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Original Article

Mentorship Models for Health Information Management and Digital Health Workforce Development in Nigeria: A Scoping Review

Yusuf Popoola [1,2]

[1] Health Information Management, School of Public Health, University of Port Harcourt, Port Harcourt, Nigeria
[2] Digital Health, European Campus Rottal-Inn, Deggendorf Institute of Technology, Pfarrkirchen, Germany.

Abstract:

Introduction: Nigeria has invested substantially in electronic health records, hospital information systems, and national digital health programmes, yet limited attention has been given to the Health Information Management (HIM) and Digital Health professionals involved in their implementation and use. Although mentorship is widely recommended to strengthen the workforce in developing countries, evidence remains fragmented. This scoping review mapped peer-reviewed evidence on mentorship models relevant to this workforce in Nigeria and comparable settings.

Methods: We conducted a scoping review using the Arksey and O'Malley and Levac et al. frameworks and reported it according to PRISMA-ScR. PubMed, Scopus, Web of Science, African Journals Online, and Google Scholar were searched for English-language publications from 2015 to 2025. Eligibility was structured using a Population–Concept–Context framework, and records were screened and charted against predefined criteria.

Results: Of 341 records identified, 23 sources met the inclusion criteria: 19 primary empirical reports and four evidence syntheses. Eight of the 19 primary reports evaluated an implemented mentorship programme, and one of these eight used a concurrent comparison group. Four programmes used virtual or predominantly online delivery, while none specifically targeted HIM professionals. Reported outcomes included workforce competencies, research and digital skills, professional support, and health information system implementation and use.

Conclusion: Mentorship relevant to HIM and digital health is commonly embedded in broader capacity-building initiatives. Direct, comparative, and HIM-specific programme evidence remains limited, supporting the need for clearly specified models and more rigorous evaluation. Strengthening the HIM workforce requires mentorship designed for it, and evaluated well enough to inform policy.

Keywords: Mentoring; Capacity building; Health workforce; Health information systems; Medical informatics; Developing countries; Nigeria; Scoping review.

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***Correspondence to:**
Yusuf Popoola,
Health Information Management,
School of Public Health,
University of Port Harcourt, Port Harcourt, Nigeria
Digital Health, European Campus Rottal-Inn, Deggendorf Institute of Technology, Pfarrkirchen, Germany
Email: yapopoola@gmail.com

Introduction

Mentorship is widely recognized as an important mechanism for professional development, capacity building, and knowledge transfer across health professions. In academic and health system settings, mentorship has been shown to support career progression, skill development, and professional identity formation, particularly in fields that require continuous learning and adaptation (1). Foundational work in academic medicine

further describes mentorship as a longitudinal and developmental relationship that benefits both individuals and institutions (2). In low- and middle-income countries (LMICs), where health systems frequently face workforce shortages and limited training opportunities, mentorship has been identified as a complementary strategy to formal education and supervision for strengthening workforce performance and sustainability (3,4).

Health information management (HIM) and digital health professionals play a central role in ensuring the availability, quality, and use of health data that underpin service delivery, planning, and decision-making. In Nigeria, ongoing investments in electronic health records (EHRs), hospital information systems, and digital health initiatives have increased the demand for a skilled and adaptable health information workforce. Health information systems (HIS), electronic medical records (EMRs), and the information technology (IT) applications within them are central to this workforce's remit. However, existing evidence highlights persistent challenges related to workforce preparedness, professional development pathways, and system implementation within Nigeria and the broader sub-Saharan African context (5,6). In response to these challenges, mentorship has increasingly been incorporated into health system strengthening initiatives, including digital health and service delivery programs, although often without being explicitly defined or formally evaluated (7).

Published mentorship literature from Nigerian and African settings has concentrated primarily on clinical training and health research capacity rather than the profession-specific competencies required for managing health information systems and digital health infrastructure (8,9). This creates an important evidence gap for health information management professionals and the wider digital health workforce (10).

Previous scoping reviews have examined mentorship among health personnel in low- and middle-income countries and mentoring or coaching for digital-technology adoption and implementation among healthcare professionals globally (4,11). However, these reviews were not specifically designed around the professional roles, competency requirements, and workforce-development needs of health information management and digital health professionals in Nigeria. No previous scoping or systematic review specifically mapping mentorship models for this workforce in Nigeria or the wider African region was identified. Accordingly, this scoping review

aimed to map the types and characteristics of mentorship models, their implementation settings, reported workforce and health information system outcomes, and the remaining evidence gaps relevant to health information management and digital health workforce development in Nigeria and comparable low- and middle-income settings.

Materials and Methods

Study design

This scoping review was conducted in accordance with the methodological framework proposed by Arksey and O'Malley (12) and further guided by Levac et al. (13). Reporting followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) guideline (14). Additional methodological guidance was informed by the Joanna Briggs Institute (JBI) Manual for Evidence Synthesis (15). The completed PRISMA-ScR checklist is provided in Supplementary File 1. A protocol was not registered

Research question and Population–Concept–Context framework

Following JBI guidance, the review question, eligibility criteria, and search concepts were structured using the Population–Concept–Context (PCC) framework. The primary review question was: What mentorship models and implementation characteristics have been reported for health information management and digital health workforce development in Nigeria and comparable low- and middle-income settings, and what workforce or health information system outcomes and evidence gaps have been reported?

The secondary questions were:

1. What types and delivery modalities of mentorship have been described?
2. Which professional groups and implementation settings have been targeted?
3. What workforce-development or health information system outcomes, facilitators, and barriers have been reported?
4. What evidence gaps remain relevant to mentorship policy, practice, and research in Nigeria?

The PCC elements are defined in Table 1. These elements informed the search concept blocks and the eligibility criteria.

Table 1: Population–Concept–Context framework

PCC element	Operational definition for this review
Population	Health information management professionals; health informatics and digital health practitioners; and health workers, managers, educators, trainees, or students whose mentorship experiences were directly related to health information, informatics, digital-health competencies, data use, or health information system implementation. Sources focused only on patients, caregivers, non-health workforces, or health personnel without an information or digital-health connection were excluded.
Concept	Formal or informal mentorship and mentoring, including structured, peer, virtual or long-distance, workplace-integrated, and on-the-job models. The concept also encompassed mentorship embedded within capacity-building, education, professional support, supervision, or digital-health implementation, together with sources reporting mentorship needs or enabling conditions directly relevant to mentorship delivery. Purely technical training without mentorship or workforce-support relevance was excluded.
Context	Nigeria was the principal context. Evidence from other sub-Saharan African or low- and middle-income settings was eligible when the mentorship mechanism, implementation experience, or outcome was transferable to Nigerian health information management or digital health workforce development. Eligible settings included healthcare facilities, educational and research institutions, professional networks, and health information or digital-health programmes.

Information sources and search strategy

A comprehensive literature search was conducted in PubMed, Scopus, Web of Science, African Journals Online (AJOL), and Google Scholar. The search covered publications from 2015 through 2025 and was limited to English. The lower date limit was selected because 2015 marked the beginning of Nigeria's National Health ICT Strategic Framework 2015–2020, a national policy for health information and communication technology (ICT), which established Capacity Building as one of its core components, defined as empowering the health and ICT workforce to develop, use and maintain Health ICT through education and training programmes, and listed ongoing on-the-job Health ICT mentoring among its action items (16). The period therefore captured the decade following a directly relevant national policy milestone while maintaining relevance to contemporary digital-health technologies and workforce contexts. The PubMed strategy combined mentorship, health information and digital health, and geographic/contextual concepts and was adapted to the syntax and functionality of each source. Only peer-reviewed literature was eligible; grey literature, conference abstracts, editorials, and opinion pieces were excluded. Backward citation searching was conducted by screening the reference lists of all included sources. Candidate records identified in this way were assessed against the same eligibility criteria; all were either already retrieved by the database and Google Scholar searches or did not meet the eligibility criteria, so no additional sources were added. No forward citation tracking was undertaken. Google Scholar was used as a supplementary source. The first 200 relevance-ranked results were screened as a pragmatic stopping rule within the 200–300-result range proposed for Google Scholar searching in evidence reviews (17). Screening was not continued to a formally defined saturation threshold, and no prospective saturation criterion was applied. Searches were completed by December 2025. The complete search strategy for each source, together with the limits applied and the records retrieved, is provided in Supplementary File 2. The PubMed, Scopus, and Web of Science strategies were recorded at the time of searching and are reproduced verbatim. The Google Scholar strategy is reported in the simplified form that the platform supports, as it does not process

extended Boolean strings. AJOL's interface does not reliably support Boolean or exact-phrase queries and substituted terms during searching, so its strategy is reported as entered, together with a note describing that behavior.

Eligibility criteria

Eligibility criteria were organized using the PCC framework presented in Table 1. Sources were eligible when their population, mentorship concept, and context met the operational definitions in the table. Eligible source types included primary empirical reports and evidence syntheses, including systematic, scoping, and narrative reviews, provided that they reported findings directly relevant to mentorship for health information management or digital health workforce development. Sources had to be peer-reviewed, published in English between 2015 and 2025, and situated in Nigeria or a transferable low- and middle-income context. Sources focused exclusively on clinical mentorship without an information, informatics, digital-health, data-use, or workforce-development link; non-peer-reviewed publications; and reports without accessible full text were excluded. Evidence syntheses were treated as secondary sources rather than as additional primary studies.

Study selection and screening process

All records retrieved from the searches were imported into EndNote 2025 (Clarivate). Duplicate records were identified and removed using EndNote's duplicate-detection function. This process removed 96 duplicate records, leaving 245 unique records for title and abstract screening. Potentially eligible reports then underwent full-text assessment. Screening and study selection were performed by a single reviewer because a second reviewer was not available within the resources for this review. Screening decisions were guided by predefined eligibility criteria, reasons for exclusion at the full-text stage were documented, and uncertain decisions were reassessed against the original reports before final inclusion. No independent duplicate screening was undertaken. The overall study-selection process is presented in a PRISMA flow diagram.

Data extraction

Data were charted from all included sources using a predefined framework developed for this review. Charted items included author and year; country and setting; source and study design; health information or digital-health domain; mentorship model or related workforce-support approach; implementation context; reported workforce or system outcomes; and challenges or evidence gaps. Data charting was conducted by the same reviewer. Entries were checked iteratively against the source articles during synthesis, and ambiguities were resolved by re-examining the original reports. No independent duplicate data charting or verification was performed.

Source type was coded as either a primary empirical report or an evidence synthesis. Review articles were used only to map review-level mentorship models, implementation issues, and evidence gaps; primary-study sample sizes, outcome observations, and effect estimates reported within reviews were not re-extracted as new observations. Primary reports represented in each included review were cross-checked against independently included primary reports using author, year, title, and digital object identifier where available. When overlap occurred, empirical findings were counted once from the primary report, and the review contributed contextual information only.

Data synthesis and analysis

The charted data were synthesised descriptively and narratively because the included sources were heterogeneous in design, mentorship model, context, and outcomes; no quantitative meta-analysis was undertaken. Tables and narrative synthesis were used to map source characteristics, delivery models, implementation settings, outcomes, facilitators, barriers, and evidence gaps. No formal critical appraisal or risk-of-bias assessment was performed. Evidence-gap indicators were operationalised at the source level. Sources were coded by source type; whether a primary report evaluated an implemented mentorship programme; use of a concurrent comparison group; target workforce; delivery modality; and explicit alignment with a national health information system or digital-workforce initiative. Counts concerning the empirical

evidence base use the 19 primary reports as the denominator; programme-level counts use the eight primary reports that evaluated an implemented mentorship programme. The four evidence syntheses were excluded from programme-frequency calculations, and numerators, denominators, and percentages are reported together.

Ethical considerations

Ethics approval and consent to participate: Not applicable. This study was a scoping review of peer-reviewed, publicly available literature and did not involve the collection of primary data from human participants, the use of identifiable personal data, or any direct interaction with individuals. Consent for publication: Not applicable.

Results

Study Selection

A total of 341 records were identified: 141 from four bibliographic databases (PubMed, n = 28; Scopus, n = 22; Web of Science, n = 15; AJOL, n = 76) and 200 from the Google Scholar search engine; and no additional sources from backward citation searching after candidate records were assessed against the eligibility criteria. The AJOL search string was not archived verbatim, and AJOL's interface does not reliably support Boolean or exact-phrase queries and does not permit date-range filtering; the 2015–2025 limit was therefore applied by manual screening of results. The AJOL count is the figure recorded at the time of searching, and repeating the search may not return the same total (Supplementary File 2). After 96 duplicates were removed, 245 records underwent title and abstract screening and 173 were excluded. Seventy-two reports were sought and retrieved for full-text assessment; none were unavailable. Forty-nine reports were excluded because they were not relevant to mentorship (n = 20), lacked a health information management or digital-health focus (n = 18), or provided insufficient methodological or contextual detail (n = 11). Twenty-three sources met the eligibility criteria and were included (Figure 1).

Characteristics of included sources

The 23 included sources were published between 2015 and 2025. Sixteen were charted as Nigeria-only, two included Nigeria alongside broader settings, and five examined other low- and middle-income or multi-country settings. The highest publication counts occurred in 2021 and 2023, with four sources in each year (Figure 2). The corpus comprised 19 primary empirical reports and four evidence syntheses (two scoping reviews and two narrative reviews) and encompassed qualitative, quantitative, mixed-methods, programme-evaluation, case-study, and review designs. Nigeria-focused included sources addressed mentorship or related professional support within electronic medical record use, informatics education, information-technology skills, supportive supervision, and digital-health workforce capacity (18–24). Ibeneme et al. (25) was used only as contextual literature concerning capacity strengthening among digital-health leaders and was not counted among the 23 included sources. The remaining included sources described long-distance or virtual mentorship, peer learning, professional support associated with health-technology use, supportive implementation, electronic medical record adoption, and informatics skills and workplace support (26–36). References 37–42 were used only to contextualise the findings in the Discussion. The reference lists of all four included reviews were screened. Awotiwon et al. (7) was identified as both independently included and drawn upon as evidence within the narrative synthesis of Okunade et al. (27), which reports its implementation setting, effectiveness findings, and identified barriers; its empirical findings were therefore counted once from the primary report, and the review contributed contextual information only. Robinson-Bassey and Edet (19) is cited in the background of Harerimana et al. (32) but was not among that review's synthesised studies, so no double counting arose. Schwerdtle et al. (4) and Odekunle et al. (6) contained no independently included primary reports.

Mentorship models and implementation settings

Eight primary reports evaluated implemented mentorship programmes. The reported approaches comprised a structured localisation model, online or e-mentorship, mentorship embedded within an informatics apprenticeship,

an institutional capacity-building partnership, a virtual peer group, a virtual matching platform, and a peer mentorship intervention (7,9,22–24,28,34,36). Four of the eight programmes (50.0%) used virtual or predominantly online delivery. The programmes operated in academic and professional networks, healthcare and primary-care settings, and national or multi-institutional health information initiatives.

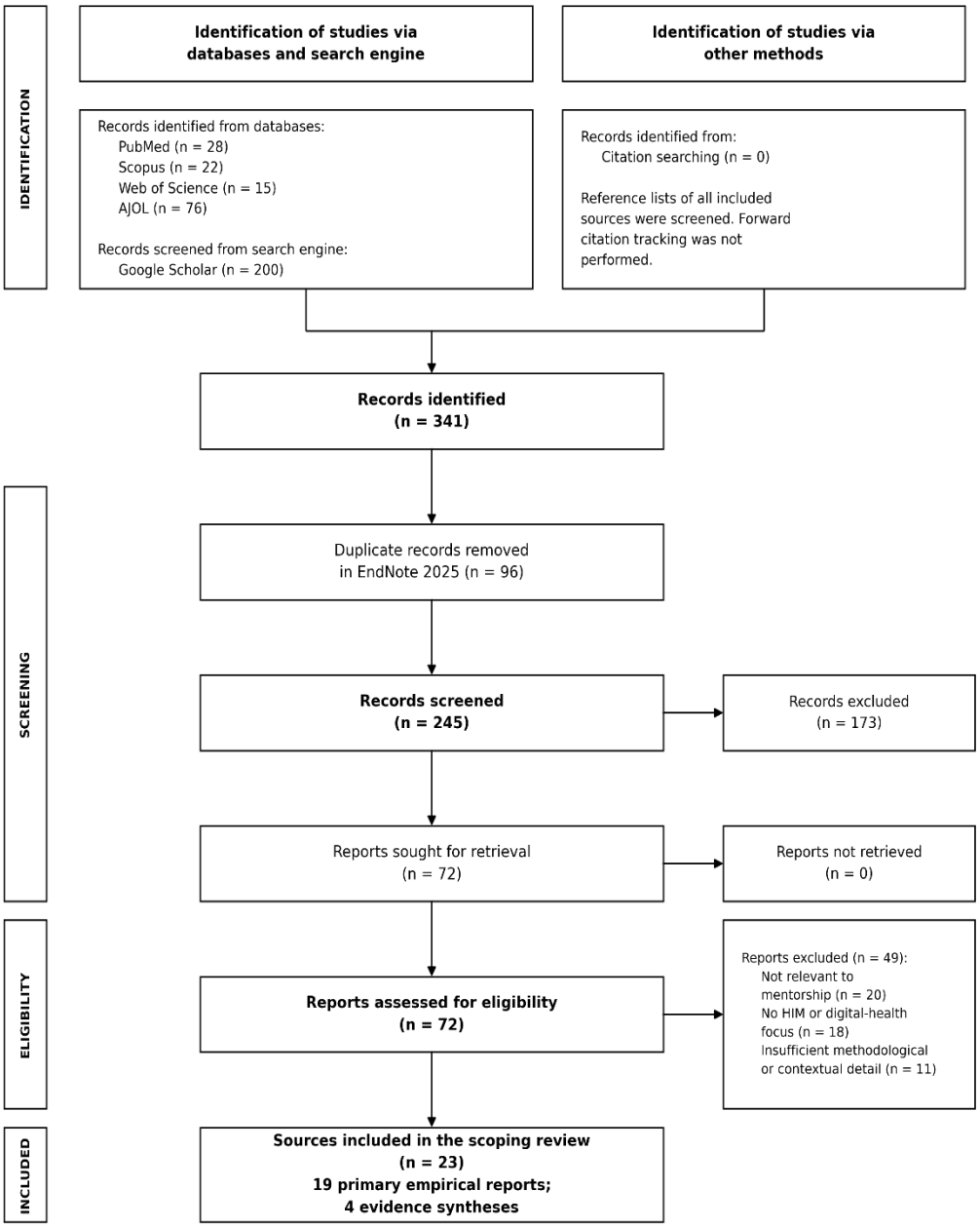

Figure 1: PRISMA flow diagram for source identification, screening, eligibility assessment, and inclusion. The AJOL count is the figure recorded at the time of searching; because AJOL does not support reliable Boolean querying or date-range filtering, repeating the search may not return the same total (see Supplementary File 2).

Reported Outcomes

Across the eight implemented-programme reports, outcomes included research or informatics competencies, academic performance, professional confidence and support, programme feasibility and acceptability, data use, and health information system implementation. The reports used programme-specific combinations of skills, implementation, academic, system, or output measures; no common mentorship-specific outcome instrument was used across reports. Only one of the eight reports (12.5%) used a concurrent comparison group.

Evidence gaps and reporting limitations

Of the 23 included sources, 19 were primary empirical reports and four were evidence syntheses. Eight of the 19 primary reports (42.1%) evaluated an implemented mentorship programme; the other 11 (57.9%) examined mentorship needs or feasibility, training or professional support, workforce gaps, technology-adoption factors, or related correlates without evaluating an implemented mentorship programme. Programme-level gaps were therefore quantified using the eight implemented-programme reports as the denominator (Table 3).

Discussion

This review mapped 23 peer-reviewed sources published from 2015 to 2025: 19 primary empirical reports and four evidence syntheses. Eight primary reports evaluated an implemented mentorship programme, whereas 11 described needs, feasibility, training or professional support, workforce gaps, technology-adoption factors, or related correlates. Reported outcomes across the eight programmes included competencies, academic or research outputs, professional support, implementation outcomes, and use of health information systems. However, only one programme report used a concurrent comparison group, and none specifically targeted HIM professionals

The findings are consistent with wider mentorship literature describing mentorship as a developmental process that supports skill acquisition, professional growth, and institutional capacity (1,2). They also complement a global scoping review of mentoring and coaching for healthcare professionals' digital-technology adoption and implementation, which similarly found a largely descriptive evidence base and heterogeneous programme outcomes (11). Within the present review, only one of eight implemented-programme reports used a concurrent comparison group, limiting causal attribution. Two programmes were explicitly embedded in national health information or informatics workforce initiatives (22,23), while the remaining programmes addressed clinical-tool adaptation, research capacity, professional development, or medical education. This distribution underscores the limited direct evidence for profession-specific HIM mentorship. Broader African mentorship, digital-health, and health information system literature similarly emphasises institutional capacity, workforce development, and implementation context as important determinants (37–42).

Implications for Practice and Policy in Nigeria

For Nigerian practice and policy, the strongest directly relevant examples are the Growing Expertise in E-health Knowledge and Skills (GEEKS) informatics apprenticeship in Nigeria and the Ethiopian capacity-building and mentorship partnership for national health information systems (22,23). These programmes illustrate how mentorship can be embedded within routine projects, cross-agency collaboration, and workforce-capacity initiatives. Four of eight evaluated programmes used virtual or predominantly online delivery (9,24,28,36), indicating a potential approach to geographic and institutional access constraints, although comparative evidence on reach and equity was not reported consistently. Health system managers and educational institutions should define mentor and mentee roles, matching procedures, contact expectations, protected time, and outcome measures before implementation. National digital-health workforce initiatives should also distinguish mentorship from training and supervision so that its independent contribution can be evaluated.

Gaps and future research

As shown in Table 3, eight of 19 primary reports evaluated an implemented mentorship programme, one of those eight used a concurrent

comparison group, and none targeted HIM professionals specifically. Two of eight were explicitly aligned with national HIS or digital-workforce initiatives, and four used virtual or predominantly online delivery. Future research should therefore prioritise clearly specified HIM and digital-health mentorship programmes, comparative or longitudinal evaluation, consistent reporting of programme components, and a core set of workforce and system outcomes. Studies should also compare in-person, virtual, and hybrid delivery and report whether access and outcomes differ by institution, geography, professional role, or career stage.

Strengths and Limitations

A strength of this review is its structured mapping of multiple mentorship and workforce-support models across Nigeria and transferable low-resource settings, guided by established scoping-review and PRISMA-ScR methods (12–15). Several limitations require emphasis. Screening, study selection, and data charting were conducted by a single reviewer because of resource and time constraints. No part of the record set was independently screened or charted in duplicate. This is a strict practical limitation of the review. It increases the risk of missed eligible sources, inconsistent eligibility judgements, and extraction or interpretation errors, and it limits the reproducibility of the study selection and charting process. Source-specific export logs from the original search were not retained. Per-source record counts are reported in Supplementary File 2 for PubMed, Scopus, Web of Science, and Google Scholar. The AJOL search string was not archived verbatim. AJOL does not reliably support Boolean or exact-phrase queries, does not permit date-range filtering, and searches full text rather than title, abstract, and keyword fields, so date limits were applied by manual screening and its retrieval is not directly comparable in method to the other databases. Repeating the AJOL search may therefore not reproduce the count reported here. Google Scholar screening was limited to the first 200 relevance-ranked results and was not continued to formal saturation, so eligible records beyond the cutoff may have been missed. Restriction to English-language, peer-reviewed literature and exclusion of grey literature may have omitted relevant programme evidence. Finally, heterogeneity in source designs, mentorship definitions, and outcomes limited assessment of comparative effectiveness.

Conclusion

This scoping review identified 23 sources relevant to mentorship and workforce support for health information management and digital health in Nigeria and comparable settings. Eight of 19 primary reports evaluated an implemented mentorship programme, but only one used a concurrent comparison group and none specifically targeted HIM professionals. The evidence therefore supports mentorship as a plausible component of workforce development while remaining insufficient for firm conclusions about comparative effectiveness. Future programmes should define mentorship components clearly, align outcomes with national HIS and digital-health workforce priorities, and use stronger comparative and longitudinal evaluation designs.

Table 2: Characteristics of included sources (n = 23)

First author (Year)	Country/Setting	Study design	Mentorship focus	Health information domain	Key findings
Schwerdtle (2017) (4)	LMICs (multi-country)	Scoping review	Mentorship of health personnel to improve quality of care/workforce capacity	Health workforce capacity building (mentorship mechanisms and barriers transferable to HIM and digital health workforce development)	Summarized mentorship approaches used in LMICs, reported workforce performance/quality-of-care benefits, and highlighted common implementation barriers (resources, structure, supervision, documentation).
Odekunle (2017) (6)	Nigeria and sub-Saharan Africa	Narrative review	Mentorship and professional support	Electronic health records	Identified workforce capacity gaps and highlighted mentorship as a strategy to support EHR adoption.

Awotiwon (2018) (7)	Nigeria	Program evaluation	Structured mentorship	Digital clinical decision support tools	Demonstrated that mentorship supported localization and sustained use of a digital decision-support tool.
Ughasoro (2022) (8)	Nigeria	Qualitative study	Barriers and facilitators of mentorship	Health research and training institutions	Identified structural, institutional, and interpersonal barriers to mentorship and highlighted the role of structured mentorship and leadership support.
Schouw (2025) (9)	Sub-Saharan Africa	Mixed-methods evaluation	Online mentorship	Digital learning and research informatics	Found that online mentorship enhanced research competencies and access to mentorship.
Babalola (2025) (18)	Nigeria	Cross-sectional descriptive study	Training and capacity-building needs	Clinical informatics and EMR use	Reported that EMR adoption was limited by training gaps, information and communication technology (ICT) support, and infrastructure constraints.
Robinson-Bassey (2015) (19)	Nigeria	Cross-sectional study	Professional guidance and mentoring	Nursing informatics	Identified gaps in informatics education and emphasized ongoing professional support for technology use.
Adeleke (2015) (20)	Nigeria	Cross-sectional survey	Mentorship to address competency gaps	Health information management and health IT	Identified IT skill gaps among HIM professionals and highlighted mentorship and training as strategies for workforce preparedness.
Nwankwo (2018) (21)	Nigeria	Intervention study	On-the-job mentoring and supervision	Health management information systems	Found improvements in Health Management Information System (HMIS) data quality following training with supportive supervision and mentoring.
Rachlin (2023) (22)	Nigeria	Program evaluation	Mentorship embedded in training	eHealth systems	Reported improved competencies and engagement following mentorship-integrated digital health training.
Tilahun (2021) (23)	Ethiopia (LMIC)	Mixed-methods study	Institutional mentorship partnerships	National health information systems	Strengthened national health information system governance and workforce capacity through structured mentorship partnerships; findings are transferable to Nigeria and similar LMIC settings.
Toyin-Thomas (2024) (24)	Nigeria	Qualitative case study	Peer mentorship	Health research informatics	Demonstrated that peer mentorship supported research skills development and sustained engagement.
Obi (2021) (26)	Nigeria	Qualitative feasibility case study	Long-distance and peer mentorship	Public health informatics	Found that formal long-distance mentorship was feasible and acceptable for professional development and health information use.
Okunade (2023) (27)	Nigeria	Narrative review	Mentorship within workforce capacity building	Health information management and digital skills	Described mentorship as a component of workforce capacity building supporting digital health skills development.
Mogaji (2024) (28)	Nigeria and LMIC settings	Mixed-methods evaluation	Virtual mentorship platform (T-BOM)	Digital mentorship and workforce development	Demonstrated feasibility and acceptability of a virtual mentorship platform for skills development, with benefits related to accessibility and user engagement.
Ojo (2015) (29)	Nigeria	Correlational study	Professional support and mentoring	Electronic health information management systems	Identified mentoring and professional support as correlates of successful system implementation.
Schmitz (2022) (30)	Nigeria	Observational implementation study	Supportive implementation (non-formal mentorship)	Clinical decision support systems	Reported improved guideline adherence with training and ongoing supervisory support.

Akwaowo (2022) (31)	Nigeria	Multi-state implementation study	Capacity factors influencing adoption	Electronic Medical Records (EMRs) and digital health systems	Found EMR adoption to be influenced by training, organizational readiness, infrastructure, and technical support.
Harerimana (2021) (32)	Multiple African countries	Scoping review	Mentorship and faculty support	Nursing and health informatics education	Identified mentorship and faculty support as facilitators of nursing informatics education despite infrastructure and capacity constraints.
Sibiya (2023) (33)	Nigeria	Cross-sectional study	Training exposure and professional support	Electronic Health Records (EHRs) and nursing informatics	Found associations between EHR use, training exposure, and availability of workplace support.
Eleje (2025) (34)	Nigeria	Quasi-experimental study	Peer mentorship intervention	Medical education and digital learning	Found improved academic performance following peer mentorship intervention.
Adejumo (2023) (35)	Nigeria	Mixed-methods study	Mentorship needs and experiences	Nursing informatics and digital literacy	Identified unmet mentorship needs related to digital literacy and health information system use.
McGuire (2021) (36)	Sub-Saharan Africa	Mixed-methods pilot study	Virtual mentorship	Digital health research and informatics	Demonstrated feasibility and acceptability of virtual mentorship for research and digital skills development.

Note: Review articles were treated as secondary evidence sources and did not contribute to primary-report outcome or programme-frequency counts. Where an included review contained an independently included primary report, the empirical evidence was counted once from the primary report.

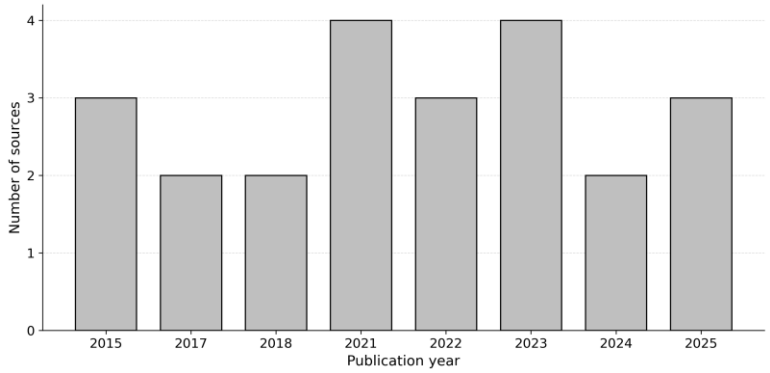

Figure 2: Distribution of included sources by year of publication (2015–2025).

Table 3: Quantified evidence gaps and reporting limitations

Domain	Quantified finding	Implication for practice	Priority for future research
Direct programme evidence	8/19 primary reports (42.1%) evaluated an implemented mentorship programme; 11/19 (57.9%) did not.	Programme-design decisions rely on a relatively small direct evidence base.	Evaluate clearly defined mentorship programmes separately from general training, supervision, or support.
Comparative evaluation	1/8 programme reports (12.5%) used a concurrent comparison group; 7/8 (87.5%) were non-controlled evaluations or case/programme reports.	Attribution of observed changes specifically to mentorship remains limited.	Use controlled, quasi-experimental, or theory-informed comparative designs where feasible.
HIM workforce specificity	0/8 programme reports (0%) targeted health information management professionals specifically.	Profession-specific mentorship needs for the HIM workforce remain untested.	Design and evaluate mentorship for HIM practitioners and emerging digital-health roles.

National HIS/digital-workforce alignment	2/8 programme reports (25.0%) explicitly evaluated mentorship embedded in a national HIS or digital/informatics workforce initiative; 6/8 (75.0%) did not.	Evidence directly applicable to national digital-health workforce planning is limited.	Align programme objectives and outcomes with national HIS and digital-health workforce priorities.
Virtual or online delivery	4/8 programme reports (50.0%) evaluated virtual or predominantly online mentorship.	Virtual delivery has a meaningful but still limited evidence base for widening access.	Compare virtual, hybrid, and in-person models and report reach, engagement, infrastructure needs, and differential access.
Outcome comparability	The eight programme reports used programme-specific outcome sets; no common mentorship-specific instrument was used across reports.	Findings cannot be compared consistently across programmes.	Develop a core outcome set covering competencies, technology or data use, professional development, implementation, and sustainability.

Note: Percentages concerning primary evidence use 19 primary reports as the denominator; programme-level percentages use the eight reports evaluating implemented mentorship programmes. The four evidence syntheses were excluded from these frequency calculations. Categories are not mutually exclusive.

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Authors' Contribution

Yusuf Popoola was responsible for all aspects of the study.

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Ethics Approval

Not applicable

Conflict of Interest

There are no conflicts of interest.

AI-assisted technology statement

Claude (Anthropic) was used to support language editing and organization of the manuscript. All content selection, interpretation, and final decisions were made solely by the author, who takes full responsibility for the accuracy and integrity of the work.

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