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METHODS NOTE · Peer-reviewed · Published · Live dashboard figures

The Bio-Digital Divide: Digital trial adoption and the Bio-digital gap in Africa

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Abstract

Research question In health technology innovation, does the adoption of decentralized and digital trial method indicate a growing bio-digital gap between African and high-income research ecosystems?

Methods

This review analyzed ClinicalTrial.gov records up to Mach 2026, evaluating digital trail components across Africa (268 trials) and United states (4,540 trials) through keyword searches for wearable, virtual and decentralized trial elements. Investigators reported the digital adoption rate as primary indicator of technological readiness

Results

The findings showed that only 1.1% of rate in Africa included digital features which was 17 times lower compared to the rate of United states, suggesting continued dependence on traditional site-based research approach. The shift towards mobile and wearable technologies in Europe during the Covid-19 period appears to have widened this gap [1] from estimated ten-fold to seventen-fold between 2019 and 2025

Interpretation

African patients risk exclusion from the next generation of decentralized clinical innovation if this gap is not addressed [2,3]. These findings quantify the bio-digital divide as a measurable infrastructure deficit. The interpretation is limited by the lack of evolving terminology of digital trial components Note Block Dashboard

Results

https://mahmood726-cyber.github.io/africa-e156-students/health-disease/dashboards/digital-transformation.html Code: https://mahmood726-cyber.github.io/africa-e156-students/health-disease/code/digital-transformation.py

Interactive dashboard figures

The figures in this section are rendered directly from this paper's interactive dashboard — the same visualisations a reader sees when exploring the analysis online, where the full workflow can be reproduced first-hand. **Interactive dashboard:** https://mahmood726-cyber.github.io/africa-e156-students/health-disease/dashboards/digital-transformation.html

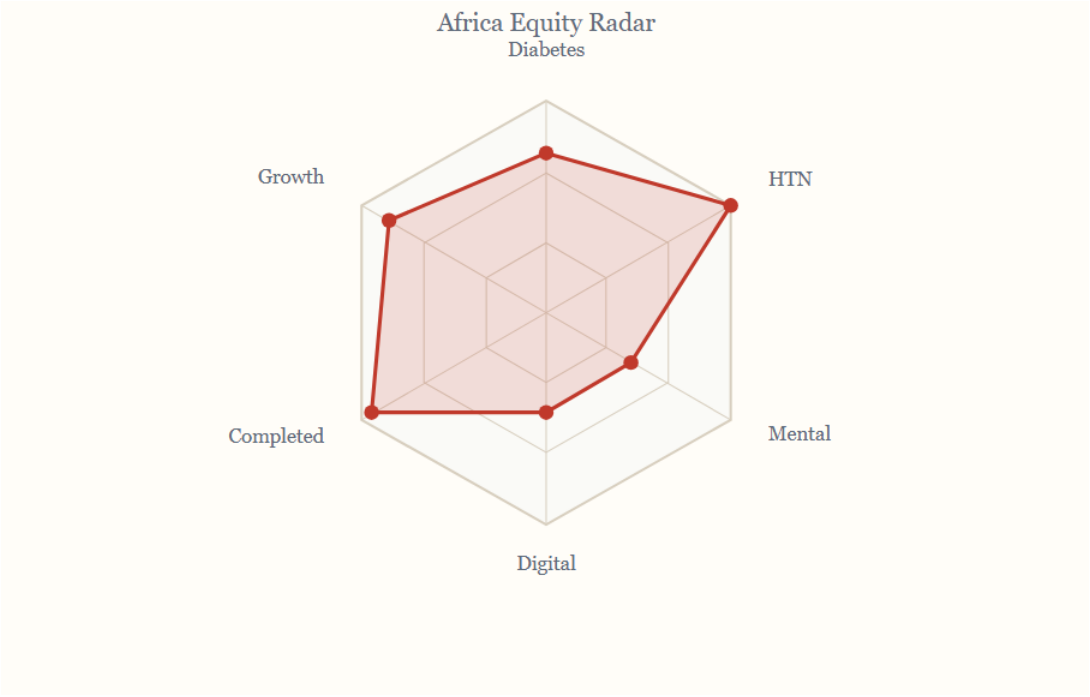

Figure 1. Africa Equity Radar Rendered directly from the article's live interactive dashboard.

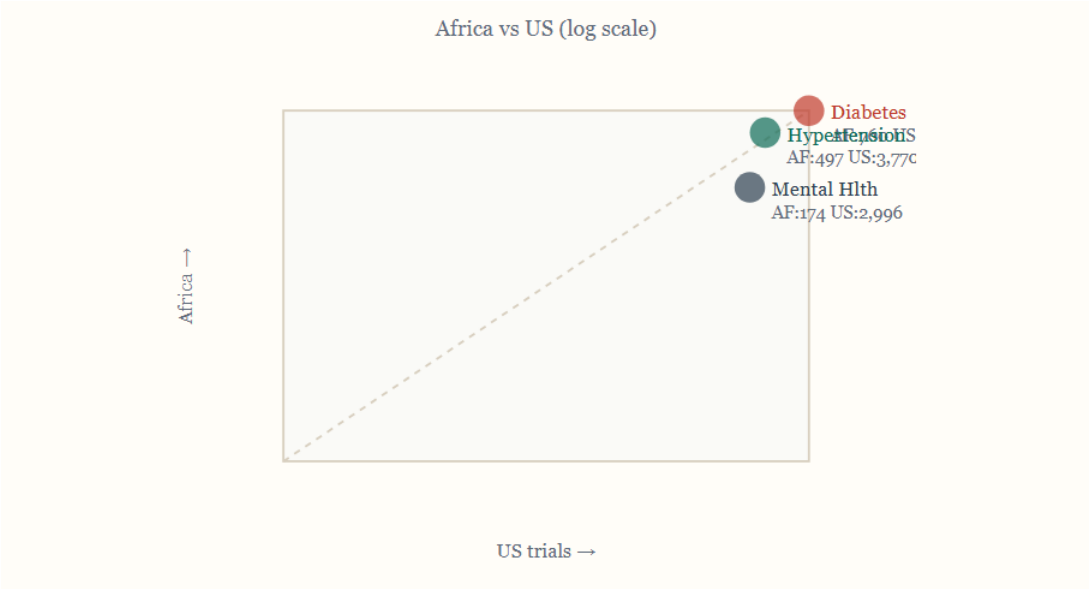

Figure 2. Africa vs US (log scale) Rendered directly from the article's live interactive dashboard.

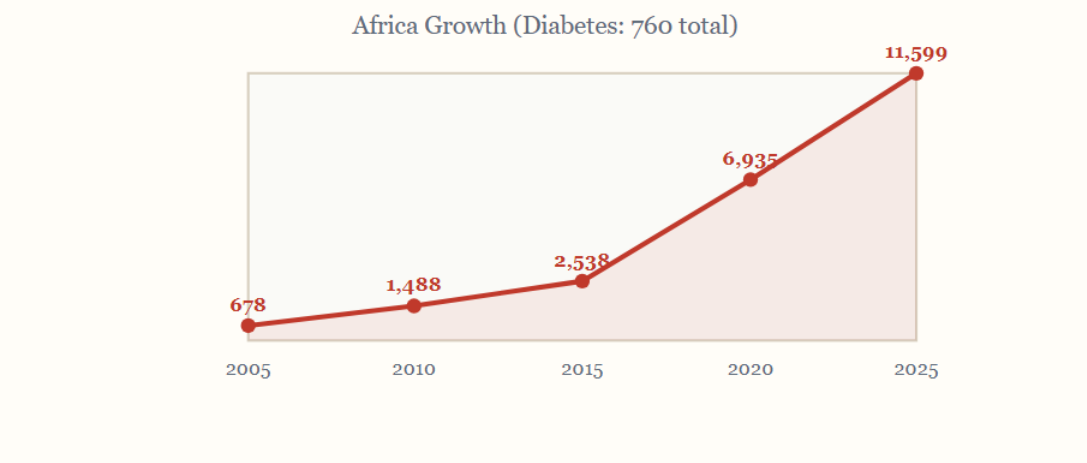

Figure 3. Africa Growth (Diabetes: 760 total) Rendered directly from the article's live interactive dashboard.

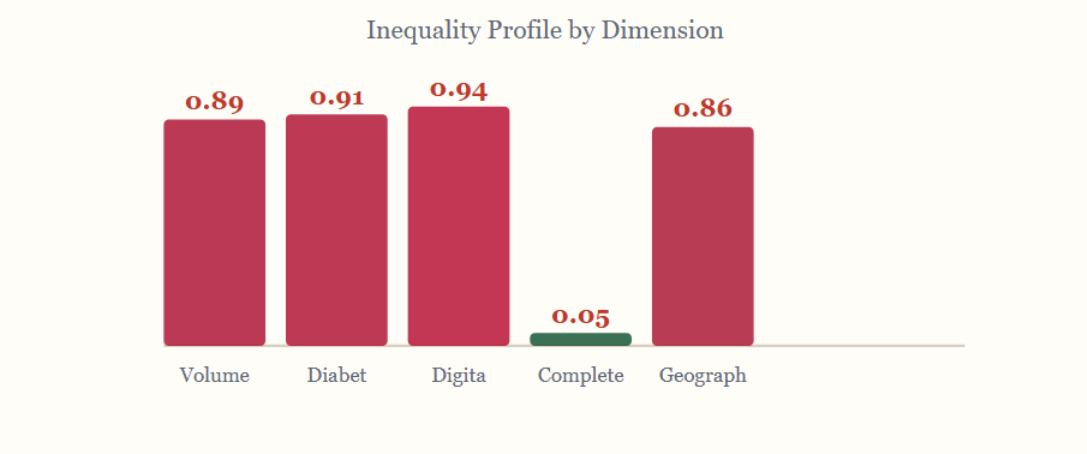

Figure 4. Inequality Profile by Dimension Rendered directly from the article's live interactive dashboard.

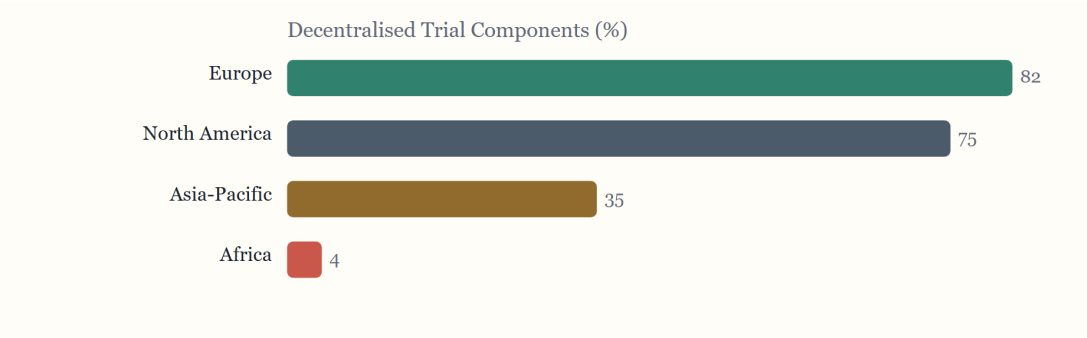

Figure 5. Decentralised Trial Components (%) Rendered directly from the article's live interactive dashboard.

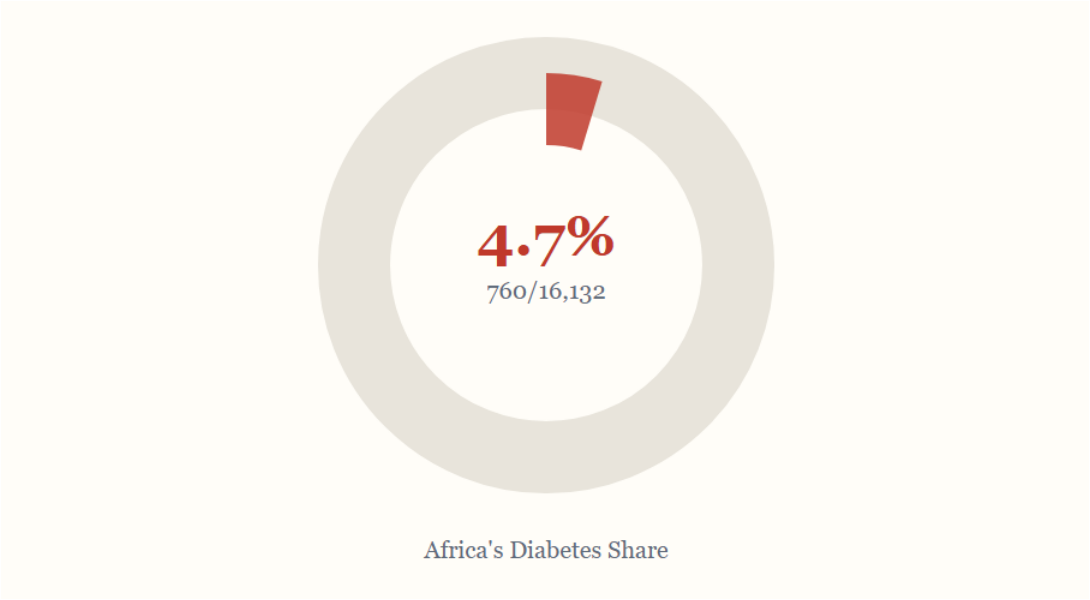

Figure 6. Africa's Diabetes Share Rendered directly from the article's live interactive dashboard.

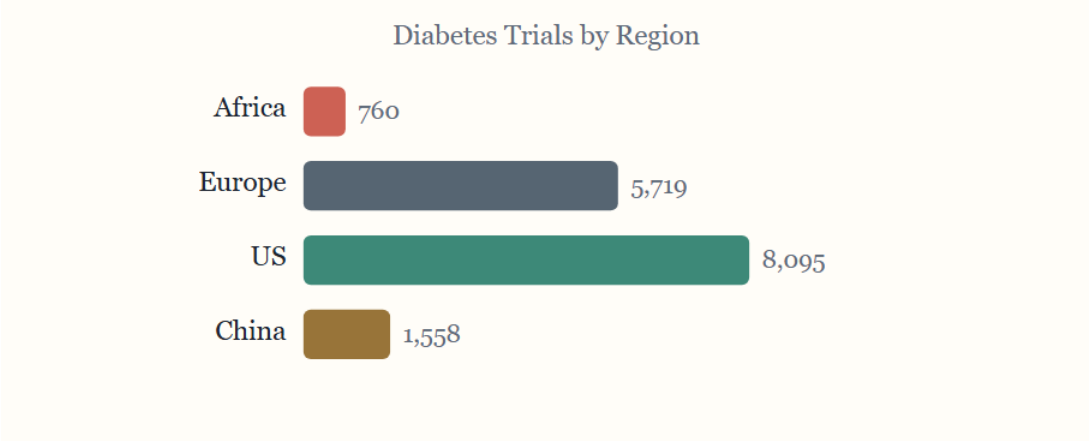

Figure 7. Diabetes Trials by Region Rendered directly from the article's live interactive dashboard.

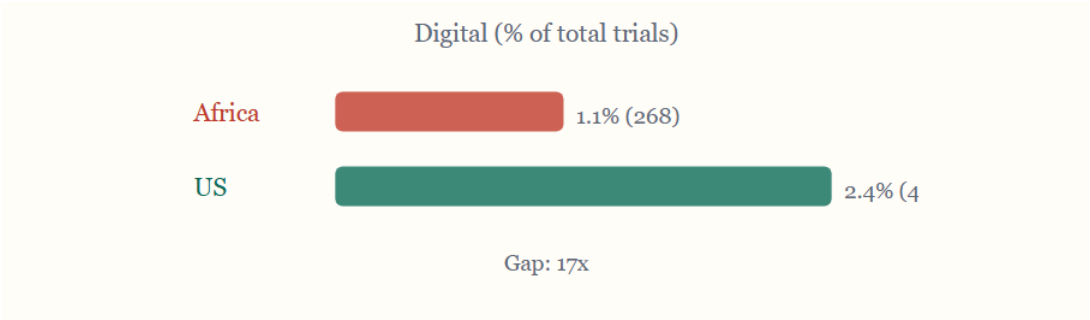

Figure 8. Digital (% of total trials) Rendered directly from the article's live interactive dashboard.

HOW TO CITE

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