

Effect of Digital Adherence Tools on Adherence to Antiretroviral Treatment: Results from a Randomized Controlled Trial

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Introduction: Lifelong adherence to antiretroviral treatment (ART) remains challenging for people living with HIV (PLHIV). Digital adherence tools (DATs) could target multiple barriers to adherence. This study aimed to investigate whether two DATs could improve adherence among PLHIV in Kilimanjaro.

Methodology: We performed a three-armed randomized controlled trial. In one arm, participants received a reminder short message service (SMS)-text on three random days a week, followed by a question-SMS to which they had to reply. In the second arm, participants received a Wisepill device from which ART had to be taken. If the medication was not taken on time, the participant received an SMS reminder. Generated adherence reports were used during clinic visits to provide tailored feedback in both intervention arms. In the third control arm, participants received standard care only. Mean adherence (percentage of pills taken) over 48 weeks based on pharmacy refill data and self-report was compared between arms using between-group t-tests.

Results: Adherence data were available for 249 of the 265 randomized PLHIV. The majority (71%) were female. The mean age was 41.2 years. Mean adherence in the SMS, RTMM and control arm was 89.6%, 90.6% and 87.9% for pharmacy refill; 95.9%, 95.0% and 95.2% for self-report in the past week; and in the past month 97.5%, 96.6% and 96.9% for self-report (p all NS). Post hoc analyses revealed that participants with a viral load <1000 copies/ml at study entry (n=173) had a significantly higher mean pharmacy refill adherence in the SMS and RTMM arms compared to the control arm (91.4% versus 86.9%, p=0.045 and 93.1% versus 86.9%, p=0.002).

Conclusion: Digital adherence tools did not improve adherence to treatment in PLHIV. The finding that DATs only improved adherence in patients who were already virally suppressed calls for more research to optimize interventions targeting PLHIV in most need.

