PHCs Sampled
Adavi	Ogaminana	238,000	48	14
Okehi	Obangede	198,000	42	13
Okene	Okene	322,000	66	18
Total		758,000	156	45

Source: Kogi State Primary Health Care Development Agency, 2023; National Population Commission Estimates.

In the Table 1, a multi stage technique was employed. In the first stage, all three LGAs were purposively selected based on their geographical contiguity, shared patient population and the absence of prior studies on medical record harmonization in the area. In the second stage, stratified proportional sampling was used to select 45 PHCs (approximately 29% of the total), ensuring representation from primary health post, clinics and centres. In the third stage, healthcare workers directly involved in record management at each selected facility were sampled. The sample size of 312 respondents was determined using Cochran's formular for finite populations:

$$n = \frac{NZ^2pq}{[d^2(N-1) + Z^2pq]}$$

Where N = total number of healthcare workers in sampled facilities (estimated at 1,560), Z = 1.96 (95% confidence level), p=0.5 (proportion assumed), q=1-p =0.5, d=0.05 (margin of error). This yielded a minimum sample of 315 for proportional allocation across the three LGAs.

Two instruments were used for data collection. The first was a structured questionnaire administered to healthcare workers, comprising four sections: demographic characteristics, current medical record management practices, perceived challenges and willingness to adopt a harmonized electronic system. The second instrument was an observational checklist completed by the research team during facility visits documenting the physical condition of record storage areas, types of registers in use, availability of computers or electronic devices, internet connectivity and power supply status. Both instruments were pilot tested at three PHCs in Ajaokuta LGA (not included in the main study) and revised for clarity and reliability. The Cronbach's alpha coefficient for the questionnaire was 0.87.

Data Analysis

Data obtained through questionnaire were analysed using the Statistical Package for Social Sciences (SPSS) version 27.0. Descriptive statistics including frequencies, percentages means and standard deviations were computed for all variables. Chi square tests were used to examine associations between categorical variables. Chi square tests were used to examine associations between categorical variables, particularly differences in record management practices across the three LGAs at significant level $p < 0.05$ was adopted for all inferential test.

Ethical Considerations

Ethical approval was obtained from the Kogi State Ministry of Health Research Ethics Committee. Written informed consent was secured from all participants prior to data collection. Anonymity and confidentiality were maintained throughout the study. Participation was voluntary and respondents were free to withdraw at any stage without consequence.

RESULTS AND DISCUSSION

Demographic Profile of Respondents

Of the 312 questionnaires distributed, 294 were returned and found usable, yielding a response rate of 94.9%. the respondents comprised Community Health Extension Workers (CHEWs) at 42.6%, Community Health Officers (CHOs) at 18.9%, nurses and midwives at 24.3%, were female and the mean years of service was 8.4 (SD = 4.7). By LGA, 32.4% of respondents from Adavi, 26.7% from Okehi and 40.9% from Okene, reflecting the distribution of sampled facilities.

Current Medical Record Management Practices**Table 2: Medical Record Management Practices across the Three LGA**

Variable	Adavi n (%)	Okehi n (%)	Okene n (%)	Total n (%)
Record keeping method				
Paper based only	84(87.5)	68(86.1)	93(76.9)	245(82.7)
Hybrid (paper & electronic)	8(8.3)	6(7.6)	18(14.9)	32(10.8)
Full electronic	4(4.2)	5(6.3)	10(8.2)	19(6.5)
Standardisation				
Yes	9(9.4)	7(8.9)	22(18.2)	38(12.8)
No	87(90.6)	72(91.1)	99(81.8)	258(87.2)
Frequent loss of patient files				
Yes	71(74.0)	59(74.7)	81(66.9)	211(71.3)
No	25(26.0)	20(25.3)	40(33.1)	85(28.7)

The data in Table 2 indicate that paper-based record keeping dominated across all three LGAs, with the overall rate standing at 82.7%. Okene LGA exhibited a slightly higher proportion of facilities using hybrid or fully electronic systems compared to Adavi and Okehi, likely attributable to its relatively greater urbanization and the presence of Kogi

State Specialist Hospital, which has served as a demonstration site for EMR adoption. The absence of a standardized patient identification system in 87.2% of facilities is particularly consequential, as it precludes any meaningful tracking of patient across facilities.

Table 3: Challenges in Medical Record Management (N = 296) Challenges Reported by Healthcare Workers

Challenge	Frequency	Percentage (%)
Lack of storage space for records	247	83.4
Absence of computers or electronic devices	234	79.1
Unreliable or absent electricity supply	221	74.7
No internet connectivity	218	73.6
Insufficient training on record management	203	68.6
Inconsistent register formats across facilities	189	63.9
Inadequate staffing for record duties	176	59.5
Damage to records from environmental factors	164	55.4

The Table 3 revealed challenges reported by respondents in regard to both infrastructural deficits and systemic weakness. The most commonly cited challenge was the lack of adequate storage space for records (83.4%), followed by the absence of computers or electronic devices (79.1%). Unreliable electricity and absence of internet connectivity, reported by 74.7% and 73.6% respectively, represent foundational barriers to any electronic record system. These findings are consistent with the broader national picture, where WHO estimates indicate that 75% of Nigerian PHCs lack the minimum required equipment package (PharmAccess Foundation, 2023).

Willingness to Adopt a Harmonized Computer-based Medical Record Database System

When asked about their willingness to adopt a standardized computer-based medical record system 89.4% of respondents indicated strong or moderate willingness. The primary conditions attached to willingness were adequate training (cited by 94.3%), provision of functional equipment (91.8%) and reliable power supply (88.7%). Only 4.7% of respondents expressed outright resistance, with reasons including concerns about displacement (2.4%) and distrust of electronic systems' security (2.3%).

Table 4: Facility Checklist Findings (N = 45 PHCs)

Indicator	Frequency	Percentage (%)
Dedicated record storage room available	12	26.7
At least one functional computer present	8	17.8
Functional internet connectivity	5	11.1
Connected to national electricity grid	31	68.9
Alternative power source available	14	31.1
Using NHMIS standard register formats	29	64.4
Records stored in secure/weatherproof location	16	35.6
Trained health records personnel on staff	7	15.6

The Table 4, observational findings reveal severe infrastructure inadequacy. Only 26.7% of visited facilities had a dedicated room for storing patient records and just 17.8% possessed at least one functional computer. Internet connectivity was available in only 11.1% of the facilities while 31.1% lacked connection to the national electricity grid.

Perhaps the most telling challenge was that only 15.6% of the facilities had trained health records personnel on their staff list. The implication is that for record management, the vast majority of these PHCs falls to clinical staff as an additional duty, performed without specialized training or allocated time.

Table 5: Association between LGA and Record Management Variables

Variable	χ^2	Df	p value	Decision
Record keeping method	8.742	4	0.033	Significant
Standardisation patient ID	6.891	2	0.032	Significant
Frequent loss of files	2.318	2	0.314	Not significant
Willingness to adopt EMR	1.547	2	0.461	Not significant

Significance level: $p < 0.05$

The Table 5, chi square analysis revealed statistically significant associations between LGA and record keeping method ($\chi^2 = 8.742$, $df = 4$, $p = 0.033$) and between LGA and the use of a standardized patient identification system ($\chi^2 = 6.891$, $df = 2$, $p = 0.032$). These findings confirm that record management practices vary significantly across the three LGAs, reinforcing the case for harmonization. The non-significant association between LGA and willingness to adopt CMRD ($p = 0.461$) suggests that readiness for a unified system is uniformly high across all areas.

Discussion

The findings of this study confirm that medical record management in PHCs across Adavi, Okehi and Okene LGAs operates well below accepted standards for health information systems. The near total reliance on paper-based systems (82.7%), the absence of standardized patient identifiers (87.2%) and the frequent loss of patient files (71.3%) together constitute a system in which continuity of care is structurally undermined. These results are consistent with national level assessments. The tracking exercise across PHCs in Nigeria found that 80% fell below the minimum best practice prescribed by the NPHCDA, with deficiencies in infrastructure, staffing and service delivery ranking among the pervasive problems (Ogah et al., 2024).

The strong willingness among healthcare workers to adopt an electrical medical record system (89.4%) is encouraging, but it must be interpreted alongside the infrastructural realities. Only 17.7% of facilities possessed a functional computer and only 11.1% had internet connectivity. Any harmonization initiative that is premised on full digitization without first addressing these basic gaps will replicate the failures of previous e-health projects in the country. Akwaowo et al. (2022) reached a similar conclusion in their multi state study, noting that while Nigerian healthcare professionals demonstrated readiness for EMR adoption the absence of enabling infrastructure remained the binding constraint.

Harmonizing computer-based medical database system required the presence of computers, internet facilities and space facilities which are foundational mechanism for successful implementation of digital medical record system in any healthcare centre. Primary healthcare centres in Nigeria including Kogi state faced critical infrastructure deficit which often affect good healthcare delivery. They lack basic infrastructure such as computer equipment and internet facilities. The findings of this study revealed that primary healthcare from the LGAs of Kogi lack requisite infrastructure that could support implementation of computer-based medical record database system. Therefore, harmonization of CMRD in primary healthcare centres needs to start with basic infrastructure. The evidences from Bolatito and Togunwa (2025), Adedeji et al. (2022) revealed that integrating electronic medical record in primary healthcare centre faced critical challenges in the implementation. Electricity is a fundamental fulcrum upon which every digital device depends for effective functioning and service delivery. Nigeria as a country faces critical challenges in adoption of electronic medical records in primary healthcare centres due

to lack of stable power supply, unreliable network, and IT staff support. The study of Onyeabor et al. (2025) which uncovered that electricity power supply, lack of network connectivity and technical staff support as major barrier working against the implementation of electronic health records in tertiary hospitals.

Interoperability is fundamentally designed system with capability to reciprocate the same information functionality when compare with others information system. It should be designed to work seamlessly with ability to exchange data with several established platforms such as open-source EMRs, civil registry and vital statistics, laboratory information systems, and master patient indices. Primary healthcare in Nigeria, particularly Kogi State faced this critical challenges in adoption of a system that work seamlessly with other information system. Migration of patient record often exposed vital information to unauthorise access. Generally, evidence literature on EMR security noted that transforming paper record to electronic medical record has opened way for health data vulnerability over network. The evidence showed that electronic medical record faced cybersecurity threat. The study of (Omosho and Emuoyibofarhe (2014) noted that cryptograph has been partially used as means of controlling cyber threat.

The Significant variation in record keeping practices across the three LGAs ($p = 0.033$) underscores the absence of a coordinating mechanism for health information management at the sub state level. While Okene LGA shows marginally better indicators, likely due to its semi urban character and the presence of the Reference hospital, the overall picture remains one of fragmentation. This fragmentation has a cascading effect on data quality at higher levels of the health system. When facility level data are recorded in inconsistent formats, the aggregation upload processes that feed into DHIS2 become error prone, contributing to low data reporting rates documented for Kogi State.

The proposed framework for harmonization should therefore be phased. In the immediate term, standardizing the paper-based system, through uniform register formats, a common patient numbering scheme linked to the National Health Insurance Authority Identification system and agreed data element definitions would produce meaningful improvements in data quality and cross facility compatibility without requiring electronic infrastructure. According to Bhattacharya et al. (2019), as demonstrated in Gombe State, improvements in register design and data extraction protocols within the paper to DHIS2 pipeline significantly enhanced the facility reported data.

In the medium term, the deployment of office capable electronic tools such as the ODK (Open Data Kit) platform or the OpenMRS offline module would allow facilities to capture data electronically without continuous internet connectivity. Data could be synchronized when connectivity becomes available, either through periodic uploads at the LGA office or via mobile data connections. This model has been successfully implemented in comparable settings in Ethiopia, where DHIS2 deployment at PHC level was accompanied by structured training programmed and regular

supervision (Zerfu et al., 2024). In the long term, full integration with the NHMIS through DHIS2, supported by a dedicated health information exchange architecture, would enable real time data sharing across facilities, LGAs and the State health system. The adoption of open standards such as HL7 FHIR for data exchange and ICD coding for diagnosis classification would position the system for eventual interoperability emphasizing that effective implementation requires not only technical standards but also governance

structures, legal frameworks for data ownership and privacy and sustained investment in human capacity (Bank, 2023).

Proposed Framework for Database Harmonization

Drawing on the findings of this study and the comparative experiences reviewed in the literature, the following three phase framework is proposed for harmonizing the computer-based medical record database system across PHCs in Adavi, Okehi and Okene LGAs.

Table 6: Phased Framework for Medical Record Database Harmonization

Phase	Key Activities	Expected Outcomes	Timeline
Phase 1: Standardisation	Adopt uniform NHMIS register formats; implement common patient numbering; train staff on data entry protocols; establish LGA data quality review committees	Consistent data elements across all PHCs; reduced duplication; improved paper to DHIS2 data flow	0 to 12 months
Phase 2: Digitisation	Deploy offline capable electronic tools (ODK/OpenMRS); provide solar powered tablets or laptops; train designated data entry personnel; establish periodic data synchronization protocols	Electronic capture at point of care; real time data at LGA level; reduced transcription errors	12 to 30 months
Phase 3: Integration	Full DHIS2 integration; adopt HL7FHIR for data exchange; implement unique patient identifiers linked to NIN; establish inter facility referral tracking	Interoperable patient records; real time state level dashboards; longitudinal patient tracking across facilities	30 to 48 months

The Table 6, revealed how this phased approach recognizes that infrastructural development, human capacity building and policy alignment cannot occur simultaneously. The framework is designed to produce incremental improvements at each phase while building the foundations for full digital integration. Cost estimated for similar implementations in Nigeria PHCs, drawing on the World Bank and NPHCDA's facility renovation benchmarks, suggest that Phase 1 activities could be accomplished at approximately 2.5 million Naira per LGA, Phase 2 at 15 to 20 million Naira per LGA and Phase 3 at 8 to 12 million Naira per LGA, exclusive of recurrent costs for internet connectivity and equipment maintenance.

CONCLUSION

In conclusion the study has documented the fragmented and predominantly paper-based state of medical record management in PHCs across Adavi, Okehi and Okene LGAs of Kogi State. The absence of standardized patient identifiers, the inconsistency in register formats, the frequent loss of records and the severe infrastructure deficits collectively compromise the quality of care delivered to over 700,000 residents served by these facilities. At the same time, the high willingness of healthcare workers to adopt computer-based medical record systems provides a foundation upon which reform can be built. Harmonizing the computer-based medical record database system across these three LGAs is not merely a technical exercise in data management. It is a prerequisite for community of care, accurate disease surveillance, evidence-based health planning and accountability in the use of public health resources. The phased framework proposed here, moving from paper standardization through offline digitization to full CMRD integration, offers a realistic pathway that can be implemented within the resources constraints of the Kogi State health system, partners and aligned with the NPHCDA's ongoing facility renovation programme.

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