



Digital health in Africa: A Strategic Lever to Transform National Health Policies

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Abstract

Digital health is playing an increasingly important role in the transformation of health systems worldwide, particularly in low- and middle-income countries. In Africa, where health systems face persistent structural constraints, including limited resources, geographic barriers to care, and a growing burden of both communicable and non-communicable diseases, digital technologies are emerging as valuable tools to strengthen health systems.

This article examines the role of digital health as a strategic lever for transforming national health policies in Africa. It explores how digital technologies can improve access to care, strengthen health information systems, and support more informed and timely decision-making in public health.

At the same time, several structural challenges remain, including inequalities in digital infrastructure, fragmented initiatives, regulatory gaps, and concerns related to data governance and long-term sustainability.

Beyond technological innovation, the successful integration of digital health largely depends on strong governance, political commitment, sustainable financing, and the development of local technical capacities. When effectively integrated into national strategies, digital health can contribute to building more resilient, equitable, and data-driven health systems and support progress toward universal health coverage in Africa.

Keywords: Digital Health, Health Policy, Health Systems, Africa, Universal Health Coverage.

1. Introduction

Africa is facing a particularly complex health transition, marked by the persistence of communicable diseases, the rapid rise of non-communicable diseases, within a context of epidemiological transition, and the recurrent emergence of major health crises. This double burden of morbidity places considerable pressure on health systems that are often underfunded, fragmented, and characterized by significant inequalities in access to health services [1, 2].

According to recent estimates from the Global Burden of Disease, non-communicable diseases now account for more than 37% of deaths in sub-Saharan Africa, while communicable, maternal, neonatal, and nutritional diseases continue to be responsible for a significant share of premature mortality. This rapid epidemiological transition complicates health planning and increases pressures on already weakened systems [3].

At the same time, many African countries are pursuing ambitious reforms aimed at universal health coverage, in a context of limited resources and growing needs. Improving the efficiency of health systems, health governance, and the quality of decision-making therefore appears as a strategic priority of national health policies [4].

The COVID-19 pandemic acted as a major catalyst for the digital transformation of healthcare systems, accelerating the deployment of telemedicine solutions, digital epidemiological surveillance, and health data management platforms. It highlighted both the strategic potential of digital technology and the structural vulnerabilities of digital infrastructures in Africa [5, 6].

In this context, digital health is progressively establishing itself as a major lever for transforming health systems. It encompasses a set of digital tools and solutions capable of supporting healthcare delivery, strengthening health information systems, monitoring epidemiology, and managing public health policies. Several international and regional strategic frameworks, including the World Health Organization (WHO) Global Strategy on Digital Health and the African Union Digital Transformation Strategy, highlight the structuring role of digital health in reinforcing health systems and achieving the Sustainable Development Goals [7, 8]. However, the integration of digital health into national health policies in Africa remains uneven and fragmented. Many initiatives are still limited to pilot projects, weakly institutionalized, and insufficiently aligned with national public health priorities. Consequently, the central issue is no longer so much technological innovation as it is governance, equity, and the sustainability of digital health strategies.

This editorial offers a critical analysis of the role of digital health as a strategic lever for transforming national health policies in Africa. It examines its potential contributions to access to care, health governance, and data-driven decision-making, while highlighting the structural challenges and the necessary conditions for effective, equitable, and sustainable integration.

2. Digital Health: Concepts and Foundations

2.1 Digital health: the essentials

According to the World Health Organization, digital health refers to the use of information and communication technologies to improve human health, including e-health, mobile health (mHealth), telemedicine, health information systems, artificial intelligence, and advanced data analytics. Today, it constitutes a strategic pillar for strengthening health systems [9].

Digital health encompasses the use of information and communication technologies in healthcare. It includes telemedicine, electronic medical records, mobile health applications, digital epidemiological monitoring, and clinical decision support [1].

In Africa, these tools are often adopted on an occasional basis. Their integration into public policies remains incomplete, despite their recognized potential to strengthen health systems [10].

Digital health is not limited to technological tools. It also requires an appropriate regulatory framework, the protection of personal data, the training of professionals, and patient engagement. Without these elements, innovations remain isolated and struggle to have a lasting impact on access to care and the quality of services.

However, to make these promises a reality, it is still necessary to ensure fair and truly inclusive access to digital technologies.

2.2 Conceptual framework for integrating digital health into public policy

The effective integration of digital health into national policies relies on a structured conceptual framework linking governance, technological infrastructure, human resources, financing, and regulatory framework. The model proposed by Labrique et al. highlights the importance of a systemic approach, avoiding the fragmentation of initiatives and promoting their alignment with national public health priorities [11].

This systemic approach requires intersectoral coordination between the ministries of health, telecommunications, finance, and innovation, as well as clear alignment with national strategies for universal health coverage.

3. Digital Health as a Lever for Health System Transformation

3.1 A lever to improve access and equity

Reducing geographical barriers is one of the main advantages of digital health. In rural or remote areas, telemedicine makes it easier to access medical expertise. Mobile applications improve the monitoring of patients with chronic illnesses [12].

However, access to digital technologies remains unequal. National policies must address the issues of connectivity, digital literacy, and social inclusion in order to maximize the benefits of digital health [4].

Several African experiences illustrate this potential. In Rwanda, telemedicine has improved access to specialized care in rural areas. In Ghana, the use of drones to deliver essential medical supplies has reduced delivery times in remote regions. These initiatives demonstrate that digital technology can overcome geographical barriers when its integration is planned at the national level [9, 10].

3.2 Equity, inclusion, and digital divide

While digital health offers significant opportunities to improve access to care, it also carries a risk of widening existing inequalities. The digital divide, whether geographic, socioeconomic, generational, or gender-related, represents a major challenge for national health policies in Africa [12].

Rural populations, vulnerable groups, and people with low levels of digital literacy may be excluded from the benefits of digital health if supportive measures are not integrated from the outset in public policy design. Equity must therefore be considered a fundamental principle of digital health, not a secondary objective [1].

National health policies have a central role to play in ensuring equitable access to digital technologies, particularly through investments in connectivity, strengthening digital skills, and designing solutions adapted to local contexts [8].

According to the International Telecommunication Union, Internet penetration in sub-Saharan Africa remains below 40%, with significant disparities between urban and rural areas. These structural inequalities are likely to limit the impact of digital health policies if they are not accompanied by massive investments in digital infrastructure [13].

3.3 Strengthen governance and decision-making

Digital health enables better production and use of health data. Information systems strengthen epidemiological surveillance and the planning of interventions [2].

The adoption of the DHIS2 system in many African countries is a concrete example of the potential impact of digital information systems on epidemiological surveillance and health planning. When fully integrated, this type of platform enhances data quality

and institutional accountability.

For policymakers, access to reliable, real-time data is an essential tool. It promotes evidence-based policies rather than relying on rough estimates [12].

Beyond technological innovation, digital health is primarily a matter of governance of health systems. Its real impact depends on its ability to be coherently integrated into national health policies, national health development plans, and universal health coverage strategies [7].

Effective digital health governance relies on strong institutional leadership, a clear definition of roles among different stakeholders, and a clear alignment between digital initiatives and national public health priorities. Without this coherence, digital tools are likely to multiply without contributing to a structural transformation of health systems [10].

Integrating digital health into public policies also helps to strengthen accountability, transparency, and intersectoral coordination by promoting better use of data for the planning, monitoring, and evaluation of health policies [1].

4. Digital Infrastructure and Technological Systems

4.1 Interoperability and technological standards

Interoperability of information systems means the ability of different digital platforms to easily, reliably, and securely exchange health data between healthcare facilities. It is a key element for improving the continuity of care, patient monitoring, and disease surveillance across healthcare systems. It also facilitates coordination among healthcare professionals and strengthens evidence-based decision-making in public health.

However, in many contexts, the lack of harmonization of digital systems leads to fragmentation of health data. Information is often stored on different platforms that do not communicate with each other, which can limit the effectiveness of health programs, slow the sharing of important medical information, and complicate the daily work of healthcare personnel. This situation poses a major challenge for the development of digital health in Africa and in low-resource countries.

The adoption of international technological standards helps structure information systems and facilitate the secure exchange of medical data. In this context, strengthening digital infrastructure, improving connectivity in healthcare facilities, and training human resources in digital health are essential to ensure the effectiveness and sustainability of technological solutions in public health.

4.2 Digital infrastructure and capacity building

Digital infrastructure represents a fundamental pillar for the effective implementation of digital health strategies. Reliable internet connectivity, secure data storage systems, and adequate technological equipment in health facilities are essential conditions for the deployment of digital health solutions. However, in many African countries, significant disparities persist between urban and rural areas in terms of connectivity and access to digital technologies, which can limit the reach and effectiveness of digital health interventions.

Beyond infrastructure, strengthening human capacity is equally critical. Healthcare professionals, data managers, and policymakers must develop the necessary digital skills to effectively use health information systems and digital tools in their daily practice. Continuous training programs, institutional support, and the integration of digital health competencies into medical and public health education are therefore essential.

Investing simultaneously in technological infrastructure and human resources will be key to ensuring that digital health initiatives are not only implemented but also sustainably integrated into national health systems.

5. Persistent Challenges in Digital Health Implementation

Despite its potential, digital health in Africa faces several obstacles. Regulatory frameworks are sometimes nonexistent or inadequate. The protection of personal data remains insufficient [4].

Cybersecurity and data sovereignty are growing concerns. Dependence on external technology providers can expose healthcare systems to structural vulnerabilities and risks of sensitive data leakage.

The heavy reliance on external funding for digital projects also raises questions about sustainability. Many initiatives remain vertical, driven by international donors, without structural integration into national health budgets.

The fragmentation of initiatives is another major challenge. Many pilot projects are not integrated into national systems. Their sustainability is limited [2].

Conditions for successful integration

To sustainably transform national health policies, digital health must be seen as a strategic tool rather than as an isolated innovation.

This involves:

- a clear political vision,
- a solide legal framework,
- a sustainable financing,
- the strengthening of local skills,
- and coordination between public and private actors [7].

The adoption by healthcare professionals and the population is also essential [10].

6. Artificial intelligence and the future of health policies

Artificial intelligence opens up new prospects for predictive analysis, diagnostic assistance, and optimization of health resources. However, its deployment in Africa must be guided by strict ethical principles, ensuring algorithmic transparency, fairness, and data protection.

Concrete regulation of the use of artificial intelligence

The integration of artificial intelligence into African healthcare systems cannot be reduced to the adoption of high-performance algorithms or the acquisition of sophisticated technological tools. It requires a thoughtful, gradual approach that is deeply rooted in local realities. AI must remain a tool in the service of public policies, not an end in itself.

Specifically, several principles should guide its management:

First, clarity of objectives. Every project using artificial intelligence must address a clearly identified health need: improvement of diagnosis, optimization of resources, prediction of epidemics, or support for planning. AI should not be introduced just because it is innovative, but because it provides measurable added value in a given context.

Next, the quality and representativeness of the data. Algorithms trained on data that do not reflect African realities are likely to produce significant biases. It is essential to develop reliable, inclusive, and diverse local databases to ensure relevant and fair results.

Transparency is also a fundamental pillar. Healthcare professionals

and decision-makers must understand the general principles underlying the tools being used. A hard-to-explain algorithmic 'black box' can undermine trust and limit institutional adoption.

The protection of personal data must be considered non-negotiable. Systems incorporating AI often handle large volumes of sensitive data. Clear mechanisms for consent, anonymization, and security must be established in advance to prevent any risk of breaches of confidentiality.

Moreover, AI can and should never replace clinical judgment, but rather complement it. Final decisions must remain in the hands of healthcare professionals, who retain ethical and medical responsibility. Artificial intelligence should be seen as a decision-support tool and not as a substitute for human expertise.

Another key element concerns training. The sustainable integration of AI requires strengthening local skills, both among clinicians and data managers as well as decision-makers. Without this upskilling, the tools risk remaining dependent on external expertise.

Finally, continuous evaluation is essential. AI-based systems must be regularly monitored to assess their actual effectiveness, any adverse effects, and their impact on fairness. A system that works in a pilot environment may produce different results on a larger scale.

Framing artificial intelligence within national health policies in Africa therefore means adopting a cautious yet ambitious approach: encouraging innovation while ensuring that it remains aligned with the principles of equity, responsibility, and health sovereignty. Only under these conditions can AI become a true driver of transformation, rather than just a passing technological trend.

7. Financing and Sustainability of Digital Health

7.1 Financing and economic sustainability of digital health

One of the most underestimated challenges of digital health in Africa concerns its long-term financing. While many initiatives are launched thanks to external funding or international partnerships, their sustainability often remains uncertain once pilot projects are completed.

The proliferation of digital solutions funded by donors can generate rapid innovation dynamics, but it can also lead to system fragmentation. Parallel, non-interoperable platforms sometimes develop without real integration into national budgets or long-term health strategies.

For digital health to become a true driver of transformation, it must be integrated into national budget planning mechanisms. This implies:

- a clear inclusion of digital projects in national health development plans;
- a dedicated and recurring budget allocation;
- a full cost assessment (maintenance, training, updates, cybersecurity);
- and a reflection on hybrid models combining the public and private sectors, while preserving the public interest.

Sustainability does not depend solely on the amount of funding, but on its predictability and strategic consistency. A digital system that cannot be maintained, updated, or adapted quickly loses its relevance and risks undermining user trust.

Thinking about funding digital health means moving beyond the logic of one-off projects to adopt a structural investment approach

that serves the health system as a whole.

7.2 Sustainable financing mechanisms

Ensuring the long-term sustainability of digital health initiatives requires the development of appropriate and diversified financing mechanisms. While many digital health programs in Africa have initially benefited from support from international donors and development partners, relying exclusively on external funding may limit their long-term continuity and integration into national health systems.

Sustainable financing therefore requires stronger integration of digital health investments into national health budgets and strategic health plans. Governments need to anticipate not only the initial costs of deploying digital solutions but also the recurrent costs related to system maintenance, updates, training of personnel, and cybersecurity.

In this context, innovative financing approaches, including public-private partnerships, regional cooperation, and collaboration with technology companies, may provide additional opportunities to support digital health development. However, these partnerships must remain aligned with national public health priorities and ensure that the public interest, data protection, and equity in access to services are preserved.

8. Digital sovereignty and political leadership

Beyond technical and financial issues, digital health raises a deeper challenge: that of data sovereignty and political leadership.

Health data constitute a strategic asset. Their hosting, storage, and use raise sensitive issues related to security, confidentiality, and technological independence. When digital infrastructures rely mainly on external solutions, states can find themselves in a situation of technological dependence that is difficult to control.

Strengthening digital sovereignty does not mean turning inward but developing a national capacity for governance. This involves:

- a clear national digital health strategy;
- a robust regulatory framework for data protection;
- a secure hosting policy that meets international standards;
- and institutional leadership capable of coordinating public, private, and academic stakeholders.

Political leadership plays a central role here. Without strong commitment at the highest level of the state, digital initiatives are likely to remain sectoral, scattered, or dependent on external impulses. Conversely, strategic management can transform digital health into a structuring tool for public policies.

Digital sovereignty is therefore inseparable from governance. It determines African countries' ability to use digital technology not only as a technical solution but also as an instrument of health autonomy and development.

9. Impact Assessment and Financial Sustainability

The rigorous evaluation of the impact of digital health interventions remains insufficiently developed in sub-Saharan Africa, despite the rapid expansion of digital health solutions. The development and scaling up of these interventions require the implementation of efficacy studies, cost-effectiveness evaluations, and impact analyses on key public health indicators, particularly morbidity, mortality, and access to care for vulnerable populations. The lack of standardized evaluation mechanisms limits the integration of digital solutions into national health policies and can lead to fragmented initiatives, sometimes poorly aligned with national health priorities. From a public health perspective based

on evidence, it is essential to adopt rigorous methodological approaches, including controlled trials, observational studies, as well as economic evaluations of digital health programs.

Furthermore, financial sustainability is a major challenge for the continuation of digital interventions. Developing viable economic models, combining public financing, public-private partnerships, and support from technical and financial partners, is essential to ensure the continuity of services beyond the pilot phases. The gradual integration of digital solutions into national health systems, combined with the strengthening of institutional capacities, represents a key strategy to guarantee their long-term impact.

Finally, continuous monitoring and evaluation, the use of performance indicators adapted to the local context, and the involvement of policymakers from the early stages of project design are essential for turning digital innovations into sustainable tools for improving health systems.

10. Perspectives

Africa has a unique potential to accelerate the integration of digital health. Local innovation, a young population, and the rapid expansion of mobile technologies are major assets [8].

Provided it is well-governed, digital health can contribute to more resilient, equitable, and efficient health systems.

Conclusion

Digital health is no longer just a technological trend; it has now become a true structural driver of transformation in healthcare systems in Africa. Its importance lies not only in the deployment of digital tools but, above all, in the ability of states to integrate these innovations into a coherent and long-term public health strategy. Technology alone does not transform systems: it is political vision, the quality of governance, and institutional coherence that determine its real impact.

When thoughtfully integrated into national policies, digital health can improve the quality and availability of data, strengthen evidence-based decision-making, and reduce persistent barriers to healthcare access, particularly in underserved areas. It thus contributes to building more adaptive, better-coordinated health systems capable of responding more effectively to emerging risks. Beyond efficiency gains, digital health also opens up new opportunities for epidemiological surveillance, continuity of services during crises, and proactive health planning. Its transformative potential relies on responsible leadership, sustainable investments, and a consistent commitment to equity.

Investing in digital health is therefore not just a technological choice; it is a public policy choice. It reflects a desire to improve governance, ensure more equitable access to services, and build health systems that are truly aligned with the realities and priorities of African populations.

Abbreviations

WHO World health organization

Author Contributions

Malick Ngom: Conceptualization, Resources, Supervision, Writing Original Draft Preparation. **Abdoulaye Diallo:** Data curation, Methodology, Formal analysis, Writing Review.

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