



Action Research in Benin: Co-Designing a Digital Health Framework for Urban Maternal Care

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Abstract

Urban maternal healthcare in Benin faces challenges including fragmented services, limited access to timely information, and resource constraints. While digital health solutions offer potential, their design frequently does not align with local clinical workflows or the specific needs of urban African settings. This action research study aimed to co-develop a contextually appropriate digital health framework for maternal care in urban Benin. Its objectives were to identify key challenges in current service delivery, collaboratively design a prototype framework with stakeholders, and assess its perceived feasibility and utility. An action research approach was employed, comprising three iterative cycles in a large urban maternity clinic. Participants included midwives, obstetricians, community health workers, and postnatal women. Data were collected through focus group discussions, participatory workshops, and prototype testing. Thematic analysis was used to synthesise qualitative data. Stakeholders identified poor inter-clinic communication and inefficient patient data management as primary systemic barriers. The co-designed framework prioritised a modular, mobile-first system for shared antenatal records and appointment reminders. In testing, most healthcare workers reported the prototype would likely reduce administrative burdens. A critical requirement identified was robust offline functionality due to unreliable internet connectivity. The action research process successfully facilitated the development of a user-informed digital health framework tailored to the urban Beninese context. Engaging frontline workers as co-designers was crucial for ensuring practical relevance and identifying critical infrastructural constraints. Future implementation should prioritise a phased rollout integrated with continuous feedback mechanisms. Investment in basic digital

infrastructure and tailored training is essential. Further research should explore integration with national health information systems and long-term cost-effectiveness. Action research, digital health, maternal health, Benin, co-design, urban health, framework development This study provides a practical, co-designed framework for digital maternal health intervention in an urban African setting, demonstrating a methodology for developing context-sensitive health technologies.

Keywords: *Action Research, Digital Health, Maternal Healthcare, Sub-Saharan Africa, Co-Design, Health Systems Strengthening, Urban Health*



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