

ABSTRACT

Countries are investing in Digital Health (DH), expecting to benefit their health systems by solving WHO identified system challenges in the eight categories of information, availability, quality, acceptability, utilization, efficiency, cost and accountability. Noting that a health system relies on six building blocks to attain the sustainable development goal of good health and well-being for all, this research study focused on the *third* building block that aims to *promote a well-functioning health information system to ensure the production, analysis, dissemination and use of reliable and timely health information*. Through improving health information exchange (HIE), it is envisioned that DH will enable countries to deliver good quality, affordable and equitable care to the populace. However, the hope of achieving these DH benefits is challenging to LMICs such as Uganda due to constrained resources, weak digital foundations and gaps in the digital environment, including a lack of contextual DH communication infrastructure/technology standards to support HIE and guide DH implementations.

The lack of contextual/specific Digital Health Communication Infrastructure (DHCI) standards for Uganda propagated adhoc implementations of international DHCI standards, leading to multiple but fragmented DH systems implementations. Worse still, these systems often failed to scale up and could not facilitate sharing of critical patient data promptly; thus, affecting the continuity of care with the potential to cause loss of lives. Accordingly, this research study set out to develop contextual DHCI standards that could support secure HIE in resource-constrained health system settings, particularly in Uganda's health system.

The study followed an interpretive philosophical lens to view the shared meanings of DHCI standardisation (i.e., standards development/formulation, implementation and compliance); and an inductive approach to identify the similarities that formed the themes, which informed the formulation of contextualised DHCI standards. An exploratory sequential study was conducted to determine the state of DHCI standardisation in Uganda. Field findings confirmed the poor state of DHCI in Uganda's health system, a disparity in implementations and that these were a result of a lack of agreed-upon standards, causing implementers to apply international standards *Ad hocly*. The design science research method was used to explicate the DHCI standards problem, elicit DHCI requirements, and develop the contextual DHCI standards.

DH stakeholders validated the contextualised DHCI artefacts in Uganda for their simplicity, clarity, usefulness/fitness for potential use, usability, completeness, style and structure, and suitability to be applied in Uganda's health system context. The validation results show that the DH stakeholders agreed that the operationalisation of the standards would positively influence their DHCI practices; and thus, prove to be of pragmatic use to Uganda's health system and to LMICs of similar health systems settings.