



# Evaluating the Impact of a Mobile Health Appointment Reminder System on Paediatric HIV Clinic Attendance in Harare, Zimbabwe: A Methodological Approach

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## Abstract

Missed clinic appointments are a major barrier to effective paediatric HIV care in sub-Saharan Africa, leading to treatment interruptions and worse health outcomes. Mobile health (mHealth) interventions like SMS reminders are a potential solution, but their impact requires evaluation through methodologically sound studies. This methodology article describes the design and planned implementation of a study to evaluate an mHealth appointment reminder system's effect on attendance at paediatric HIV clinics in Harare, Zimbabwe. Its primary objective is to detail a rigorous methodological framework applicable to low-resource settings. The study employs a pragmatic, cluster-randomised controlled trial design. Clinics will be randomised to an intervention group receiving automated SMS reminders before appointments or a standard care control group. The methodology specifies procedures for participant recruitment, culturally appropriate message development, attendance data collection, and statistical analysis using mixed-effects models to account for clinic-level clustering. As a methodology article, it presents no empirical trial results. It instead details the planned analytical approach, which will compare the proportion of missed appointments between the intervention and control groups to determine the system's effect. The described methodology offers a structured and replicable framework for evaluating mHealth interventions in resource-constrained public health settings. It emphasises practical implementation considerations and rigorous analysis to produce reliable evidence. Future research using this framework should include qualitative components to explore user experience and contextual barriers. Integrating the reminder system with existing national health information systems is advised for long-term sustainability. mHealth, HIV, paediatrics, missed appointments, randomised controlled trial, methodology, Zimbabwe This article provides a detailed methodological protocol for researchers and practitioners evaluating digital health interventions in African settings, with a focus on practical implementation challenges.

**Keywords:** *mHealth, paediatric HIV care, clinic attendance, sub-Saharan Africa, implementation research, randomised controlled trial*

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