



# Methodological Approaches to Studying Digital Health Integration in Urban Benin,

Rachida Salami<sup>1</sup>, Mawulolo Hounkpatin<sup>2</sup>, Adélaïde Adékambi<sup>3,4</sup>, Koffi Gbaguidi<sup>5</sup>

<sup>1</sup> Department of Clinical Research, National University of Agriculture (UNA)

<sup>2</sup> Department of Clinical Research, African School of Economics (ASE)

<sup>3</sup> Department of Public Health, African School of Economics (ASE)

<sup>4</sup> National University of Agriculture (UNA)

<sup>5</sup> Department of Pediatrics, National University of Agriculture (UNA)

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**Correspondence:** [rsalami@aol.com](mailto:rsalami@aol.com)

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## Author notes

*Rachida Salami is affiliated with Department of Clinical Research, National University of Agriculture (UNA) and focuses on Medicine research in Africa.*

*Mawulolo Hounkpatin is affiliated with Department of Clinical Research, African School of Economics (ASE) and focuses on Medicine research in Africa.*

*Adélaïde Adékambi is affiliated with Department of Public Health, African School of Economics (ASE) and focuses on Medicine research in Africa.*

*Koffi Gbaguidi is affiliated with Department of Pediatrics, National University of Agriculture (UNA) and focuses on Medicine research in Africa.*

## Abstract

The integration of digital health tools into urban healthcare systems in Africa presents distinct methodological challenges. In Benin, rapid urbanisation and technological adoption require robust research frameworks for evaluation, but a standardised methodological approach is lacking. This methodology article aims to detail a comprehensive, mixed-methods approach for studying digital health integration in urban Benin. Its primary objective is to provide a replicable research framework that captures the complex socio-technical interactions between healthcare providers, patients, and digital systems. The proposed methodology employs a longitudinal, convergent mixed-methods design. It combines quantitative surveys of healthcare facilities and users with in-depth qualitative interviews and ethnographic observations. A multi-stage sampling strategy ensures representation across different urban strata. Data integration occurs at the analysis stage to triangulate findings. As a methodology article, it presents no empirical results. A key procedural finding from framework development is the critical importance of iterative, community-engaged scoping to define ‘digital health’ locally. Pilot studies revealed that a substantial proportion of initial survey items required cultural and contextual adaptation for clarity. The outlined methodology provides a structured, culturally situated approach for generating rigorous evidence on digital health integration in urban African settings. It addresses common pitfalls in cross-disciplinary health technology research. Researchers should adopt flexible, mixed-methods designs with embedded piloting phases. Future studies must prioritise sustained stakeholder engagement throughout the research process to ensure relevance and validity. Digital health, research methodology, mixed methods, urban health, Benin, implementation

science This article provides a novel methodological framework for health services researchers and policymakers studying the complex integration of digital technologies in urban African healthcare contexts.

**Keywords:** *Digital health, Sub-Saharan Africa, Implementation science, Mixed-methods research, Urban health systems, mHealth, Health informatics*



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