Sustainability of mHealth interventions: Patients' preferences and willingness to pay user fees for mHealth ART adherence support tool in resource limited settings

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Background: The increasing mobile phone penetration in Africa offers unique opportunities for leveraging mobile health (mHealth) interventions to enhance health care[1]. Although there is suggestive evidence for benefit of mHealth for HIV care on ART adherence[2,3,4,5] and retention in care[6,7,8], there are concerns about the scalability and sustainability of these interventions. Within a randomized controlled trial, we assessed participants' willingness to pay a fee for Call for life Uganda (C4LU), a software that helps in ART adherence, appointment reminders and health tips with people living with HIV/AIDS via mobile phones.

Methodology: A total of 600 participants were randomised (1:1 ratio) at an urban (Infectious Diseases Institute Clinic) and peri-urban HIV clinic (Kasangati HC) to either Standard of Care (SoC)- face-to-face counsellor adherence support or SoC plus the C4LU mHealth tool. C4LU uses Interactive Voice Response or text messages delivered via MoTech-based Connect for Life™ (Janssen, Global Public Health-J&J). The C4LU offers:

- Daily pill reminders
- Appointment visit reminders
- Symptom reporting and management
- Weekly health Info-tips

To determine willingness to pay, participants were interviewed about their desire to continue with adherence support and willingness to pay a nominal fee for C4LU at the end of the study.
We determined the proportion of patients willing to pay (±95% confidence interval), stratified by study arm. We determined the predictors of willingness to pay using multivariate logistic regression.

Results: Overall, majority of the participants were female, young and educated (Table 1)

Table 1:Characteristics of study participants

Variables	Standard of Care arm N= 245(%)	Interventional arm N=258(%)	Total N=503
Study Site			
Infectious Diseases Institute-Mulago	137(53.1%)	136(55.5%)	273(54.3%)
Kasangati Health Centre IV	121(46.9%)	109(44.5%)	230(45.7%)
Gender			
Female	173(67.1%)	164(66.9%)	337(67.0%)
Male	85(32.9%)	81(33.1%)	166(33.0%)
Age(yrs)			
16-24	62(25.3%)	62(24.0%)	124(24.7%)
25-35	101(39.2%)	83(33.8)	184(36.6%)
36-50	77(29.8%)	83(33.8%)	160(31.8%)
51+	18(6.98%)	17(6.9%)	35(7.0%)
Currently having a partner/spouse			
Yes	199(77.1%)	185(75.5%)	384(76.3%)
No	59(22.9%)	60(24.5%)	119(23.7%)
Highest education Level			
None	12(4.7%)	7(2.9%)	19(3.8%)
Primary	96(37.21%)	95(38.8%)	191(38.0%)
Secondary	109(42.3%)	111(45.3%)	220(43.7%)
Tertiary	41(15.9%)	32(13.1%)	73(14.5%)
Employment status			
Yes	181(70.2%)	170(69.4%)	351(69.8%)
No	77(29.8%)	75(30.6%)	152(30.2%)
ART duration yrs: Median (IQR)	2.7(0.5-5.2)	3(0.5-5.2)	2.9(0.5-5.4)

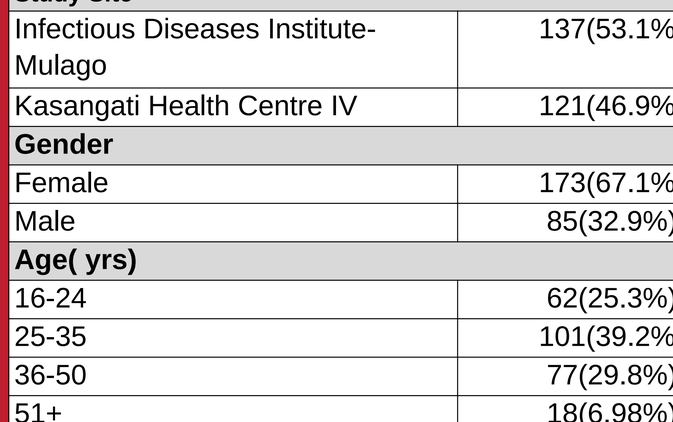
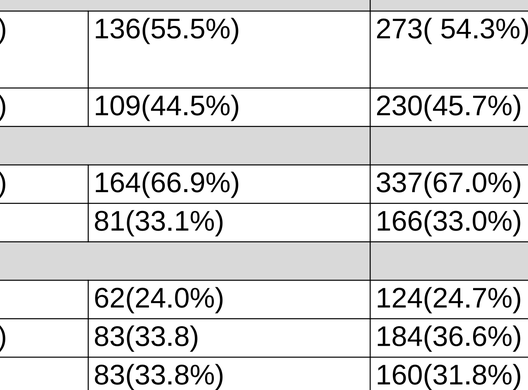


Fig1: Preferred schedule for adherence support



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References:[1] *S. Akter, P. Ray, et al 2010,[2] Garofalo et al, May 2016, [3]Lester et al., 2010, [4] A. R. Campbell et al., 2018;[5]J. I. Campbell & Haberer, 2015, [6] Kiwanuka et al., 2018, [7]Smillie et al.,2014, [8] Rana et al..2016*

Figure 3: Participants' Willingness to continue using C4LU after study completion

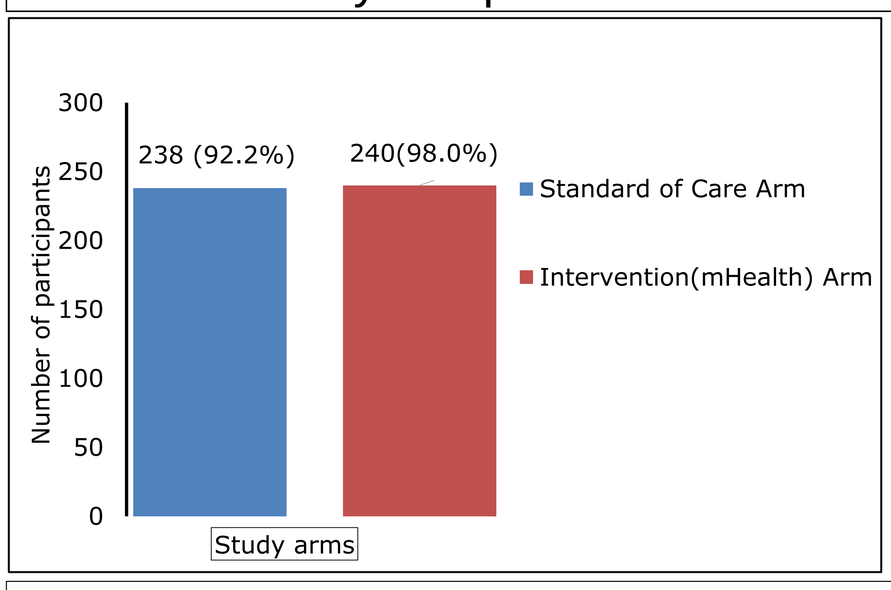
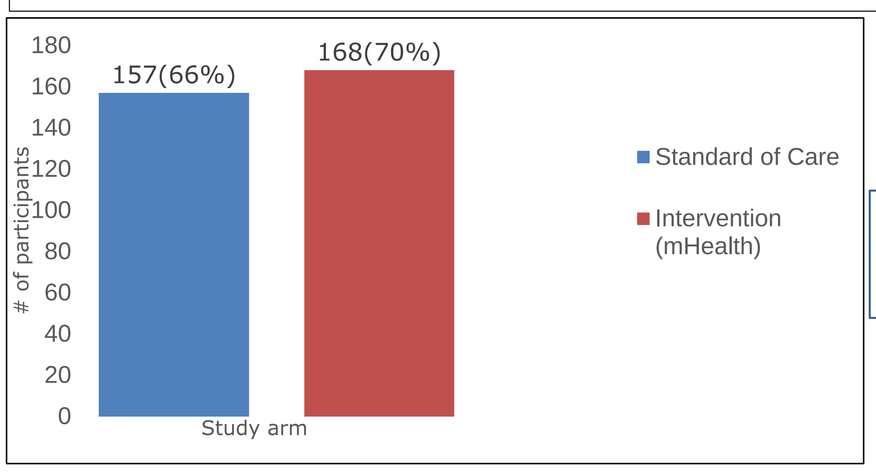
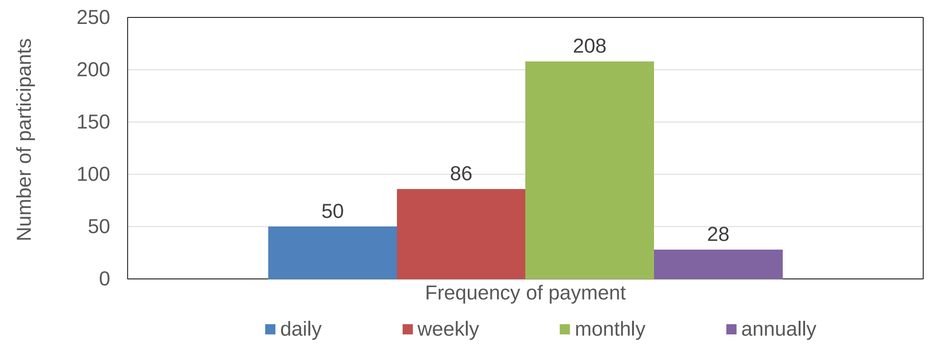


Figure 4: Willingness to pay for C4LU across study arms



- Overall, 95% were willing to continue using C4LU with 77.8% willing to pay for the service.
- In the C4LU intervention arm, 240 (97.96%) wanted continued adherence support and 168/240 (70.00%) were willing to pay for the service.
- Within the SoC arm, 238 (92.22%) wanted continued adherence support, and 157(65.97%) were willing to pay for C4LU.
- Persons receiving care at the peri-urban clinic (OR 3.12, 95% CI 1.43-9.11.86) and those in the C4LU arm (OR 4.2, 95% CI 1.55-11.84) were more willing to continue and pay for the service.
- Males were more likely to continue with and pay for adherence support although this was not statistically significant. There was no association seen with age.

Fig 5: Preferred payment Frequency for mHealth Support



Conclusion:

- With this high overall willingness to continue using and pay for C4LU services, UA, is preparing for scale up studies in young people with HIV in Mid-Western region and in HIV-TB co-infected patients in the central region.
- mHealth tools being evaluated today, fall short of defined studies and projects, and the best way to have a country sustainable model would be a co-pay model that empowers PLHIV and caregivers in resource limited settings.