International Journal of Interdisciplinary Cultural Studies
ISSN: 2327-008X (Print), ISSN: 2327-2554 (Online)
Volume 21, Issue 1, 2026
https://cgscopus.com/index.php/journals

THE ROLE OF INFORMATION TECHNOLOGY IN TRANSFORMING HEALTHCARE DELIVERY IN EMERGING MARKETS: A SYSTEMATIC LITERATURE REVIEW

Edi Suyitno[1]
Universitas Esa Unggul, Indonesia.
Email: edisuyitno@student.esaunggul.ac.id

Agus Munandar[2]
Universitas Esa Unggul, Indonesia.

Tantri Yanuar Rahmat Syah[3]
Universitas Esa Unggul, Indonesia.

Abstract: Information Technology (IT) is increasingly heralded as a critical tool for overcoming chronic challenges in emerging markets (EMs), such as specialist shortages, geographical barriers, and data fragmentation. This Systematic Literature Review (SLR) comprehensively assesses the landscape of IT utilization to understand its key transformative roles, mechanisms, and major implementation challenges in these resource-constrained settings. Following the SALSA framework and PRISMA 2020 guidelines, a systematic search was conducted exclusively in the Scopus database, yielding 124 peer-reviewed articles published between 2015 and 2025. Data were extracted based on publication trends, geographical distribution, technology classification, and thematic content. The thematic synthesis focused on interpreting the roles and challenges reported across various IT categories. Research activity showed a sharp increase post-2021 and was heavily concentrated in Africa (n=56) and Asia (n=28). The technology classification revealed a dominance of studies focusing on Clinical Decision Support & AI/ML (n=35) and EHR/EMR/HIS (n=28). The thematic synthesis established that IT plays a dual role: enhancing clinical quality (through AI/ML to augment diagnosis) and expanding geographic access (via mHealth and Telemedicine). However, these efforts are constrained by persistent structural barriers, notably the lack of policy/governance frameworks (n=11), inadequate infrastructure, and reliance on unsustainable external funding. IT is an essential engine for transformation, effectively addressing clinical quality and access gaps. Yet, genuine and sustainable transformation requires a critical shift in focus. Future policy must prioritize robust governance, data interoperability, and local financing models to bridge the gap between technological innovation and effective systemic implementation.

Keywords: Digital Health, Information Technology, Emerging Markets, Telemedicine, mHealth, Systematic Review, AI/ML.

International Journal of Interdisciplinary Cultural Studies
ISSN: 2327-008X (Print), ISSN: 2327-2554 (Online)
Volume 21, Issue 1, 2026
https://cgscopus.com/index.php/journals

INTRODUCTION:

Healthcare systems in emerging markets (EMs) and Low- and Middle-Income Countries (LMICs) face a set of complexs, chronic challenges that impede the achievement of Universal Health Coverage (UHC). These challenges include, but are not limited to, the critical shortage and maldistribution of specialist healthcare professionals, vast geographical barriers separating patients from providers, and heavily fragmented data management systems often relying on paper-based records.

In the last decade, Information Technology (IT), broadly defined to include Electronic Health Records (EHR), Telemedicine, mobile health (mHealth), and Artificial Intelligence (AI), has emerged as a powerful, necessary lever for systemic change. Proponents argue that digital health solutions can effectively leapfrog traditional infrastructural hurdles, offering cost-effective ways to deliver quality clinical support, empower patients, and improve operational efficiency across disparate settings.

Despite the rapid proliferation of digital health initiatives across Africa, Asia, and Latin America, the scholarly literature remains fragmented. Various systematic reviews have addressed specific technologies (e.g., mHealth for maternal health) or single regions, but a comprehensive, multi-dimensional assessment of the entire landscape of IT's transformative role, its key mechanisms, policy requirements, and most persistent implementation barriers is lacking. This gap limits the ability of policymakers, practitioners, and technology developers to make evidence-based decisions regarding strategic investment and resource allocation in EMs.

Although the volume of research concerning digital health in EMs has steadily increased, a coherent understanding of how scholarly attention aligns with real-world healthcare needs remains unclear. For example, it remains uncertain whether the existing body of literature prioritizes foundational, high-impact technologies such as Electronic Health Records, or instead places disproportionate emphasis on cutting-edge trends such as Artificial Intelligence. Likewise, regional patterns—such as the high concentration of studies originating from African contexts—may influence the types of IT interventions being developed or deployed. Moreover, structural concerns related to governance, financing, regulatory frameworks, and capacity building are not always adequately addressed in current research, raising questions about whether an urgent policy gap persists in the digital health domain. This Systematic Literature Review seeks to address these concerns by presenting a synthesized, evidence-based overview of IT innovations in healthcare in emerging markets from 2015 to 2025, thereby offering strategic insights for governments, international organizations, and academic stakeholders committed to achieving sustainable digital

transformation.

The overarching objective of this Systematic Literature Review is to develop a comprehensive assessment of the current state of scholarly research on the role of Information Technology in transforming healthcare delivery across emerging markets. Through a structured and rigorous synthesis, this review aims to map existing knowledge, identify technological priorities, and reveal thematic patterns that shape the digital health landscape.

Guided by this objective, the review explores three key domains through its research questions. First, it seeks to describe temporal and geographical trends in digital health research conducted between 2015 and 2025, providing insight into how scholarly activity has evolved over time and across regions. Second, it examines which types of information technologies are most frequently investigated in the context of healthcare transformation, thereby identifying dominant technological categories and emerging areas of interest. Third, it synthesizes the major themes underlying the transformative roles, enabling mechanisms, and recurring implementation challenges associated with IT in healthcare delivery within emerging markets. Together, these inquiries provide a structured foundation for understanding how digital health research contributes to broader health system improvement efforts.

LITERATURE REVIEW:

Defining Information Technology (IT) in Health-care

Information Technology (IT) in healthcare, often encompassed by the term Digital Health, refers to the application of computer systems and communication technologies to manage patient data, support clinical decision-making, and facilitate healthcare service delivery. For the purpose of this review, IT is categorized into foundational, access-focused, and advanced solutions:

1. Foundational Systems: These include Electronic Health Records (EHR), Electronic Medical Records (EMR), and Health Information Systems (HIS). Their primary goal is to digitize core patient data, enhance operational efficiency, and establish a basis for data exchange (interoperability).
2. Access Technologies: Telemedicine/Telehealth (remote consultation, diagnosis, and mentoring) and mHealth (mobile applications, SMS, and wearable technologies) are essential for overcoming physical barriers, improving patient engagement, and expanding service coverage to remote areas.
3. Advanced Technologies: Clinical Decision Support (CDS) and Artificial Intelligence/Machine Learning (AI/ML) are designed to augment clinical capacity by processing complex data, predicting patient outcomes, and automating diagnostic processes.

International Journal of Interdisciplinary Cultural Studies
ISSN: 2327-008X (Print), ISSN: 2327-2554 (Online)
Volume 21, Issue 1, 2026
https://cgscopus.com/index.php/journals

The Context of Emerging Markets (EMs)

Emerging Markets, defined generally by the World Bank/IMF as Low- and Middle-Income Countries (LMICs), share common socio-economic characteristics that shape the deployment of IT:

1. Scarcity of Resources: Limited financial investment and fewer specialized human resources necessitates IT solutions that are low-cost, scalable, and require minimal maintenance.
2. High Mobile Penetration: The widespread availability of mobile phones, even where fixed infrastructure is lacking, makes mHealth a highly effective and context-appropriate delivery mechanism.
3. Fragmented Systems: Healthcare data often exists in silos (paper or disparate digital systems), making interoperability a more challenging, yet vital, requirement than in High-Income Countries (HICs).

Transformation vs. Digitization

A key conceptual distinction in this review is between digitization and transformation. Digitization is merely the conversion of paper-based information to digital formats (e.g., adopting a basic EHR system). Transformation, however, refers to the fundamental change in how healthcare is delivered, accessed, and managed (e.g., using AI for preventative screening, shifting specialist consultations entirely to Telemedicine, or integrating national data systems). This review focuses on studies that contribute to transformation, as outlined by the thematic synthesis in RQ3.

Addressing the Policy and Governance Gap

Literature consistently identifies non-technical factors policy, governance, ethics, and sustainability—as the primary determinants of long-term success for digital health initiatives. The lack of a clear national digital health strategy, inadequate data privacy laws, and ethical oversight for AI are critical implementation challenges. This review emphasizes the need to assess whether current research provides sufficient evidence to guide policymakers in establishing a resilient and equitable digital health ecosystem.

METHODOLOGY:

This Systematic Literature Review (SLR) was strictly developed following the SALSA framework (Search, Appraisal, Synthesis, and Analysis) proposed by Grant and Booth (2009). This operational framework was integrated with the PRISMA 2020 reporting guidelines to ensure transparency, reproducibility, and methodological rigor. The integration of SALSA and PRISMA

International Journal of Interdisciplinary Cultural Studies
ISSN: 2327-008X (Print), ISSN: 2327-2554 (Online)
Volume 21, Issue 1, 2026
https://cgscopus.com/index.php/journals

served as the conceptual and reporting backbone, with SALSA providing the operational sequence, and PRISMA governing the transparent reporting during the study selection process.

Table 1. Methodological Framework for the Systematic Review

Phase	Description
Protocol	The review was designed following the PRISMA 2020 and SALSA frameworks. Objectives, research questions, and eligibility criteria were defined to examine the role of information technology in transforming healthcare delivery in emerging markets.
Search	A systematic search was conducted exclusively in the Scopus database on 21 October 2025 at 11:29 A.M., using Boolean operators that combined terms for information technology, healthcare delivery, and emerging markets. Filters were applied for English-language journal articles published between 2015 and 2025.
Appraisal	Titles, abstracts, and metadata were screened for topical relevance, context (LMICs/emerging markets), and methodological clarity. All qualifying papers were retained to enable a comprehensive mapping of evidence.
Synthesis	Key information was extracted into a review matrix, coded by year, technology type, healthcare domain, geographic region, research design, theoretical framework, and outcomes.
Analysis	Descriptive bibliometric mapping and qualitative thematic synthesis were performed to identify patterns, research clusters, and gaps.
Report	Results were organized into analytical tables and figures, followed by an integrative discussion on policy and research implications for digital health in emerging markets.

Table 1 summarizes the methodological pathway of this study, structured according to the PRISMA and SALSA frameworks. It provides an overview of how the review was systematically designed from defining the protocol and search strategy to appraising, synthesizing, and analyzing the evidence base. This structured approach ensures transparency, reproducibility, and coherence between the research objectives and outcomes.

Search Strategy

The literature search was conducted exclusively in the Scopus database (Elsevier). Scopus was selected for its comprehensive coverage of multidisciplinary, peer-reviewed journals, spanning

Medicine, Health Sciences, Engineering, and Information Systems. This ensured the review achieved the necessary breadth and depth to capture the multifaceted nature of digital health transformation in emerging markets.

The Boolean search strategy was meticulously designed to capture studies at the intersection of information technology, healthcare delivery, and emerging markets. The final query was executed on October 21, 2025, yielding an initial estimate of 2500 records. The specific search syntax used was:

TITLE-ABS ((telemedicine OR telehealth OR "electronic health record*" OR ehr* OR emr* OR "health information system*" OR "clinical decision support" OR "health informatics" OR "health information technolog*" OR "information technology" OR "digital health" OR ehealth OR "e health" OR "e-health" OR mhealth OR "m health" OR "m-health" OR "artificial intelligence" OR "machine learning" OR "data analytic*") AND (("health* W/1 care W/3 deliver*") OR "delivery of health care" OR "health service* delivery" OR "patient care") AND ("low- and middle-income countr*" OR LMIC* OR "emerging market*" OR "developing countr*" OR "Global South" OR "resource-limited" OR "low-resource"))AND PUBYEAR > 2014 AND PUBYEAR < 2026 AND (LIMIT-TO (SRCTYPE , "j")) AND (LIMIT-TO (SUBJAREA , "MEDI") OR LIMIT-TO (SUBJAREA , "NURS") OR LIMIT-TO (SUBJAREA , "HEAL") OR LIMIT-TO (SUBJAREA , "COMP") OR LIMIT-TO (SUBJAREA , "ENGI"))AND (LIMIT-TO (DOCTYPE , "ar"))AND (LIMIT-TO (LANGUAGE , "English"))

Appraisal Process

The study selection process was executed in phases, strictly adhering to the PRISMA 2020 standard, to guarantee objectivity. The entire process is clearly mapped in Figure 3.1: PRISMA Flow Diagram.

From 2,500 initial records, 200 duplicates were removed, leaving 2,300 records for screening. Title/abstract screening excluded 1,955 records; 345 articles underwent full-text review. Of these, 221 were excluded (review articles; focus on high-income countries; or irrelevant design), resulting in 124 studies included in the final synthesis.

Synthesis Stage

1. Data Extraction

   From the 124 included studies, key data points were systematically extracted. This extraction included: descriptive data (publication year, geographic setting), classification data

International Journal of Interdisciplinary Cultural Studies
ISSN: 2327-008X (Print), ISSN: 2327-2554 (Online)
Volume 21, Issue 1, 2026
https://cgscopus.com/index.php/journals

(primary technology category used to build Table 4), and thematic data (key findings concerning the transformative roles, mechanisms, and reported implementation challenges).

2. Synthesis and Analysis

The analysis was performed at two distinct levels to address the different research questions:

a. Descriptive Mapping: Quantitative analysis of the extracted data was used to map publication trends (Table 2), geographic distribution (Table 3), and technological focus (Table 4). This mapping directly addressed RQ1 and RQ2.

b. Thematic Synthesis: In-depth qualitative analysis of the key findings across all 124 articles was performed to identify recurrent patterns and emergent themes regarding IT's transformative roles and structural constraints. This thematic synthesis generated the three core themes presented in Chapter 4.4, directly addressing RQ3.

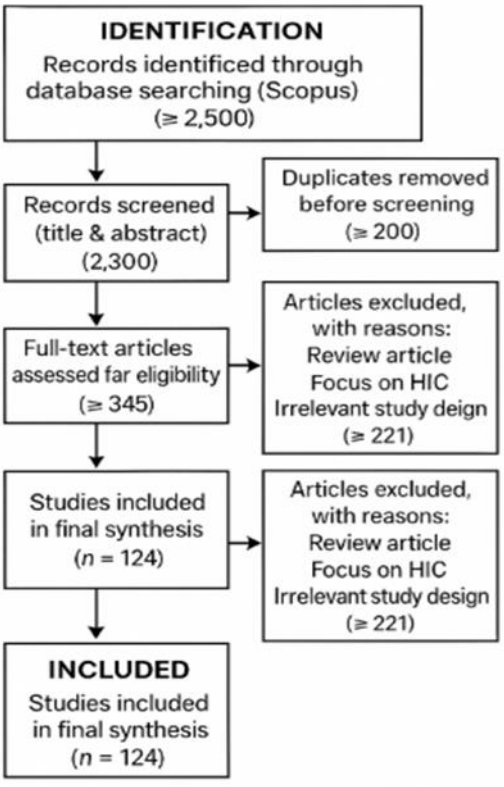

Figure 1. PRISMA 2020 Flow Diagram

Analysis Stage

The analysis combined quantitative mapping with qualitative interpretation to generate a holistic picture of the research field. Descriptive mapping identified trends in publication years,

geographic distribution, research methodologies, and the range of digital technologies used in healthcare delivery.

This helped visualize how interest in digital health in emerging markets has grown and diversified over the past decade.

The qualitative thematic analysis then explored the stories behind the data, how IT tools are actually influencing care delivery, system efficiency, and equity in access. Three overarching perspectives guided the interpretation:

1. Technological and operational innovation, including the development and integration of digital platforms, interoperability systems, and health data analytics;
2. Service transformation and patient access, examining how telemedicine, mHealth, and decision-support systems improve healthcare reach and quality;
3. Governance and equity, highlighting policy issues, implementation barriers, and the importance of digital inclusion in low-resource environments.

Together, these analytical layers revealed not only what has been studied, but also what remains underexplored. The insights derived from this stage form the foundation for the discussion and future research agenda presented in the following sections.

Quality Assurance and Transparency

To maintain rigor and transparency throughout the review process, all stages were conducted following the PRISMA 2020 guidelines and the SALSA framework principles. Every decision from search design to data extraction was documented to ensure replicability and accountability. Inter-rater reliability was assessed using Cohen's κ at the title/abstract and full-text stages; agreement met the substantial threshold in both stages. Full details and the screening log are provided in the Supplementary Materials.

The screening and appraisal processes were carried out independently by two reviewers, who cross-checked decisions at each stage. Discrepancies were discussed and resolved through consensus to minimize bias and strengthen the reliability of the synthesis. All bibliographic data, coding matrices, and inclusion logs were maintained using Mendeley and Microsoft Excel, allowing a clear audit trail of how the final evidence base was built.

To ensure quality and consistency, the extracted data were rechecked during the thematic coding phase. Each article was validated for accuracy in classification (e.g., technology type, healthcare domain, or geographic region). The iterative coding process not only reduced human error but also encouraged reflection on emerging patterns, improving the robustness of the thematic

interpretation.

By combining structured documentation with critical reflection, this review ensures that its findings are both methodologically sound and transparently derived, a foundation that supports the credibility, reproducibility, and practical value of its conclusions.

The anonymized extraction matrix, coding book, complete search strings, PRISMA 2020 checklist, and inclusion/exclusion logs (Mendeley/Excel) are provided as Supplementary Materials (Appendix A1/A2). This ensures transparency and reproducibility of the SLR.

RESULTS AND DISCUSSION:

Following this methodological process, the subsequent section presents the key findings derived from 124 articles retrieved from Scopus. The results begin with an overview of publication trends by year (Table 2), followed by geographical distribution (Table 3) and technological focus (Table 4), culminating in a thematic synthesis of digital health transformation in emerging markets.

Table 2. Publication Trends by Year (2015–2025)

Year	Number of Publications	Representative Studies
2015	6	Chaplin et al. (2015); Diez et al. (2015); Tilahun & Fritz (2015); Hao et al. (2015); Purkayastha et al. (2015); Kahouei et al. (2015)
2016	6	Park et al. (2016); David & Rafiullah (2016); Tesfalul et al. (2016); Maia et al. (2016); Umali et al. (2016); Thit et al. (2016)
2017	4	Sachdeva et al. (2017); Steegers-Theunissen (2017); Oza et al. (2017); Austria (2017)
2018	9	Abejirinde et al. (2018); Orton et al. (2018); Frost et al. (2018); Williams & Kovarik (2018); Wexler et al. (2018); Liang et al. (2018); Kleczka et al. (2018); O'Reilly-Shah et al. (2018); Seethamraju et al. (2018)
2019	7	Miah et al. (2019); Huang et al. (2019); Sarwar et al. (2019); Willcox et al. (2019); Mohammadi et.al. (2019); Krishnan & Kamath (2019); Elsadig & Nassar (2019)
2020	7	Clarence et al. (2020); Ferraris et al. (2020); Oest et al. (2020); Olabumuyi et al. (2020); Tadesse et al. (2020); Liao & Lin (2020); Iyengar et al. (2020)
2021	16	Ngugi et al. (2021); Qureshi et al (2021); Priyadarshani et al. (2021);

Year	Number of Publications	Representative Studies
		Barsasella et al. (2021); Wuni et al. (2021); Lickness et al. (2021); Pattee et al. (2021); Ohene-Botwe et al. (2021); Wang & Wang (2021); Nies et al. (2021); Wilson et al. (2021); Hitti et al. (2021); Winders et al. (2021); Gatellier et al. (2021); Mekonnen et.al. (2021); Madaan et al. (2021)
2022	15	Afaya et al. (2022); Borgelt et al. (2022); Akeju et al. (2022); Ekpenyong et al. (2022); Chukwu et al. (2022); Ganguli et al. (2022); Woulfe et al. (2022); Adedeji et al. (2022); Mazumder et al. (2022); Schmude et al. (2022); Robbiati et al. (2022); Brotherton et al. (2022); Fatrin et al. (2022); Mallika & Selvamuthukumaran (2022); Sivakumar & Ibrahim (2022)
2023	12	Mohammadzadeh et al. (2023); Hitti et al. (2023); Christiansen et al. (2023); Denhere et al. (2023); Ghanem et al. (2023); Lyerla et al. (2023); Maphosa (2023); Unkels et al. (2023); Nsugbe et al. (2023); Musa et al. (2023); Ndlovu et al. (2023); Sezgin et al. (2023)
2024	20	Gulzar et al. (2024); Jose et al. (2024); Adeyeye et al. (2024); Hilker et al. (2024); Liao et al. (2024); Krishnasamy (2024); Williams et al. (2024); Alihamidi et al. (2024); Pamplin et al. (2024); Agboryah et al. (2024); Francis et al. (2024); Reynolds et al. (2024); Mooghal et al. (2024); Gerber et al. (2024); Mwogosi & Mambile (2024); Tegenaw et al. (2024); Chen & Gombay (2024); Tiangco et al. (2024); Rawashdeh et al. (2024); Patel et al. (2024)
2025	22	Alaswad et al. (2025); Shi et al. (2025); Hassan et al. (2025); Kpokiri et al. (2025); Nishan et al. (2025); Mwogosi et al. (2025); Mitra & Pal (2025); de Zoysa et al. (2025); Orbatu et al. (2025); Armitage (2025); Abotsi et al. (2025); Razak et al. (2025); Jonnalagedda-Cattin et al. (2025); Saidu et al. (2025); Theros et al. (2025); Cayetano-Jimenez et al. (2025); Bille et al. (2025); Obst et al. (2025); Valliyappan et al. (2025); Onyeabor et al. (2025); Aboalsamh et al. (2025); Kola et al. (2025)

International Journal of Interdisciplinary Cultural Studies
ISSN: 2327-008X (Print), ISSN: 2327-2554 (Online)
Volume 21, Issue 1, 2026
https://cgscopus.com/index.php/journals

The annual publication distribution presented in Table 2 illustrates a consistent increase in research activity on digital health within emerging markets over the past decade. Between 2015 and 2018, publication numbers remained relatively modest, with fewer than ten studies per year. These early years likely represent the initial emergence of scholarly interest in how information technology could enhance healthcare delivery in resource-limited settings.

A gradual increase occurred from 2019 to 2020, and the upward trajectory became much steeper after 2021, reaching its highest output in 2025 with 22 publications nearly quadruple the number from 2015. This steady growth suggests a broadening recognition of the importance of digital solutions in healthcare systems of low- and middle-income countries (LMICs). The surge may also correspond to global trends in technological adoption and policy support for digital health innovation.

In total, 124 peer-reviewed articles were identified and analyzed in this review. The complete list of studies, organized by publication year, authors, journal, and DOI, is available in Appendix A1 for full transparency and reproducibility. Together, these results provide a quantitative foundation for understanding the growing academic and institutional engagement with digital health in emerging markets.

The following section explores the geographical distribution of these studies (Table 3), examining where research activity has been most concentrated and how regional contexts shape the focus of digital health research.

Table 3. Distribution of Studies by Country/Region (2015–2025)

Region	Number of Studies	Representative Countries	Key Example Studies
Africa	56	Nigeria, Ghana, Kenya, Ethiopia, Egypt, Tanzania, Uganda, Cameroon, Rwanda, Morocco, Liberia, Lesotho, Zimbabwe, Botswana, Malawi, Congo, Zambia, Guinea, Sudan, Sierra	[1], [2], [3], [4], [5], [6], [7], [8], [9], [10], [11], [12], [13], [14], [15], [16], [17], [18], [19], [20], [21], [22], [23], [24], [25], [26], [27], [28], [29], [30], [31], [32], [33], [34], [35], [36], [37], [38], [39], [40], [41], [42], [43], [44], [45], [46], [47], [48], [49], [50], [51], [52], [53], [54], [55], [56].

Region	Number of Studies	Representative Countries	Key Example Studies
		Leone, Swaziland	
Asia	28	India, China, Bangladesh, Pakistan, Indonesia, Malaysia, Philippines, Vietnam, Thailand	[57], [58], [59], [60], [61], [62], [63], [64], [65], [66], [67], [68], [69], [70], [71], [72], [73], [74], [75], [76], [77], [78], [79], [80], [81], [82], [83], [84].
Latin America	4	Brazil, Mexico, Peru, Guatemala	[85], [86], [87], [88].
Middle East	12	Saudi Arabia, Lebanon, Yemen, Iran	[89], [90], [91], [92], [93], [94], [95], [96], [97], [98], [99], [100].
Emerging Europe	2	Turkey, Georgia	[101], [102]
Global / Multinational Studies	22	WHO-led or cross-regional analyses	[103], [104], [105], [106], [107], [108], [109], [110], [111], [112], [113], [114], [115], [116], [117], [118], [119], [120], [121], [122], [123], [124].

The regional distribution of studies (Table 3) shows that research in the field is predominantly concentrated in Africa and Asia, together accounting for a substantial proportion of all publications from 2015 to 2025. This trend underscores the increasing focus on these regions as hubs for innovation, evaluation, and practical application of research in resource-diverse contexts.

Africa leads with 56 studies, reflecting sustained scholarly attention across a wide range of countries, including Nigeria, Ghana, Kenya, Ethiopia, Egypt, Tanzania, Uganda, Cameroon, Rwanda, Morocco, Liberia, Lesotho, Zimbabwe, Botswana, Malawi, Congo, Zambia, Guinea, Sudan, Sierra Leone, and Swaziland. Research from these countries often addresses context-specific challenges, including infrastructure limitations, workforce capacity, and implementation feasibility.

Asia follows with 28 studies, led by countries such as India, China, Bangladesh, Pakistan, Indonesia, Malaysia, Philippines, Vietnam, and Thailand. Studies from this region highlight substantial national and institutional investments in healthcare technologies, telemedicine, and AI-

based interventions, reflecting an emerging focus on digital innovation and scalable solutions.

Latin America (4 studies) and the Middle East (12 studies) remain underrepresented, with research primarily concentrated in Brazil, Mexico, Peru, Guatemala, Saudi Arabia, Lebanon, Yemen, and Iran. This suggests a need for further context-specific studies and cross-regional collaboration to address local challenges and bridge knowledge gaps.

Finally, 22 global or multinational studies led by the WHO or other cross-regional initiatives illustrate the growing importance of comparative analyses, international knowledge exchange, and global frameworks for advancing research and policy.

Overall, the distribution highlights a concentration of research in Africa and Asia, while Latin America, the Middle East, and emerging European countries remain areas with significant potential for further investigation and collaboration.

Table 4. Classification of Reviewed Studies by Information Technology Category

Category	Studies (n)	Representative Studies
Clinical Decision Support & AI/ML	35	Nishan et al. (2025); Mwogosi et al. (2025); de Zoysa et al. (2025); Orbatu et al. (2025); Theros et al. (2025); Liao et al. (2024); Tegenaw et al. (2024)
EHR/EMR/HIS & Interoperability	28	Bille et al. (2025); Onyeabor et al. (2025); Tiangco et al. (2024); Denhere et al. (2023); Adedeji et al. (2022); Robbiati et al. (2022)
mHealth (Mobile Apps/SMS/CHW tools)	23	Kola et al. (2025); Valliyappan et al. (2025); Reynolds et al. (2024); Gerber et al. (2024); Christiansen et al. (2023); Woulfe et al. (2022)
Telemedicine/Telehealth & Virtual Care	25	Razak et al. (2025); Jose et al. (2024); Pamplin et al. (2024); Lyerla et al. (2023); Musa et al. (2023); Mazumder et al. (2022)
Digital Health – Strategy/Policy/Implementation	11	Shi et al. (2025); Rawashdeh et al. (2024); Borgelt et al. (2022); Clarence et al. (2020); Austria (2017)
Specialized/Other IT (e.g., POCUS, IoT, Hardware)	2	Alaswad et al. (2025); Cayetano-Jimenez et al. (2025)

Note on Reporting: The column "Studies (n)" represents the total count of articles categorized into each technology type. The "Representative Studies" column lists a maximum of seven key articles chosen to exemplify the research focus within that category, and does not represent the full count of all 124 studies retained for synthesis.

To address the key research objective regarding the diversity of Information Technology (IT) applied in healthcare delivery in emerging markets, the 124 identified articles 5 were systematically classified into six distinct technology categories. This classification, based on the analytical coding of each study's primary focus, is presented in Table 4.

The analysis reveals that Clinical Decision Support (CDS) and Artificial Intelligence/Machine Learning (AI/ML) are the most frequently studied IT interventions (n=35). This high count underscores a significant academic interest in leveraging advanced computational power to improve diagnostic accuracy and clinical decision-making, particularly in settings where specialist access is limited.

Following closely are studies related to EHR/EMR/HIS & Interoperability (n=28). This focus reflects the foundational challenges and opportunities associated with digitizing core patient data and ensuring seamless data exchange within healthcare systems in resource-limited countries [9], [67]. mHealth (Mobile Apps/SMS/CHW tools) (n=23) remains a robust category, leveraging the high penetration of mobile communication for service delivery, education, and remote monitoring [12], [16].

In contrast, Telemedicine/Telehealth & Virtual Care (n=25) shows moderate representation, indicating a growing, though not yet dominant, area of research focused on remote consultation and mentoring [6], [106]. The categories Digital Health – Strategy/Policy/Implementation (n=11) and Specialized/Other IT (n=2) show the lowest counts, suggesting a current research gap in broad governance frameworks and highly specialized IT hardware applications, such as Point-of-Care Ultrasound (POCUS) [2].

Thematic Synthesis

The Thematic Synthesis stage consolidated the findings from the 124 included articles into three principal themes, reflecting the multifaceted role of Information Technology in the transformation of healthcare delivery across emerging markets. This qualitative synthesis, built upon the quantitative foundation laid in Tables 2, 3, and 4, identifies the primary drivers, mechanisms, and systemic barriers characterizing the current research landscape.

1. Theme I: Enhancing Clinical Quality and Operational Support

This theme is defined by technologies aimed at improving the internal efficiency and clinical decision-making capacity of health systems. It is anchored by the two largest research categories: Clinical Decision Support (CDS) & AI/ML (n=35) and EHR/EMR/HIS & Interoperability (n=28).

The dominance of CDS/AI/ML research in Table 4 signifies the most pressing role of IT: compensating for specialist shortages [59], [104]. AI applications are predominantly developed as diagnostic accelerators or predictive screening tools within high-burden specialties (e.g., ophthalmology screening and infectious disease management). The studies position AI as a force multiplier for frontline primary care providers, enabling them to handle complex cases that would typically require tertiary expertise.

Conversely, the high volume of research on EHR/EMR/HIS reflects the persistent, foundational challenge of digitizing core patient data. The findings emphasize that IT's role here is managerial and fundamental: improving data integrity and administrative efficiency [9]. The most prominent discussion within this literature is the critical need for interoperability, where fragmented systems and non-standardized data formats severely hinder the seamless exchange required for integrated care [67].

2. Theme II: Transforming Service Delivery and Patient Access

This theme captures the transformative impact of accessible technologies on external service delivery and patient reach, largely driven by Telemedicine/Telehealth (n=25) and mHealth (n=23).

These technologies function as geographic equalizers, addressing the vast distances and infrastructural disparities prevalent in emerging markets [87]. Telemedicine studies highlight its effectiveness in linking remote clinics to urban tertiary centers, enabling teleconsultation and remote mentoring. This expands the specialist workforce's reach without requiring physical travel [6].

Simultaneously, mHealth leverages high mobile phone penetration to deliver highly localized, community-based interventions [12]. The role of mHealth is largely focused on patient empowerment (e.g., appointment reminders, health education) and supporting Community Health Workers (CHWs) for data collection and adherence monitoring. The overwhelming geographic concentration of these studies in Africa (n=56) and Asia (n=28) (Table 3) validates mobile technology as a contextually appropriate, low-cost solution for population-level health management in these regions.

International Journal of Interdisciplinary Cultural Studies
ISSN: 2327-008X (Print), ISSN: 2327-2554 (Online)
Volume 21, Issue 1, 2026
https://cgscopus.com/index.php/journals

3. Theme III: Governance, Policy Gaps, and Implementation Challenges

This theme addresses the overarching non-technical barriers that dictate the success or failure of IT adoption, synthesizing findings from the Digital Health – Strategy/Policy/Implementation category (n=11) and cross-cutting challenges reported across all categories.

The paucity of research explicitly addressing Strategy/Policy (n=11) signals a critical governance gap in the current literature. The findings underscore that a lack of cohesive national digital health strategies, clear ethical frameworks for AI, and standardized data regulations often undermine successful scaling [57]. It is transformative potential is severely constrained by structural issues such as:

a. Infrastructural Instability: Unreliable electricity and poor internet connectivity are consistently reported across all technology categories as daily operational bottlenecks [110].
b. Workforce Capacity: System adoption is frequently hampered by insufficient user training, clinical resistance, and a lack of digital literacy, pointing to a need for human-centric implementation approaches.

Sustainability: The pervasive reliance on external donor funding [90] raises serious questions about the long-term viability of otherwise successful IT interventions, emphasizing the need for robust local financing models.

Discussion

Discussion of Key Findings

This section serves as a crucial bridge, interpreting the quantitative results of Chapter 4 within the dynamic context of healthcare delivery in emerging markets and directly addressing the established Research Questions. The analysis reveals that the role of IT in transformation is a dynamic and contradictory phenomenon, marked by rapid innovation on one side, yet fundamentally constrained by deep-seated structural challenges on the other.

1. Clinical Innovation Leadership: The Dominance of AI/ML

The finding that Clinical Decision Support (CDS) and AI/ML constitute the largest research category (n=35) is an indication of urgent necessity rather than just a technological trend. In emerging economies, the scarcity of specialists and limited access to advanced diagnostics are chronic issues. Consequently, IT is strategically deployed to substitute or augment specialized clinical expertise [59], [104]. AI functions as a "diagnostic co-pilot,"

enabling quality medical decision-making at the under-resourced frontline. However, this high-tech dominance must be balanced by the critical consideration of data trustworthiness and the validation of global algorithms when applied to local patient populations.

2. The Reach Gap: The Role of mHealth and Telemedicine

   The phenomena of mHealth (n=23) and Telemedicine (n=25) clearly define IT's role as a geographic equalizer. High mobile phone penetration in regions like Africa and Asia (Table 3) makes mHealth a feasible solution for widespread patient outreach and Community Health Worker support [12]. Telemedicine, conversely, overcomes physical barriers by expanding specialist reach, granting access to previously isolated areas [6]. Despite their proven effectiveness, the centralized geographic distribution of this research suggests that remote access solutions have not yet been uniformly tested or standardized in underrepresented regions like Latin America.

3. The Implementation Reality: Transformation Constrained by the Foundation

   The thematic analysis highlights that digital transformation hinges not merely on technology availability, but profoundly on the quality of operational foundations and governance. While many studies focus on EHR/EMR (n=28), the widespread reports of interoperability issues and user resistance indicate that core digitization remains an unresolved challenge. The low number of studies dedicated to Strategy/Policy (n=11) further confirms a significant disconnect between technological ambition and systemic readiness. Sustainable transformation is only viable when issues of unstable infrastructure and donor-dependent funding [90] are addressed as structural policy problems, not merely technical hurdles.

Implications for Practice and Policy

1. Implications for Clinical and Managerial Practice
   a. Local AI Validation: Practitioners and system developers must prioritize the local validation of AI models as an ethical and clinical imperative, ensuring that imported or developed decision-support tools are sensitive to local disease patterns and population characteristics.
   b. Boosting Digital Literacy: Health institutions must view digital training as a core investment in staff capacity, rather than an auxiliary cost, to mitigate resistance and ensure the effective adoption of EHR systems.
   c. Formalizing CHW Integration: mHealth initiatives should formally integrate CHWs into the digital data workflow, standardizing their reporting mechanisms and elevating their role

from volunteers to integral components of the health information system.

d. Prioritize interoperability maturity before large-scale EHR roll-outs to avoid workflow disruption and low adoption.
e. Allocate budget for staff digital upskilling and change management as a core workstream, not an add-on.
f. Ensure domestic/long-term financing for mHealth/telemedicine beyond donor pilots to secure post-pilot continuity.

2. Implications for Government Policy
   a. Mandatory Interoperability: Governments must move decisively to establish mandatory national data interoperability standards. This foundational step is critical for enabling seamless Telemedicine and future Big Data analytics, ending the era of fragmented data silos.
   b. Sustainability Strategies: Policy must explicitly include sustainable financing models and local incentives, breaking the dependency on donor funding and ensuring successful IT projects survive the pilot phase.
   c. Ethical Governance Frameworks: Policymakers must prioritize developing a clear data governance framework to regulate privacy, cybersecurity, and the ethical deployment of AI, ensuring digital transformation protects and serves all citizens.
   d. Establish data governance (privacy, access, standards) early, given multi-stakeholder ecosystems in LMICs. These actions align with our synthesis that transformation (not just digitization) drives quality and access gains.

Strengths and Limitations of the Review

1. Strengths
   a. Comprehensive Focus: Reviewing 124 articles from 2015 to 2025 provides an up-to-date and robust perspective on the evolving literature.
   b. Methodological Rigor: The use of the SALSA framework integrated with PRISMA 2020 guidelines ensures high transparency and reproducibility.
   c. Multi-dimensional Classification: Categorizing studies by time, region, and technology (Tables 2, 3, and 4) established a strong descriptive basis for the subsequent in-depth thematic synthesis.

2. Limitations
    a. Single Database Scope: Limiting the search to Scopus may exclude relevant studies only indexed in specialist databases (e.g., specific clinical journals in PubMed) or gray literature.
    b. Publication Bias: Restricting the review to peer-reviewed articles likely introduces publication bias, potentially underrepresenting unsuccessful IT implementation projects.
    c. This SLR draws exclusively on Scopus (Elsevier). To mitigate single-database bias, we report the full search string, exact PRISMA counts, a two-reviewer workflow with reliability checks, and provide open materials (extraction matrix, logs). Future work could triangulate with Web of Science/PubMed for broader coverage while retaining the current managerial focus.

Future Research Agenda

1. Longitudinal Cost-Benefit Studies: Research must shift toward longitudinal and cost-effectiveness analyses, measuring the economic impact and patient outcomes of IT (EHR, Telemedicine) over a sustained 5–10 years period, moving beyond short-term pilot results.
2. Mapping Governance Gaps: The research agenda should urgently explore policy success and failure factors in national digital health strategies, particularly in underrepresented regions (Latin America and Emerging Europe), to develop contextually relevant, evidence-based policy recommendations.

Ethics and Algorithmic Bias: More in-depth research is required on the ethical and algorithmic biases of AI/ML systems concerning ethnicity, gender, and socioeconomic status in emerging markets, ensuring technology promotes equity rather than exacerbates existing inequalities.

CONCLUSIONS

This Systematic Literature Review concludes that Information Technology has become an inevitable engine of transformation in healthcare delivery within emerging markets, a trend highlighted by the sharp increase in publications post-2021 and strong research centers in Africa and Asia.

This transformation is realized through two essential roles: enhancing clinical quality (driven by AI/ML) and expanding geographic access (enabled by mHealth and Telemedicine). However, the full potential of this transformation is currently constrained by the same structural challenges: inadequate infrastructure, policy fragmentation, and a lack of self-sustaining funding models.

To achieve genuine and lasting transformation, future investments must be coupled with a

strong policy commitment to building robust governance frameworks and data interoperability standards. The future research agenda must prioritize cost-effectiveness studies and the critical exploration of policy gaps, ensuring that technology innovation is ultimately implemented ethically and sustainably.

References:

[1] E. Abotsi *et al.*, "Transitioning to digital transactional data capture in primary health care facilities: a case report from Ghana's Savannah Region," *mHealth*, vol. 11, 2025, doi: 10.21037/mhealth-24-42.

[2] M. Alaswad *et al.*, "Point-of-Care Ultrasound in Pediatric Emergency Care in Low-Resource Settings: A Literature Review of Applications, Successes, and Future Directions," *Curr. Treat. Options Pediatr.*, vol. 11, no. 1, 2025, doi: 10.1007/s40746-024-00323-3.

[3] E. Hassan, A. Saber, T. Abd El-Hafeez, T. Medhat, and M. Y. Shams, "Enhanced dysarthria detection in cerebral palsy and ALS patients using WaveNet and CNN-BiLSTM models: A comparative study with model interpretability," *Biomed. Signal Process. Control*, vol. 110, 2025, doi: 10.1016/j.bspc.2025.108128.

[4] A. Mwogosi, C. Mambile, D. Shao, and N. Kibinda, "AI-driven innovations for enhancing mental health care in Tanzania: opportunities and challenges," *Ment. Heal. Soc. Incl.*, vol. 29, no. 3, pp. 297–311, 2025, doi: 10.1108/MHSI-10-2024-0180.

[5] W. de Zoysa *et al.*, "Electronic Clinical Decision Support Tools to Manage Patients with Lower Respiratory Tract Infection: Clinicians' Perspectives in Sri Lanka," *Am. J. Trop. Med. Hyg.*, vol. 112, no. 5, pp. 1168–1174, 2025, doi: 10.4269/ajtmh.24-0576.

[6] S. S. Razak *et al.*, "Telerehabilitation and cost analysis in global neurosurgery: a systematic review and meta-analysis of 40,537 patients," *Neurosurg. Focus*, vol. 58, no. 3, 2025, doi: 10.3171/2024.12.FOCUS24830.

[7] M. Jonnalagedda-Cattin *et al.*, "Barriers and Facilitators to the Preadoption of a Computer-Aided Diagnosis Tool for Cervical Cancer: Qualitative Study on Health Care Providers' Perspectives in Western Cameroon," *JMIR Cancer*, vol. 11, 2025, doi: 10.2196/50124.

[8] Y. Saidu *et al.*, "Building medical oxygen systems in a resource-limited setting: the case of Cameroon," *J. Glob. Health*, vol. 15, 2025, doi: 10.7189/JOGH.15.04087.

[9] N. Bille, D. L. Christensen, S. Byberg, C. Gishoma, S. F. Villadsen, and M. Calopietro, "A qualitative exploration of the early adoption of an electronic medical record system for type 1 diabetes management in Rwanda," *Digit. Heal.*, vol. 11, 2025, doi:

10.1177/20552076241311057.

[10] M. Obst *et al.*, "AI-Enhanced 3D Models in Global Virtual Reality Case Conferences for Surgical Care in a Low-Income Country: Exploratory Study," *JMIR Form. Res.*, vol. 9, 2025, doi: 10.2196/69300.

[11] U. S. Onyeabor, O. Onwuasoigwe, W. O. Okenwa, T. Schaaf, N. Pinkwart, and F. Balzer, "Assessing the usability and performance of digital healthcare systems in Nigerian teaching hospitals: Challenges and future directions," *Digit. Heal.*, vol. 11, 2025, doi: 10.1177/20552076251341089.

[12] L. Kola *et al.*, "Factors Impacting Mobile Health Adoption for Depression Care and Support by Adolescent Mothers in Nigeria: Preliminary Focus Group Study," *JMIR Form. Res.*, vol. 9, 2025, doi: 10.2196/42406.

[13] A. A. Adeyeye, A. O. Ajose, O. M. Oduola, B. A. Akodu, and A. Olufadeji, "Usage and perception of electronic medical records (EMR) among medical students in southwestern Nigeria," *Discov. public Heal.*, vol. 21, no. 1, 2024, doi: 10.1186/s12982-024-00264-0.

[14] I. Alihamidi, A. Anass, A. Addaim, and A. A. Aït Madi, "Revolutionizing Healthcare: Convergence of IoT and Open-Source ERP Systems in Health Information Management," *Int. J. Online Biomed. Eng.*, vol. 20, no. 9, pp. 83–98, 2024, doi: 10.3991/ijoe.v20i09.48805.

[15] B.-E. N. M. Agboryah, V. A. Ndip, A. V Ngomba, A. A. Tazinya, and D. Adiogo, "Factors associated with the use of digital health among healthcare workers in the Buea and Tiko health districts of Cameroon: a cross-sectional study," *Pan Afr. Med. J.*, vol. 47, 2024, doi: 10.11604/pamj.2024.47.51.35531.

[16] C. W. Reynolds, H. Lee, J. Sieka, J. Perosky, and J. R. Lori, "Implementation of a Technology-Based Mobile Obstetric Referral Emergency System (MORES): Qualitative Assessment of Health Workers in Rural Liberia," *JMIR mHealth uHealth*, vol. 12, 2024, doi: 10.2196/58624.

[17] F. Gerber *et al.*, "eConsent administered by Community Health Workers in a study using the Trials within Cohorts (TwiCs) design—Experiences from the Community-Based chronic Care Lesotho (ComBaCaL) project," *Digit. Heal.*, vol. 10, 2024, doi: 10.1177/20552076241288757.

[18] A. Mwogosi and C. Mambile, "Clinical decision support in Tanzanian healthcare facilities: an activity theory approach to analysing tools and procedures for enhanced patient care," *Inf. Technol. People*, 2024.

[19] G. S. Tegenaw, D. A. Amenu, G. K. Teklemariam, F. Verbeke, J. Cornelis, and B. Jansen, "Evaluation of a Computer-Aided Clinical Decision Support System for Point-of-Care Use in Low-Resource Primary Care Settings: Acceptability Evaluation Study," *JMIR Hum. Factors*, vol. 11, 2024, doi: 10.2196/47631.

[20] T. Chen and C. Gombay, "Advantages and disadvantages of digital mental health initiatives in Nigeria–a qualitative interview study," *J. Ment. Heal.*, vol. 33, no. 5, pp. 613–618, 2024, doi: 10.1080/09638237.2024.2361234.

[21] A.-M. H. Christiansen *et al.*, "The impact of the Safe Delivery Application on knowledge and skills managing postpartum haemorrhage in a low resource setting: a cluster randomized controlled trial in West Wollega region, Ethiopia," *Reprod. Health*, vol. 20, no. 1, 2023, doi: 10.1186/s12978-023-01635-7.

[22] P. T. Denhere, E. Ruhode, and M. Zhou, "A TOGAF based interoperable health information system needs assessment for practitioner–patient interaction," *Electron. J. Inf. Syst. Dev. Ctries.*, vol. 89, no. 6, 2023, doi: 10.1002/isd2.12284.

[23] V. Maphosa, "E-health Implementation by Private Dental Service Providers in Bulawayo, Zimbabwe," *Int. J. Inf. Eng. Electron. Bus.*, vol. 15, no. 1, pp. 20–28, 2023, doi: 10.5815/ijieeb.2023.01.02.

[24] R. Unkels *et al.*, "Feasibility, usability and acceptability of a novel digital hybrid-system for reporting of routine maternal health information in Southern Tanzania: A mixed-methods study," *PLOS Glob. Public Heal.*, vol. 3, no. 1, 2023, doi: 10.1371/journal.pgph.0000972.

[25] E. Nsugbe, D. Mathebula, E. Viza, O. W. Samuel, S. Connelly, and I. Mutanga, "On the Clinical Use of Artificial Intelligence and Haematological Measurements for a Rapid Diagnosis and Care of Paediatric Malaria Patients in West Africa †," *Eng. Proc.*, vol. 58, no. 1, 2023, doi: 10.3390/ecsa-10-16246.

[26] S. Musa, A.-A. Ramatu, L. Haliru, D. Abigail, and S. Gumbi, "Establishing a paediatric telemedicine centre in a low-resource setting: Experience and challenges from a teaching hospital in Kaduna, Nigeria," *Sri Lanka J. Child Heal.*, vol. 52, no. 2, pp. 155–160, 2023, doi: 10.4038/sljch.v52i2.10548.

[27] K. Ndlovu, M. Mars, and R. E. Scott, "Validation of an Interoperability Framework for Linking mHealth Apps to Electronic Record Systems in Botswana: Expert Survey Study," *JMIR Form. Res.*, vol. 7, 2023, doi: 10.2196/41225.

[28] A. Afaya *et al.*, "Health system barriers influencing timely breast cancer diagnosis and

treatment among women in low and middle-income Asian countries: evidence from a mixed-methods systematic review," *BMC Health Serv. Res.*, vol. 22, no. 1, 2022, doi: 10.1186/s12913-022-08927-x.

[29] D. Akeju *et al.*, "The use of and need for data and information by health professionals supporting the delivery of palliative cancer care services in sub-Saharan Africa: A qualitative study," *Health Informatics J.*, vol. 28, no. 4, 2022, doi: 10.1177/14604582221139054.

[30] N. Ekpenyong *et al.*, "Using and improving the PHISICC paper-based tools in the health facility laboratories: Examples of Human Centered Design taking systems thinking into practice, in Côte d'Ivoire and Nigeria," *Front. Public Heal.*, vol. 10, 2022, doi: 10.3389/fpubh.2022.916397.

[31] E. Chukwu, I. Ekong, and L. Garg, "Scaling up a decentralized offline patient ID generation and matching algorithm to accelerate universal health coverage: Insights from a literature review and health facility survey in Nigeria," *Front. Digit. Heal.*, vol. 4, 2022, doi: 10.3389/fdgth.2022.985337.

[32] F. Woulfe *et al.*, "Modification and Validation of an mHealth App Quality Assessment Methodology for International Use: Cross-sectional and eDelphi Studies," *JMIR Form. Res.*, vol. 6, no. 8, 2022, doi: 10.2196/36912.

[33] T. Adedeji, H. Fraser, and P. Scott, "Implementing Electronic Health Records in Primary Care Using the Theory of Change: Nigerian Case Study," *JMIR Med. Informatics*, vol. 10, no. 8, 2022, doi: 10.2196/33491.

[34] M. Schmude *et al.*, "Investigating the Potential for Clinical Decision Support in Sub-Saharan Africa With AFYA (Artificial Intelligence-Based Assessment of Health Symptoms in Tanzania): Protocol for a Prospective, Observational Pilot Study," *JMIR Res. Protoc.*, vol. 11, no. 6, 2022, doi: 10.2196/34298.

[35] C. Robbiati *et al.*, "Improving TB Surveillance and Patients' Quality of Care Through Improved Data Collection in Angola: Development of an Electronic Medical Record System in Two Health Facilities of Luanda," *Front. Public Heal.*, vol. 10, 2022, doi: 10.3389/fpubh.2022.745928.

[36] P. N. Ngugi, M. C. Were, and A. Babić, "Users' perception on factors contributing to electronic medical records systems use: a focus group discussion study in healthcare facilities setting in Kenya," *BMC Med. Inform. Decis. Mak.*, vol. 21, no. 1, 2021, doi: 10.1186/s12911-021-01737-x.

[37] A.-R. Wuni, B. O. Ohene-Botwe, and T. N. Akudjedu, "Impact of artificial intelligence on clinical radiography practice: Futuristic prospects in a low resource setting," *Radiography*, vol. 27, pp. S69–S73, 2021, doi: 10.1016/j.radi.2021.07.021.

[38] K. Pattee *et al.*, "The use a virtual interactive system to enhance gynecologic oncology multi-disciplinary care in Zambia," *J. Cancer Policy*, vol. 29, 2021, doi: 10.1016/j.jcpo.2021.100298.

[39] B. O. Ohene-Botwe, W. K. Antwi, S. Arkoh, and T. N. Akudjedu, "Radiographers' perspectives on the emerging integration of artificial intelligence into diagnostic imaging: The Ghana study," *J. Med. Radiat. Sci.*, vol. 68, no. 3, pp. 260–268, 2021, doi: 10.1002/jmrs.460.

[40] Z. A. Mekonnen, K. A. Gelaye, M. C. Were, and B. Tilahun, "Acceptability, barriers and facilitators of mobile text message reminder system implementation in improving child vaccination: A qualitative study in northwest ethiopia," *J. Multidiscip. Healthc.*, vol. 14, pp. 605–616, 2021, doi: 10.2147/JMDH.S298167.

[41] P. Madaan *et al.*, "Teleneurology based management of infantile spasms during COVID-19 pandemic: A consensus report by the South Asia Allied West syndrome research group," *Epilepsy Behav. Reports*, vol. 15, 2021, doi: 10.1016/j.ebr.2020.100423.

[42] C. Clarence *et al.*, "Setting global research priorities for private sector child health service delivery: Results from a CHNRI exercise," *J. Glob. Health*, vol. 10, no. 2, pp. 1–15, 2020, doi: 10.7189/jogh.10.021201.

[43] A. A. Olabumuyi *et al.*, "Oncology practice in the COVID-19 pandemic: A report of a Nigerian expert panel discussion (oncology care in Nigeria during the COVID-19 pandemic)," *Pan Afr. Med. J.*, vol. 36, pp. 1–9, 2020, doi: 10.11604/pamj.2020.36.153.23662.

[44] G. K. L. Huang *et al.*, "Telemedicine in Resource-Limited Settings to Optimize Care for Multidrug-Resistant Tuberculosis," *Front. Public Heal.*, vol. 7, 2019, doi: 10.3389/fpubh.2019.00222.

[45] M. Willcox *et al.*, "Mobile technology for community health in Ghana: Is maternal messaging and provider use of technology cost-effective in improving maternal and child health outcomes at scale?," *J. Med. Internet Res.*, vol. 21, no. 2, 2019, doi: 10.2196/11268.

[46] M. Elsadig and D. A. Nassar, "Evaluation of healthcare information system using delone and mclean quality model, case study ksa," *Int. J. Adv. Trends Comput. Sci. Eng.*, vol. 8, no. 1.4S1, pp. 522–527, 2019, doi: 10.30534/ijatcse/2019/8181.42019.

[47] I.-O. O. Omolade Abejirinde *et al.*, "Unveiling the black box of diagnostic and clinical decision support systems for antenatal care: Realist evaluation," *JMIR mHealth uHealth*, vol. 6, no. 12, 2018, doi: 10.2196/11468.

[48] C. Wexler *et al.*, "Implementing ehealth technology to address gaps in early infant diagnosis services: Qualitative assessment of Kenyan provider experiences," *JMIR mHealth uHealth*, vol. 6, no. 8, 2018, doi: 10.2196/mhealth.9725.

[49] L. Liang, M. O. Wiens, P. Lubega, I. Spillman, and S. Mugisha, "A locally developed electronic health platform in Uganda: Development and implementation of streamline," *JMIR Form. Res.*, vol. 2, no. 2, 2018, doi: 10.2196/formative.9658.

[50] B. Kleczka *et al.*, "Rubber stamp templates for improving clinical documentation: A paper-based, m-Health approach for quality improvement in low-resource settings," *Int. J. Med. Inform.*, vol. 114, pp. 121–129, 2018, doi: 10.1016/j.ijmedinf.2017.10.014.

[51] S. Oza *et al.*, "Development and deployment of the OpenMRS-Ebola electronic health record system for an Ebola treatment center in Sierra Leone," *J. Med. Internet Res.*, vol. 19, no. 8, 2017, doi: 10.2196/jmir.7881.

[52] E. Park *et al.*, "Information needs of Botswana health care workers and perceptions of wikipedia," *Int. J. Med. Inform.*, vol. 95, pp. 8–16, 2016, doi: 10.1016/j.ijmedinf.2016.07.013.

[53] M. Tesfalul *et al.*, "Evaluating the potential impact of a mobile telemedicine system on coordination of specialty care for patients with complicated oral lesions in Botswana," *J. Am. Med. Informatics Assoc.*, vol. 23, no. e1, pp. e142–e145, 2016, doi: 10.1093/jamia/ocv140.

[54] B. Tilahun and F. Fritz, "Comprehensive Evaluation of Electronic Medical Record System Use and User Satisfaction at Five Low-Resource Setting Hospitals in Ethiopia," *JMIR Med. Informatics*, vol. 3, no. 2, 2015, doi: 10.2196/medinform.4106.

[55] W.-R. Hao *et al.*, "LabPush: A pilot study of providing remote clinics with laboratory results via short message service (SMS) in Swaziland, Africa - A qualitative study," *Comput. Methods Programs Biomed.*, vol. 118, no. 1, pp. 77–83, 2015, doi: 10.1016/j.cmpb.2014.10.005.

[56] B. Chaplin *et al.*, "Scale-up of networked HIV treatment in Nigeria: Creation of an integrated electronic medical records system," *Int. J. Med. Inform.*, vol. 84, no. 1, pp. 58–68, 2015, doi: 10.1016/j.ijmedinf.2014.09.006.

[57] J. Shi, H. Chen, X. Wang, F. Fang, C. Chao, and Z. Li, "Barriers to implementing clinical

practice guidelines for managing patients with pressure injuries in China: a qualitative study using the theoretical domains framework," *BMC Nurs.*, vol. 24, no. 1, 2025, doi: 10.1186/s12912-025-03785-4.

[58] E. E. Kpokiri *et al.*, "Sexual and reproductive health service delivery innovations and adaptations during COVID-19: A systematic review and crowdsourcing open call," *PLOS Glob. Public Heal.*, vol. 5, no. 9 September, 2025, doi: 10.1371/journal.pgph.0002032.

[59] N. H. Nishan, S. Sultana, T. A. Tithi, and M. D. H. Hawlader, "Physician perspectives on utilization of AI for medical assistance in Bangladesh: Knowledge, attitudes, and practices," *J. Public health Res.*, vol. 14, no. 3, 2025, doi: 10.1177/22799036251369408.

[60] A. Mitra and A. Pal, "On signal encryption at MapReduce and collaborative attribute-based access with ECAs for a preprocessed data set with ML in a privacy-preserving health 4.0," *e-Prime - Adv. Electr. Eng. Electron. Energy*, vol. 12, 2025, doi: 10.1016/j.prime.2025.100983.

[61] I. G. Valliyappan, Y. K. Lee, C. J. Ng, and H. M. Lim, "Exploring primary care doctors' perceptions and experiences in adopting mHealth with patients: A qualitative study," *Digit. Heal.*, vol. 11, 2025, doi: 10.1177/20552076251347850.

[62] S. Gulzar, A. A. Gulzar, Z. A. Faheem, A. Arif, and A. Sarfaraz, "Improve the Referral System of Health care organizations in rural community settings of Pakistan using Health Information Technology (HIT)-A protocol," *J. Asian Midwives*, vol. 11, no. 2, pp. 123–132, 2024, doi: 10.71071/JAM/v11i2.1.12th.

[63] A. P. Jose *et al.*, "Redesigning telemedicine: preliminary findings from an innovative assisted telemedicine healthcare model," *BMC Prim. Care*, vol. 25, no. 1, 2024, doi: 10.1186/s12875-024-02631-x.

[64] S. Hilker *et al.*, "A Proof-of-Concept Model for Implementing a 'Smart-NICU' to Improve Infant Mortality," *J. Intensive Care Med.*, vol. 39, no. 10, pp. 974–979, 2024, doi: 10.1177/08850666241247532.

[65] X. Liao, C. Yao, F. Jin, J. Zhang, and L. Liu, "Barriers and facilitators to implementing imaging-based diagnostic artificial intelligence-assisted decision-making software in hospitals in China: a qualitative study using the updated Consolidated Framework for Implementation Research," *BMJ Open*, vol. 14, no. 9, 2024, doi: 10.1136/bmjopen-2024-084398.

[66] M. Mooghal, S. Nasir, A. Arif, W. Khan, Y. A. Abdul Rashid, and L. M. Vohra, "Innovations in Artificial Intelligence-Driven Breast Cancer Survival Prediction: A

Narrative Review," *Cancer Inform.*, vol. 23, 2024, doi: 10.1177/11769351241272389.

[67] B. Tiangco, S. E. J. Daguit, N. C. Astrologo, L. Flores, R. N. Parma, and L. A. Celi, "Challenges in the maintenance of an open hospital-based cancer registry system in a low-to-middle-income country (LMIC): 2017–2022 experience," *PLOS Digit. Heal.*, vol. 3, no. 1, 2024, doi: 10.1371/journal.pdig.0000328.

[68] M. A. Mazumder, S. Gulati, and A. Sengar, "Telemedicine in Paediatric Subspecialty: A Low Cost Model for Developing Countries during the COVID-19 Pandemic," *J. Indian Med. Assoc.*, vol. 120, no. 7, pp. 11–15, 2022.

[69] S. Fatrin, S. Auliani, S. Pratama, T. M. Brunner, and B. B. Budi Siswanto, "Telemedicine to Support Heart Failure Patients during Social Distancing: A Systematic Review," *Glob. Heart*, vol. 17, no. 1, 2022, doi: 10.5334/GH.1175.

[70] C. Mallika and S. Selvamuthukumaran, "Hybrid online model for predicting diabetes mellitus," *Intell. Autom. Soft Comput.*, vol. 31, no. 3, pp. 1873–1885, 2022, doi: 10.32604/IASC.2022.020543.

[71] P. Priyadarshani, R. Purwar, V. R. Pipal, and R. P. Mall, "Patient Satisfaction with Telemedicine Services in Obstetrics and Gynecology during the COVID-19 Pandemic," *J. South Asian Fed. Obstet. Gynaecol.*, vol. 13, no. 6, pp. 382–386, 2021, doi: 10.5005/jp-journals-10006-1974.

[72] D. Barsasella *et al.*, "Predicting length of stay and mortality among hospitalized patients with type 2 diabetes mellitus and hypertension," *Int. J. Med. Inform.*, vol. 154, 2021, doi: 10.1016/j.ijmedinf.2021.104569.

[73] L. Gatellier *et al.*, "The Impact of COVID-19 on Cancer Care in the Post Pandemic World: Five Major Lessons Learnt from Challenges and Countermeasures of Major Asian Cancer Centres," *Asian Pacific J. Cancer Prev.*, vol. 22, no. 3, pp. 681–690, 2021, doi: 10.31557/APJCP.2021.22.3.681.

[74] K. P. Ferraris *et al.*, "Recapitulating the Bayesian framework for neurosurgical outpatient care and a costbenefit analysis of telemedicine for socioeconomically disadvantaged patients in the Philippines during the pandemic," *Neurosurg. Focus*, vol. 49, no. 6, pp. 1–9, 2020, doi: 10.3171/2020.9.FOCUS20695.

[75] G. A. Tadesse *et al.*, "Severity detection tool for patients with infectious disease," *Healthc. Technol. Lett.*, vol. 7, no. 2, pp. 45–50, 2020, doi: 10.1049/htl.2019.0030.

[76] M. A. Sarwar, T. Bashir, O. Shahzad, and A. Abbas, "Cloud-Based Architecture to Implement Electronic Health Record (EHR) System in Pakistan," *IT Prof.*, vol. 21, no. 3,

pp. 49–54, 2019, doi: 10.1109/MITP.2018.2882437.

[77] G. S. S. Krishnan and S. Kamath S., "Ontology-driven Text Feature Modeling for Disease Prediction using Unstructured Radiological Notes," *Comput. y Sist.*, vol. 23, no. 3, pp. 915–922, 2019, doi: 10.13053/CyS-23-3-3238.

[78] S. J. Jahan Miah, N. Hasan, and J. Gammack, "Follow-up decision support tool for public healthcare: A design research perspective," *Healthc. Inform. Res.*, vol. 25, no. 4, pp. 313–323, 2019, doi: 10.4258/hir.2019.25.4.313.

[79] M. J. Frost, J. B. Tran, F. Khatun, I. K. Friberg, and D. C. Rodríguez, "What does it take to be an effective national steward of digital health integration for health systems strengthening in low- and middle-income countries?," *Glob. Heal. Sci. Pract.*, vol. 6, pp. S18–S28, 2018, doi: 10.9745/GHSP-D-18-00270.

[80] R. Seethamraju, K. S. Diatha, and S. Garg, "Intention to Use a Mobile-Based Information Technology Solution for Tuberculosis Treatment Monitoring – Applying a UTAUT Model," *Inf. Syst. Front.*, vol. 20, no. 1, pp. 163–181, 2018, doi: 10.1007/s10796-017-9801-z.

[81] S. Sachdeva, S. Batra, and S. Bhalla, "Evolving large scale healthcare applications using open standards," *Heal. Policy Technol.*, vol. 6, no. 4, pp. 410–425, 2017, doi: 10.1016/j.hlpt.2017.10.001.

[82] P. J. Austria, "Exploring the influence of informatics in nursing: The Filipino student nurses' perspective," *Online J. Nurs. Informatics*, vol. 21, no. 2, 2017.

[83] W. M. Thit *et al.*, "Electronic medical records in Myanmar: User perceptions at marie stopes international clinics in Myanmar," *Southeast Asian J. Trop. Med. Public Health*, vol. 47, no. 4, pp. 799–809, 2016.

[84] S. Purkayastha, A. Price, R. Biswas, A. U. Jai Ganesh, and P. Otero, "From Dyadic Ties to Information Infrastructures: Care-Coordination between Patients, Providers, Students and Researchers. Contribution of the Health Informatics Education Working Group," *Yearb. Med. Inform.*, vol. 10, no. 1, pp. 68–74, 2015, doi: 10.15265/IY-2015-008.

[85] I. U. Cayetano-Jimenez, N. P. López-Jiménez, and R. Bustamante-Bello, "Demystifying Infusion Pumps: Design of a Cost-Effective Platform for Education and Innovation," *J. Diabetes Sci. Technol.*, 2025, doi: 10.1177/19322968251316580.

[86] K. N. Williams *et al.*, "Health system barriers to hypertension care in Peru: Rapid assessment to inform organizational-level change," *PLOS Glob. Public Heal.*, vol. 4, no. 8, 2024, doi: 10.1371/journal.pgph.0002404.

[87] F. Lyerla, B. Sobczak, and G. Jennings, "An international telehealth experience in Guatemala," *J. Am. Assoc. Nurse Pract.*, vol. 35, no. 6, pp. 366–372, 2023, doi: 10.1097/JXX.0000000000000849.

[88] J. X. Maia *et al.*, "The impact of a clinical decision support system in diabetes primary care patients in a developing country," *Diabetes Technol. Ther.*, vol. 18, no. 4, pp. 258–263, 2016, doi: 10.1089/dia.2015.0253.

[89] A. Aboalsamh *et al.*, "From crisis to care: exploring the resilience of pediatric urologists in tackling complex urological challenges in a resource-limited country during volunteer campaigns: a qualitative study," *Front. Public Heal.*, vol. 13, 2025, doi: 10.3389/fpubh.2025.1486283.

[90] M. Rawashdeh, K. H. Alzoubi, S. Muflih, S. A-Azzam, and A. M. Halboup, "Community pharmacists' attitudes, prior experience, and perceived barriers to informatics: A cross-sectional study from a developing country," *Informatics Med. Unlocked*, vol. 46, 2024, doi: 10.1016/j.imu.2024.101473.

[91] Z. Mohammadzadeh, H. R. Saeidnia, A. Lotfata, M. Hassanzadeh, and N. Ghiasi, "Smart city healthcare delivery innovations: a systematic review of essential technologies and indicators for developing nations," *BMC Health Serv. Res.*, vol. 23, no. 1, 2023, doi: 10.1186/s12913-023-10200-8.

[92] E. Hitti, M. A. Cheaito, and A. A. Kazzi, "Beirut Port Blast 2020: New Lessons Learned in Mass Casualty Incident Management in the Emergency Department," *J. Emerg. Med.*, vol. 65, no. 6, pp. e580–e583, 2023, doi: 10.1016/j.jemermed.2023.07.012.

[93] M. Ghanem *et al.*, "Deep Learning Approaches for Glioblastoma Prognosis in Resource-Limited Settings: A Study Using Basic Patient Demographic, Clinical, and Surgical Inputs," *World Neurosurg.*, vol. 175, pp. e1089–e1109, 2023, doi: 10.1016/j.wneu.2023.04.072.

[94] T. Brotherton, S. Brotherton, H. Ashworth, A. Kadambi, H. Ebrahim, and S. Ebrahim, "Development of an Offline, Open-Source, Electronic Health Record System for Refugee Care," *Front. Digit. Heal.*, vol. 4, 2022, doi: 10.3389/fdgth.2022.847002.

[95] N. R. Sivakumar and A. Z. Ibrahim, "Deep neural artificial intelligence for IoT based tele health data analytics," *Comput. Mater. Contin.*, vol. 70, no. 3, pp. 4467–4483, 2022, doi: 10.32604/cmc.2022.019041.

[96] E. Hitti, T. El Zahran, H. Hamade, B. W. Morgan, and Z. Kazzi, "Telephonic medical toxicology service in a low-resource setting: Setup, challenges, and opportunities," *West.*

J. Emerg. Med., vol. 22, no. 2, pp. 450–453, 2021, doi: 10.5811/WESTJEM.2020.10.48534.

[97] M. Mohammadi, K. Bahaadinbeigy, M. Ahmadinejad, B. Chaboki, H. Tabesh, and K. Etminani, "Clinical dashboard in the intensive care unit: Need-assessment and survey about attitudes and acceptance of tele-ICU from the viewpoint of nurses and clinicians in the intensive care unit," *Tanaffos*, vol. 18, no. 2, pp. 142–151, 2019.

[98] M. Orton, S. Agarwal, P. Muhoza, L. Vasudevan, and A. Vu, "Strengthening delivery of health services using digital devices," *Glob. Heal. Sci. Pract.*, vol. 6, pp. S61–S71, 2018, doi: 10.9745/GHSP-D-18-00229.

[99] S. K. David and M. R. M. Rafiullah, "Innovative health informatics as an effective modern strategy in diabetes management: A critical review," *Int. J. Clin. Pract.*, vol. 70, no. 6, pp. 434–449, 2016, doi: 10.1111/ijcp.12816.

[100] M. Kahouei, S. Alaei, S. S. G. Shariat Panahi, and J. M. Zadeh, "Strategy of health information seeking among physicians, medical residents, and students after introducing digital library and information technology in teaching hospitals of Iran," *J. Evid. Based. Med.*, vol. 8, no. 2, pp. 91–97, 2015, doi: 10.1111/jebm.12154.

[101] D. Orbatu, Z. İ. P. Bulğan, E. Olmez, and O. Er, "A Decision Support System for Machine Learning-Based Determination of Zinc Deficiency: A Study in Adolescent Patients," *Iran. J. Pediatr.*, vol. 35, no. 2, 2025, doi: 10.5812/ijp-148520.

[102] R. Ganguli, J. Franklin, X. Yu, A. Lin, R. Lad, and D. S. Heffernan, "Machine learning models to prognose 30-Day Mortality in Postoperative Disseminated Cancer Patients," *Surg. Oncol.*, vol. 44, 2022, doi: 10.1016/j.suronc.2022.101810.

[103] R. C. Armitage, "Implications of Large Language Models for Clinical Practice: Ethical Analysis Through the Principlism Framework," *J. Eval. Clin. Pract.*, vol. 31, no. 1, 2025, doi: 10.1111/jep.14250.

[104] J. Theros, A. Soetikno, and D. Liebovitz, "Foundations of AI for future physicians: A practical, accessible curriculum," *Med. Teach.*, vol. 47, no. 10, pp. 1601–1603, 2025, doi: 10.1080/0142159X.2025.2463492.

[105] S. Krishnasamy, "My Holistic Data Share: A WEB3 Data Share Application: Extending Beyond Finance to Privacy-Protected Decentralised Share of Multi-Dimensional Data to Enhance Global Healthcare," *Blockchain Healthc. Today*, vol. 7, no. 2, 2024, doi: 10.30953/bhty.v7.341.

[106] J. C. Pamplin *et al.*, "Randomized Controlled Trial of Telementoring during Resource-

Limited Patient Care Simulation Improves Caregiver Performance and Patient Survival," *Crit. Care Explor.*, vol. 6, no. 5, p. E1090, 2024, doi: 10.1097/CCE.0000000000001090.

[107] S. Francis, F. Crema Garcia, K. Uma, W. Mestdagh, B. de Moor, and M.-F. Moens, "Clinical entity-aware domain adaptation in low resource setting for inflammatory bowel disease," *Front. Artif. Intell.*, vol. 7, 2024, doi: 10.3389/frai.2024.1450477.

[108] D. Patel *et al.*, "Traditional Machine Learning, Deep Learning, and BERT (Large Language Model) Approaches for Predicting Hospitalizations From Nurse Triage Notes: Comparative Evaluation of Resource Management," *JMIR AI*, vol. 3, no. 1, 2024, doi: 10.2196/52190.

[109] E. Sezgin, S.-A. Hussain, S. Rust, and Y. Huang, "Extracting Medical Information From Free-Text and Unstructured Patient-Generated Health Data Using Natural Language Processing Methods: Feasibility Study With Real-world Data," *JMIR Form. Res.*, vol. 7, 2023, doi: 10.2196/43014.

[110] K. Borgelt, T. K. Siose, I. V Taape, M. Nunan, K. Beek, and A. T. Craig, "The impact of digital communication and data exchange on primary health service delivery in a small island developing state setting," *PLOS Digit. Heal.*, vol. 1, no. 10, 2022, doi: 10.1371/journal.pdig.0000109.

[111] O. Qureshi *et al.*, "Barriers and drivers to service delivery in global mental health projects," *Int. J. Ment. Health Syst.*, vol. 15, no. 1, 2021, doi: 10.1186/s13033-020-00427-x.

[112] J. Lickness, P. Bachanas, R. Tohme, A. Russell, A. Craig, and A. Hakim, "COVID-19 mitigation measures to maintain access to essential health services: new opportunities with long-term benefits," *Pan Afr. Med. J.*, vol. 40, 2021, doi: 10.11604/pamj.2021.40.254.31264.

[113] F. Wang and J.-D. Wang, "The determinants of telehealth provision: Empirical evidence from oecd countries," *Int. J. Environ. Res. Public Health*, vol. 18, no. 16, 2021, doi: 10.3390/ijerph18168288.

[114] S. Nies, S. Patel, M. Shafer, L. Longman, I. Sharif, and P. Pina, "Understanding physicians' preferences for telemedicine during the COVID-19 pandemic: Cross-sectional study," *JMIR Form. Res.*, vol. 5, no. 8, 2021, doi: 10.2196/26565.

[115] M. A. Wilson, B. L. Fouts, and K. N. Brown, "Development of a mobile application for acute pain management in U.S. military healthcare," *Appl. Nurs. Res.*, vol. 58, 2021, doi: 10.1016/j.apnr.2020.151393.

[116] W. T. Winders *et al.*, "The effects of mobile health on emergency care in low- and middle-

income countries: A systematic review and narrative synthesis," *J. Glob. Health*, vol. 11, 2021, doi: 10.7189/jogh.11.04023.

[117] S. E. R. Oest, M. B. Swanson, A. Ahmed, and N. M. Mohr, "Perceptions and Perceived Utility of Rural Emergency Department Telemedicine Services: A Needs Assessment," *Telemed. e-Health*, vol. 26, no. 7, pp. 855–864, 2020, doi: 10.1089/tmj.2019.0168.

[118] M.-C. Liao and I.-C. Lin, "Performance evaluation of an information technology intervention regarding charging for inpatient medical materials at a regional teaching hospital in Taiwan: Empirical study," *JMIR mHealth uHealth*, vol. 8, no. 3, 2020, doi: 10.2196/16381.

[119] M. S. Iyengar, O. E. Pinzón, and R. R. Campbell, "Design and development of a mobile-based patient management and information system for infectious disease outbreaks in low resource environments," *Technol. Heal. Care*, vol. 28, no. 6, pp. 697–709, 2020, doi: 10.3233/THC-192100.

[120] V. Williams and C. Kovarik, "Long-range diagnosis of and support for skin conditions in field settings," *Trop. Med. Infect. Dis.*, vol. 3, no. 3, 2018, doi: 10.3390/tropicalmed3030084.

[121] V. N. O'Reilly-Shah, J. Kitzman, C. S. Jabaley, and G. C. Lynde, "Evidence for increased use of the Society of Pediatric Anesthesia Critical Events Checklist in resource-limited environments: A retrospective observational study of app data," *Paediatr. Anaesth.*, vol. 28, no. 2, pp. 167–173, 2018, doi: 10.1111/pan.13305.

[122] R. P. M. Steegers-Theunissen, "Periconception mHealth platform for prevention of placental-related outcomes and non-communicable diseases," *Placenta*, vol. 60, pp. 115–118, 2017, doi: 10.1016/j.placenta.2017.04.017.

[123] E. Umali, J. McCool, and R. Whittaker, "Possibilities and expectations for mHealth in the Pacific Islands: Insights from key informants," *JMIR mHealth uHealth*, vol. 4, no. 1, 2016, doi: 10.2196/mhealth.4626.

[124] I. Torre Diez, B. Martínez-Pérez, M. López-Coronado, J. R. Díaz, and M. M. Löpez, "Decision Support Systems and Applications in Ophthalmology: Literature and Commercial Review Focused on Mobile Apps," *J. Med. Syst.*, vol. 39, no. 1, 2015, doi: 10.1007/s10916-014-0174-2.