AI Implementation in Low-Resource Healthcare Settings: Implications of the Digital Health Divide

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Introduction

This literature review will address the following research question: As health systems are increasingly transformed by digital health, in what ways does the digital health divide manifest in low-resource settings, and what considerations are needed for the effective implementation of artificial intelligence (AI)? The findings support the argument that realizing AI's potential to strengthen health systems requires intersectional, multisectoral, and context-specific approaches. Implementing AI without ensuring that populations can equitably access, use, and benefit from digital technologies risks exacerbating and entrenching existing inequalities. Innovative solutions must address the barriers that drive digital exclusion, consider whose voices are excluded throughout research, development, implementation, and evaluation, and identify the ways in which AI may be detrimental to already marginalized populations.

Background

The global health landscape in recent decades has been increasingly shaped by the proliferation of digital health technologies, transforming healthcare systems and outcomes across the Global North. In 2020, the World Health Organization (WHO) released the Global Strategy on Digital Health, highlighting the potential for digital health technologies to strengthen health systems and contribute to the health-related Sustainable Development Goals, including universal health coverage (World Health Organization, 2020; Raza et al., 2025; Lima et al., 2025; Koebe, 2025). Digital health encompasses the use of artificial intelligence, which is assumed to have the greatest potential benefit in the resource-limited settings of low- and middle-income countries (LMICs). Health-care disparities in LMICs are characterized by limited infrastructure, workforce shortages, inadequate resources, and unequal access to medical services, all of which exacerbate the already existing high health burdens (Sylla, Ismaila, & Diallo, 2025). It is widely recognized

that the use of Artificial Intelligence (AI) can be effectively implemented to counter these challenges through measures such as improving diagnostics, facilitating remote consultations, enabling predictive analytics and surveillance for disease outbreaks, and optimizing resource allocation. The use of AI throughout health systems can significantly improve health access and outcomes in LMICs, helping to bridge disparities in global health outcomes between low- and high-income countries (Wibowo, 2025; Wong, Bermudez-Cañete, Campbell, & Rhew, 2025).

However, the increasing digitalization of healthcare in the developed world cannot be unilaterally or arbitrarily applied to the developing world. LMICs remain afflicted by the digital divide both within and between regions, where many lack access to digital technologies, their benefits, and overall inclusion in the digital world. According to the World Economic Forum, 2.5 billion people worldwide still lack internet access, with the majority of them living in developing and least developed countries. The resource constraints of LMICs often compound embedded structural inequalities of racism, gender norms, discrimination, limited access to education, socioeconomic inequalities, and political turmoil. (Sylla et al., 2025; Raza et al., 2025). The consequence is unequal access to digital health interventions, with structural, practical, commercial, and economic barriers preventing vulnerable populations from benefiting. As digital health continues to reshape healthcare systems, inadequate access risks further entrenching and exacerbating existing health inequities, an exclusionary trend that became increasingly apparent during the COVID-19 pandemic (Sylla et al., 2025). As stated by UN Secretary-General António Guterres, “the digital divide is now a matter of life and death for people who are unable to access essential health-care information. It is threatening to become the new face of inequality, reinforcing social and economic disadvantages” (United Nations, 2020).

The successful implementation of AI in these settings requires that the digital divide be addressed through comprehensive strategies grounded in thorough understandings of local contexts. Ethical implementation requires that the foundations for digital readiness be established and sustained prior to interventions, and that interventions are responsive to community needs through accessible, scalable, and person-centric solutions tailored to local and regional priorities (Wibowo, 2025; Ogungbe et al., 2025). In doing so, equal attention must be paid to the technology itself, including its design, development, integration, and interaction with end users in the targeted communities, with the voices of those most susceptible to inequitable health outcomes prioritized. In an increasingly digitized system, it is also imperative that the digital determinants of health be considered at the individual and societal levels (Ogungbe et al., 2025; Chidambaram, 2025).

Methodology

The articles for this literature review were primarily obtained through the Scopus and PubMed Central databases. Three iterations of the search were conducted in each database to capture three dimensions of this topic: the current state of the digital health divide in LMICs, the interplay between AI and the digital health divide across health system building blocks, and the recommended policy considerations or existing responses for implementation. The search terms, detailed in the annex, were derived from core terms such as “digital divide,” “artificial intelligence,” “health systems,” “equity,” “LMICs,” and “health policy,” with additional variations used to broaden the search. The inclusion criteria were: published after 2010, written in English, focused on LMICs, qualitative or quantitative studies, and peer-reviewed or produced by international organizations with a review process. After reviewing titles and abstracts based on these criteria, 122 articles were screened, of which 25 were included in this review. Five

additional sources were identified through Google searches and from the reference lists of screened articles. In total, 29 articles were included in the final review.

Framework: The Digital Health Divide

This review is guided by the concept of the digital health divide, which describes how digital exclusion intersects with and reinforces existing determinants of health inequities. Factors such as age, gender, education, and socioeconomic status shape who is able to access and benefit from digital health tools (Barnils, 2024). Given that social inequality is often associated with lower use of digital technologies, digital health interventions often benefit more privileged groups, while marginalized populations risk being excluded or further disadvantaged (Western et al., 2025; König et al., 2023). Western et al. describe three levels of the digital divide: (1) disparities in access to and infrastructure for health technology, (2) disparities in the skills required to navigate and interact with health technology, and (3) disparities in the outcomes derived from digital technologies. The thematic analysis will be structured around these three dimensions of the digital health divide.

1st Digital Divide: Access

Urban-Rural Divide

The primary barrier to AI adoption and scalability remains the difference in adequate basic infrastructure and resources between urban and rural areas, including unreliable electricity and internet connectivity (Wibowo et al., 2025). Internet coverage continues to be an ongoing challenge in rural and remote regions; according to the World Bank, LMICs have an average rural population of 65%, with only 20% using the internet, compared with HICs where 19% of the population is rural and 90% have internet access (Reddy et al., 2022; Wong et al., 2025). A study on community health workers in India, where infrastructural constraints pushed them

toward informal and accessible mobile platforms such as WhatsApp, found that rural community health workers were affected by fragile phones, patchy networks, out-of-pocket data costs, connectivity constraints, reliance on shared or family devices, and delays when storage was full, or data packs were unaffordable (Thakur et al., 2025). Similarly, the introduction of e-pharmacies in Ghana found that only residents of major urban hubs, who had consistent electrical power and internet connectivity and could afford these services, were able to benefit from e-pharmacies. Rural residents, on the other hand, had their immensely inadequate electricity and internet compounded by poor road networks and insufficient home address systems that prevented both the ordering and delivery of medications. This is exemplary of the paradox in which digital platforms are introduced with the promise of greater accessibility, but the absence of foundational infrastructure prevents its realization (Khan & Eab-Aggrey, 2025). Technological advancements remain a long shot and largely unfeasible until basic physical infrastructure is well established. Another study from Saudi Arabia found that the centralization of specialized health services and large discrepancies in stable internet access posed major challenges for rural residents with disabilities, who were inhibited in their use of AI-enabled wearable health devices. The continuous connectivity and real-time data transmission required for proper monitoring and personalized adjustments make these technologies especially vulnerable to weak infrastructure. It was further found that beyond basic connectivity issues, wider discrepancies existed in technical support access, with urban areas receiving same-day or next-day assistance while rural participants faced 1-2 week delays (Alanazi et al., 2025).

Financial Constraints

At the individual level, those who are disadvantaged may be unable to afford high-speed internet or advanced devices, making financial accessibility a key component of digital inclusion and necessary for benefiting from digital technologies (Koehle et al., 2023). The inability to afford more advanced medical devices may result in worse health outcomes than for those who can, while the existence of different tiers of technology is itself a digital determinant of health (Chidambaram et al., 2024). Even so, the cost of acquiring the technology is only the first barrier; long term maintenance and updates pose ongoing financial burdens and limit sustainability (Alanazi et al., 2025). At the macro system level, LMICs have a critical need for foundational investments, yet the costs to adopt and sustain these innovations are widely unattainable for their underdeveloped economies. Limited public-sector investment, a lack of sustainable financing mechanisms, and a reliance on international aid, pose significant challenges to adoption. Aid may cease at any time, as is currently being witnessed globally, which can result in incomplete or discontinued projects and disrupted health systems. The innovations that can be afforded are typically concentrated in urban hubs, where sufficient infrastructure can be leveraged, and implementation costs are lower (Wibowo et al., 2025).

Gender Digital Divide

Globally, women lag behind men in both internet access and ownership of digital devices. In 2023, 70% of men had internet access compared with 65% of women. While gender differences in internet use are minimal in high-income countries, the disparity is substantial in LMICs, where 34% of men and 20% of women go online (Choi, 2025). This divide widens further in Sub-Saharan Africa, where the gender gap reaches 45%, with women in low-income African countries being the least likely to be online globally (Reddy et al., 2022; Figueroa et al., 2023). In 2022, 143 million more men owned mobile phones than women worldwide, as mobile

phone ownership and access continue to be comparatively lower among women than men in LMICs (Figueroa et al., 2023; Ginsburg et al., 2014).

2nd Digital Divide: Adoption & Skills

Culture and Language

Cultural alignment influences an individual's acceptance of and willingness to use digital technologies, making it a key component of the second digital divide. Given that much of AI was developed and trained in HICs, cultural adaptation strongly affects AI acceptance in LMIC healthcare. For instance, AI models prioritize individual autonomy in line with individualistic HIC contexts; however, many LMICs are defined by collectivist cultures where social influence, community support, and family networks form a collective decision-making process (Raza et al., 2025). Studies from Pakistan and Saudi Arabia, where joint families are prevalent, found a preference for AI systems that accommodate family-centered decision making, while the Saudi study further found that familial comfort was a prerequisite for the use of AI-driven personal devices (Raza et al., 2025; Alanazi et al., 2025). As well, the reduction in human interaction associated with AI contradicts cultural values that emphasize personal relationships in medical care and the role of family caregiver involvement in increasing patient satisfaction and adherence. As such, there is a preference for technologies that support rather than bypass these traditional consultation methods (Raza et al., 2025; Alanazi et al., 2025).

Further, the majority of LLMs are trained on English databases, which is often not the primary language in LMICs, limiting their utility across cultures in the absence of advanced translation tools, especially since 65% of internet users prefer content in their native language (Lima et al., 2025). To increase access to medical information, LLMs must first be tested for medical proficiency in the native languages of the regions in which they will operate (Tensen et

al., 2025). LLMs also tend to produce language similar to the written texts they were trained on, which results in the need for higher reading comprehension levels, often at a high school or college level. This adds yet another inequity related to socioeconomic status, access to education, and literacy, and contradicts the American Medical Association recommendation that patient-facing information be written at a sixth grade reading level or lower (Ogungbe et al., 2024; Lima et al., 2025). It is also necessary that LLMs be trained on cultural nuances to avoid the spread of misinformation or harmful content that is not culturally attuned, as unrealistic recommendations can cause guilt or increase stress due to perceived failure to follow them (Lima et al., 2025; Koehle et al., 2022).

Trust

Directly related to cultural acceptance is the concept of trust, which refers to the perceived credibility and goodwill of these technologies (Raza et al., 2025). The factor of goodwill is particularly important given that AI has sometimes been perceived as a vehicle for the "colonization of healthcare," where outputs benefit the powerful few while further marginalizing those already disadvantaged (Chidambaram et al., 2024). This makes trust yet another vehicle for disparity, as vulnerable populations that have previously faced healthcare marginalization may be unwilling to trust AI outputs, making transparency and inclusion throughout the process imperative (Alanazi et al., 2025). The WHO outlines six core tenets for promoting trust: accountability, fairness, data privacy and protection, transparency, explainability, and value and purpose alignment. However, LMICs are limited in fulfilling them due to resource scarcity, such as limited infrastructure, expertise, and government capacity for effective monitoring, and a lack of widely accessible and reliable data (Wong et al., 2025). Concerns about data privacy and protection were listed as a key barrier to trust, yet many LMICs

lack the necessary security infrastructure to address these concerns, particularly in regions experiencing political instability where system trust and regulatory maturity are already weak (Alanazi et al., 2025; Wibowo et al., 2025). For instance, individuals may hesitate to disclose personal information related to HIV status, contraception, or abortions out of fear of discrimination or criminalization, depending on the domestic legal framework (Tensen et al., 2025). Further limitations to trust for physicians include the need for liability protections to use AI in clinical decision-making, whether AI can adapt to the local context, and fears of job displacement (Alanazi et al., 2025; Wibowo et al., 2025). Ultimately, trust is a critical determinant in the adoption of AI technologies and can only be built through experience, which is contingent on addressing all other components of the digital divide.

Digital Health Literacy

Digital health literacy (DHL) refers to whether individuals possess the skill set necessary to make use of digital information; it is the ability to extract, understand, and use health information provided by digital sources. DHL is shaped by how often people engage with health and digital resources, as it is developed through access and experience, which is in turn influenced by social determinants such as age, gender, education, and socioeconomic status (Estrela et al., 2023). Those who bypass the first digital divide, such as affluent young men in urban centres, tend to have higher DHL. This creates a new layer of disparity between those who possess and do not possess DHL, as possessing DHL is associated with greater privilege and results in better health outcomes. Individuals with higher DHL are better capable of managing their health using apps, equipment, platforms, and telemedicine, which support better health-seeking behaviours, health promotion, knowledge, and attitudes. Meanwhile, those most marginalized and affected by health inequities tend to have lower DHL and consequently worse

health outcomes (Chidambaram et al., 2024). Lower DHL also results in increased vulnerability to consuming misinformation, algorithmic biases, and failing to recognize AI-generated errors (Estrela et al., 2023; Choi, 2025). The necessity of DHL poses a significant risk to the effective implementation of AI, as over 70% of adults in LMICs have inadequate health literacy. Addressing these gaps is costly and time-consuming, while neglecting them may further entrench existing inequities or lead users to disengage from AI tools entirely (Wong et al., 2025). For instance, as women have less access to digital inclusion, they also possess lower DHL and therefore may have reduced engagement with such technologies and face worse outcomes when digital interventions are designed only for digitally literate users, widening the gender disparity (Choi, 2025).

3rd Digital Divide: Outcomes

Burden on Community Health Workers

In many rural and remote settings, community health workers (CHWs) become responsible for delivering digital solutions resulting in increased administrative burden, reduced programmatic efficiency, and declining motivation. In the absence of sufficient training and preparation, many CHWs find themselves overwhelmed with stress and their work life balances eroded as they deal with information overload, duplicative reporting requirements, and the need to balance paper registers with digital data entry (Thakur et al., 2025). This workload is further compounded for older, rural, and digitally marginalized CHWs, as they face greater barriers to keeping up with and learning new digital tools. As well, the study on CHWs in India using WhatsApp to mediate workflows found that the instantaneous and interconnected nature of the platform made CHWs feel constantly monitored, surveilled, and micromanaged by their supervisors, contributing to burnout and the erosion of trust in the platform (Thakur et al., 2025).

In the case of e-pharmacies in Ghana, the long-standing role of CHWs as the primary source of care was diminished. Community pharmacies had previously served as the first point of contact for non-urgent conditions, sparing patients the long commutes and wait times of clinics or hospitals. These pharmacies are legally permitted to dispense and formulate medications, counsel clients, and provide basic first aid. However, the introduction of e-pharmacies occurred without adequate consultation or engagement with pharmacists, leaving them alienated and facing pressure to adopt the new system or invest further in their businesses to retain customers in the long run (Khan & Aggrey, 2025). As many fear being displaced entirely, this not only marginalizes community health workers, but also prevents digitally excluded groups from benefiting from the services they have long relied on.

Algorithmic Biases

Unfortunately, surpassing the first two digital divides does not guarantee marginalized populations a seamless experience with AI outputs. Data-related, human-induced, and machine-generated biases, along with diverse sources of structural bias, can reinforce one another (Lima et al., 2025). Societal inequalities and existing baseline health disparities shape AI models, which machine-learning algorithms can re-perpetuate; the most noted forms include ethno-racial and gender discrimination. One study found that the accuracy of IBM's facial recognition systems was 11% to 19% lower for images of Black men and dropped to 34% for images of Black women (Wirtz, Logie, & Mbuagbaw, 2022; Chidambaram et al., 2024). Another found that models consistently referred to healthcare professionals as male, reinforcing medicine as a male-dominated field and potentially limiting equal access to the platform for women and non-binary professionals (Lima et al., 2025). Such biases become ingrained throughout the various stages of algorithm development, including data collection, model design, and implementation; processes

that marginalized populations are typically excluded from (Koehle, Kronk, & Lee, 2022). This is especially evident in regions such as South Africa and Kashmir, where the term “digital apartheid” has been used to describe structural discrimination in access to the internet or technology on the basis of race and ethnicity (Wirtz et al., 2022). Beyond the algorithm, healthcare priorities for minority groups generally receive less funding for AI-based solutions (Chidambaram et al., 2024).

Data Poverty

A lack of basic infrastructure, rural location, digital exclusion, and social marginalization often pose barriers for health systems to obtain representative health data. Most data correspond to populations that can access health services more often and neglect those who do not, leaving already marginalized groups excluded from these data pools. In turn, they cannot reap the benefits of discoveries and innovations that do not reflect or apply to them (Chidambaram et al., 2024). The lack of representative data also makes biases more likely to arise, as AI models are trained on asymmetrical datasets that already reflect those most privileged in society (Wong et al., 2025). Nonetheless, many LMICs still lack centralized or national data repositories altogether, which are essential for digital readiness and for aligning AI implementation with local needs (Wilbowo et al., 2025).

Underrepresentation in Research

While advancements in AI have focused on research and development, the research guiding AI remains exclusionary, which becomes evident in the implementation, use, and outcomes of these technologies. At a macro level, the majority of digital health research is based in Western, educated, industrialized, rich, and democratic (WEIRD) countries, with North America, Europe, Australia, and New Zealand producing most studies (König et al., 2023). This

reflects global power and knowledge-production dynamics between nations and, ultimately, the legacy of colonialism. Many LMICs are still recovering from historical dispossession and facing disproportionately poor health outcomes as a result. It is therefore necessary to consider indicators of social inequalities in digital health at the global level (König et al., 2023). Further, this grounding in Western populations explains why there is limited consideration of cultural values and family structures in non-Western contexts and why such research typically emphasizes technical functionality rather than user acceptance and experience (Alanazi et al., 2025). At the local level, digital clinal trials risk reproducing inequities because by design, they exclude individuals with limited or inconsistent technology access, which results in an accumulation of trails that ignore the subgroups of those digitally excluded (Wirtz et al., 2022). As well, structural biases mean that research questions concerning disadvantaged groups are typically not prioritized, leading to their exclusion in subsequent steps and resulting in fewer AI-based solutions developed for them (Chidambaram et al., 2024).

Potential Solutions and Key Considerations for Policy and Implementation by Health System Building Block

Service Delivery

Service delivery intersects with all three levels of digital divides discussed above. In terms of access, studies recommend using visual representations to supplement LLMs, investing in well-developed translation tools, and prioritizing contextualization and customization strategies such as complex architectures like Retrieval-Augmented Generation to produce more domain-specific LLMs (Lima et al.; Wong et al.). Building cultural acceptance and trust entails ensuring that the goals of AI are aligned with community needs; this necessitates increased co-designing with CHWs, with greater participation of women, at every stage of development,

implementation, and evaluation (Figueroa et al., 2023; Choi, 2025; Koehle et al., 2022). As well, the adoption of Reinforcement Learning from Human Feedback (RLHF) can refine AI training on what outputs are acceptable in a given context and effectively mitigate bias (Wong et al., 2025). Greater transparency can be accomplished through clear disclaimers on technological limitations and explainability of AI operations to providers and clients through user-friendly interfaces and DHL programs (Wong et al., 2025). When it comes to DHL, groups with no prior internet experience should be prioritized, organizations should engage in multiple modes of educational advertising and health messaging tailored to target age groups, and CHWs can play a key role in facilitating broader access to and use of digital technologies (Raza et al., 2025; Figueroa et al., 2023). Further, a "universal approach" should be adopted when developing technologies, assuming all users have limited literacy to reduce disparities in comprehension (Choi, 2025). For outcomes, it is first crucial to understand how diverse bias affects AI systems, including conducting pre-deployment bias testing through RLHF. These pre-deployment checks should also be supplemented with risk assessments that prioritize community input to determine what an acceptable level of risk is, and whether that risk is outweighed by the benefits of implementation (Wong et al., 2025). Moreover, key community stakeholders should be involved in the process as early as possible to help design research questions pertinent to them, and for trials to be designed according to the realities of their context (Wirtz et al., 2022; König et al., 2023).

Health Workforce

In this context of low-resource settings, CHWs are the preeminent focus of the health workforce. They hold incredible potential to train their communities in the use of digital health tools as trusted actors who can implement strategies for equitable access and inclusion from

ground-level perspectives (Sylla et al., 2025; Tensen et al., 2025). In fact, a randomized control trial in Bangladesh found that CHWs guided by smartphone applications had better outcomes than those without in gaining patient adherence. Their high level of community acceptance carried over to the introduction of new technologies, as long as they acted as patient navigators (Jonayed & Rumi, 2024). Similarly, community pharmacists, who hold vast knowledge of ground realities and diverse clinical needs and often serve as the first point of contact, are crucial to engage early in the onset of interventions (Tensen et al., 2025; Khan & Eab-Aggrey, 2025). It is imperative that community health workers are collaborated with and have visibility of their contributions to the process to lessen fears of being replaced, as well as to build greater trust among them (Wong et al., 2025). However, the leveraging of CHW roles requires sufficient political will, government support, and funding for comprehensive training and compensation (Tensen et al., 2025). There should also be regulatory oversight to ensure a fair and sustainable transition of roles, including the introduction of "right to disconnect" policies to prevent them from being overworked (Wong et al., 2025; Thakur et al., 2025). Beyond CHWs, government commitment for tailored training programs is required to build local capacity and fill the specialized roles required by AI, such as health IT specialists, AI trainers, and clinicians with AI expertise (Wong et al., 2025).

Health Information Systems

Barriers to implementing electronic health records include inadequate infrastructure, a lack of centralized data repositories, poor-quality and poorly managed data, and data poverty resulting from unrepresentative datasets. Many systems also fail to meet data-maturity benchmarks, and the high costs of data cleaning and the inability to process large volumes of incoming data further limit implementation (Wong et al., 2025). Meanwhile, poor digital health

literacy, limited technical expertise, resistance to change, and fragmented workflows hinder adoption (Mwogosi et al., 2025). Wider system challenges include financial constraints, lack of interoperability, weak data protection frameworks, insufficient cybersecurity and privacy safeguards, the absence of standardized or national electronic medical databases, and the ongoing need for system maintenance (Mwogosi et al., 2025; Tensen et al., 2025; Wong et al., 2025; Wibowo, 2025). Addressing these complexities first requires top-down commitments to invest in robust national data security and privacy frameworks and infrastructure, initiatives to centralize patient data in national repositories, and scalable infrastructure and adaptive governance practices (Wong et al., 2025; Wibowo et al., 2025). However, this is widely dependent on funding, political and government regulatory capacity, and trust in those systems. As such, addressing equity at this level entails addressing how structural power shapes data collection, use, management, storage, and sharing in the health system (Koehle et al., 2022). Nonetheless, required practices include having trained IT personnel for continuous monitoring and offering continuous in-service digital literacy training. Ethical practices should be maintained for local data collection, data sharing should be context specific, and electronic health record systems should reflect relevant categories of experience in a given community (Wong et al., 2025; Koehle et al., 2022). Systems should also support integration and interoperability between applications and adopt national data exchange standards (Thakur et al., 2025; Mwogosi et al., 2025). Notably, there are currently concerted efforts with universities in Kenya, Rwanda, and Nigeria to build localized datasets for LLMs to support clinical decision-making (Wong et al., 2025).

Access to Essential Medicines & Technologies

In LMICs, access in this context entails facilitating basic, reliable, and sustainable digital inclusion. This can occur through measures such as subsidized smartphone distribution programs, establishing affordable internet access, and making applications compatible with low-bandwidth internet or well-functioning, data-frugal browser equivalents (Sylla et al., 2025; Alnasser et al., 2025; Koehle et al., 2022). This is especially important given that smartphones have proven to be a successful, accessible, and convenient form of digital infrastructure, providing a simplified solution in contexts where broader infrastructure is lacking (Alnasser et al., 2025). However, the use of personal cellphones and platforms such as WhatsApp requires governments to produce formal guidelines on their ethical, secure, and effective use, including standards for data protection, information sharing, out-of-hours communication, and efforts to scale up encryption (Thakur et al., 2025; Alnasser et al., 2025).

Financing

Among the sources reviewed, the financial dimension of LMIC health systems in the context of the digital divide was far less explored. There is, however, acknowledgement that high implementation costs risk widening disparities and that sustainable financial models are critical for AI adoption (Wong et al., 2025). As well, that government regulation is necessary to budget for uncompensated care, which is essential for equitable access by way of ensuring fair pricing and preventing unethical billing or denial of services. Further, that public–private partnerships and the leveraging of industry investments are crucial to subsidize implementation, especially to maintain continuity of care in the face of political disruptions (Wong et al., 2025).

Leadership and Governance

Political stability and peace are the key prerequisites for governments to support AI implementation in health. Government institutions with the capacity and public trust to act

appropriately are necessary to provide sustainable guidance and a roadmap for proper ethical implementation (Wibowo et al., 2025). As well, to support the collaboration between academia, industry, and health care professionals that is necessary to drive innovation, validate AI algorithms, and ensure their effective integration into the health care system (Thakur et al., 2025). Metrics used to evaluate the progress of digital transformation guide policy, leadership, and funding commitments. It is therefore necessary to ensure that metrics are adjusted according to the context in which implementation projects occur; local priorities must be considered when developing indicators (Maaß et al., 2024). This is particularly important for monitoring and evaluation systems to address implementation challenges and improve health care delivery (Wibowo et al., 2025). At an international level, having open databases to share experiences in implementation and adoption can inform comparable contexts, prevent research waste, and enable knowledge exchange (König et al., 2023).

Literature Gaps

While the literature provides a broad overview of the major themes shaping AI implementation in LMICs, there is an overreliance on assertions that lack elaboration. The Global Strategy on Digital Health is the main global policy guiding AI-related health system transformation, and although it recognizes the limitations imposed by the digital divide, its guidance is largely aspirational rather than substantive. Similarly, the literature consistently mentions DHL training as a solution, yet none of the sources specify what such training would involve, what resources it would require, or what barriers it may face. Given that access to basic education is already a challenge in many settings, it remains unclear through what modes DHL training would realistically occur. Private-public partnerships are repeatedly cited as essential funding mechanisms but are rarely examined in terms of the ethical constraints that arise when

profit-driven companies deliver services to vulnerable populations, or what sort of regulatory oversight is necessary to mediate that relationship. Similarly, the idea of insufficient infrastructure appears throughout the literature with little specification of what it entails or how it differs by AI technology and context. Instead, AI and its infrastructural prerequisites are often treated as a monolith. It would also be valuable for the literature to identify which AI technologies are most accessible and feasible, and which health concerns they meaningfully address. This poses the question of whether the medical conditions targeted by the most accessible forms of AI disproportionately affect marginalized groups whose health conditions remain deprioritized in AI development. The urban-rural divide is only explored in terms of access but lacks discussion of how cultural differences between remote regions and urban hubs within LMICs shape interactions with AI. Finally, the literature offers almost no discussion of how AI might influence secondary and tertiary care and does not acknowledge the risks associated with development cultures that prioritize quick wins in the context of healthcare transformation in LMICs.

***AI Statement:** AI was used to assist in designing and adapting Boolean search queries for different databases, for general writing and grammar checks, and to generate citations. *

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Annex

Inclusion/Exclusion Criteria

Property	Included	Excluded
Article Type	• Peer reviewed • From international organizations with review process	• Web page data, opinion pieces
Methodology	• Qualitative studies • Quantitative studies	
Geographic Scope	• Developing countries • LMICs/LICs	• Developed Countries • HICs
Time Frame	After 2010	Before 2010
Language	English	Non-English

Documentation of Search

Link to document, also pasted below.

Date of Search	Database Used	Search Terms	Total # of articles	Articles considered	Articles included in final paper
13-Nov-25	Scopus	TITLE-ABS-KEY ("artificial intelligence" OR "medical AI" OR "healthcare AI" OR "clinical decision support" OR "machine learning" OR "deep learning" OR "predictive analytics") AND ("healthcare" OR "health care" OR "health services" OR "health system" OR "health systems" OR "clinical setting" OR "health facility") AND (LMIC OR LMICs OR "low-income country" OR "low-income countries" OR "middle-income country" OR "middle-income countries" OR "resource-limited" OR "resource-limited setting" OR "resource-constrained" OR "resource-constrained settings" OR "developing country" OR "developing countries" OR "global south") AND ("digital health divide" OR "healthcare digital divide" OR "digital health inequity" OR "digital health inequality" OR "digital health literacy" OR "eHealth literacy")	132	39	13
13-Nov-25	Scopus	TITLE-ABS-KEY ("digital health divide" OR "healthcare digital divide" OR "digital health inequity" OR "digital health inequality" OR "digital health literacy" OR "eHealth literacy") AND ("artificial intelligence" OR "machine learning" OR "deep learning" OR "clinical decision support" OR "predictive analytics" OR "medical AI" OR "healthcare AI") AND ("health system" OR "health systems" OR "service delivery" OR "health workforce" OR "health information system" OR "health information systems" OR "essential medicines" OR "medical products" OR "medical technologies" OR "health financing" OR "health governance") AND (LMIC OR LMICs OR "low-income country" OR "low-income countries" OR "middle-income country" OR "middle-income countries" OR "resource-limited" OR "resource-limited setting" OR "resource constrained" OR "resource-constrained settings" OR "developing country" OR "developing countries" OR "global south")	41	24	5
13-Nov-25	Scopus	TITLE-ABS-KEY ("digital health divide" OR "healthcare digital divide" OR "digital health inequity" OR "digital health inequality" OR "digital health literacy" OR "eHealth literacy") AND ("health policy" OR "digital health policy" OR "policy response" OR "policy intervention" OR "policy framework" OR "national digital health strategy" OR "eHealth strategy" OR "health governance" OR regulation OR governance) AND (LMIC OR LMICs OR "low-income country" OR "low-income countries" OR "low income country" OR "low income countries" OR "low- and middle-income countries" OR "low and middle income countries" OR "developing country" OR "developing countries" OR "resource-limited" OR "resource-limited settings" OR "global south")	119	34	3
16-Nov-25	PubMed	("artificial intelligence" OR "medical AI" OR "healthcare AI" OR "clinical decision support" OR "machine learning" OR "deep learning" OR "predictive analytics") AND ("healthcare" OR "health care" OR "health services" OR "health system" OR "health systems" OR "clinical setting" OR "health facility") AND ("digital health divide" OR "healthcare digital divide" OR "digital health inequity" OR "digital health inequality" OR "digital health literacy" OR "eHealth literacy") AND (LMIC OR LMICs OR "low-income country" OR "low-income countries" OR "middle-income country" OR "middle-income countries" OR "resource-limited" OR "resource-limited setting" OR "resource-constrained" OR "resource-constrained settings" OR "developing country" OR "developing countries" OR "global south")	8	7	0
16-Nov-25	PubMed	("digital health divide" OR "healthcare digital divide" OR "digital health inequity" OR "digital health inequality" OR "digital health literacy" OR "eHealth literacy") AND ("artificial intelligence" OR "machine learning" OR "deep learning" OR "clinical decision support" OR "predictive analytics" OR "medical AI" OR "healthcare AI") AND ("health system" OR "health systems" OR "service delivery" OR "health workforce" OR "health information system" OR "health information systems" OR "essential medicines" OR "medical products" OR "medical technologies" OR "health financing" OR "health governance") AND (LMIC OR LMICs OR "low-income country" OR "low-income countries" OR "middle-income country" OR "middle-income countries" OR "resource-limited" OR "resource-limited setting" OR "resource constrained" OR "resource-constrained settings" OR "developing country" OR "developing countries" OR "global south")	2	2	1
16-Nov-25	PubMed	("digital health divide" OR "healthcare digital divide" OR "digital health inequity" OR "digital health inequality" OR "digital health literacy" OR "eHealth literacy") AND ("health policy" OR "digital health policy" OR "policy response" OR "policy intervention" OR "policy framework" OR "national digital health strategy" OR "eHealth strategy" OR "health governance" OR regulation OR governance) AND (LMIC OR LMICs OR "low-income country" OR "low-income countries" OR "middle-income country" OR "middle-income countries" OR "resource-limited" OR "resource-limited settings" OR "developing country" OR "developing countries" OR "global south")	35	16	2
24-Nov-25	Google > UN Reports	Global Strategy on digital health		1	1
24-Nov-25	Google > World Econon	How many people lack internet access worldwide?		1	1
24-Nov-25	Google > UN Reports	UN Statement on Digital Divide		1	1
24-Nov-25	Other: References of articles found through database search	N/A		2	2
TOTAL:				**127**	**29**