Livelihood Interventions and Stigma Among People Living with HIV: Results from the *Shamba Maisha* Trial

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BACKGROUND

- HIV stigma poses a significant barrier to successful antiretroviral treatment (ART) adherence and viral suppression, particularly in sub-Saharan Africa.
- Livelihood interventions could potentially reduce stigma by weakening symbolic associations between HIV and economic incapacity and premature morbidity.
- We examined the effects of a climate adaptive, multisectoral agricultural livelihood intervention (*Shamba Maisha*) on internalized, anticipated, and enacted stigma among people living with HIV (PLHIV) on ART in western Kenya.

METHODS

Eight well-matched health facility pairs were randomly allocated (1:1) to intervention and control arms of a cluster randomized controlled trial. Our intervention targeted root causes of poverty and food insecurity in the region, which included unpredictable rainfall and increasing frequency of drought occurring in the setting of climate change.

Climate Adaptive Livelihood intervention:

- A loan to purchase farming implements (human-powered water irrigation pump, seeds, fertilizers)
- Group training in sustainable farming practices (including regenerative agriculture) and financial management

Inclusion criteria:

- ≥18 years old
- Living with HIV and on ART for >6 months
- Moderately-to-severely food insecure
- Have access to farmland and surface water

Semi-annual interviews were conducted for two years. We measured internalized, anticipated, and enacted HIV-related stigma using validated Likert scales consisting of 6-9 questions each. Each scale score ranged from 1 (lowest) to 5 (highest). We compared changes in scores between baseline and 24-months by arm using longitudinal multi-level difference-in-difference linear regression models, accounting for clustering of facilities using cluster-correlated robust standard errors.

Reductions in internalized, anticipated, and enacted stigma were greater in the intervention compared to the control arm.

RESULTS

Table 1: Baseline characteristics of study population, by study arm (n=720)

	Control (n=354)	Intervention (n=366)
	N (%) or Mean (SD)	
Sex		
Female	194 (54.8%)	202 (55.2%)
Age	40.4 (9.3)	40.3 (8.9)
Categorical food insecurity (FI) score		
Mild FI	2 (0.6%)	1 (0.3%)
Moderate FI	77 (21.8%)	72 (19.7%)
Severe FI	275 (77.7%)	293 (80.1%)
Viral load, detection limit ≤200 copies/mL		
Undetectable	291 (82.4%)	314 (85.8%)
ART adherence categories		
95–100	331 (94.8%)	344 (95.0%)
75–94%	17 (4.9%)	17 (4.7%)
<75%	1 (0.3%)	1 (0.3%)
Internalized stigma score	2.06 (0.81)	2.18 (0.84)
Anticipated stigma score	1.70 (0.60)	1.94 (0.70)
Enacted stigma score	1.10 (0.27)	1.22 (0.41)

Two-year retention was 94%. Compared to the control arm, the intervention resulted in:

- 0.417-point decrease in internalized stigma (difference in trend: -0.017, p<0.001)
- 0.426-point decrease in anticipated stigma (difference in trend: -0.018, p<0.001)
- 0.127-point decrease in enacted stigma (difference in trend: -0.0053, p<0.001)
- Similar results in sex stratified analyses

Figure 1: Internalized Stigma Scale

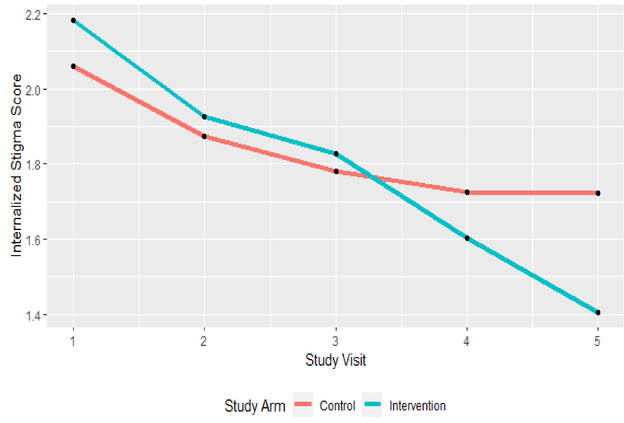


Figure 2: Anticipated Stigma Scale

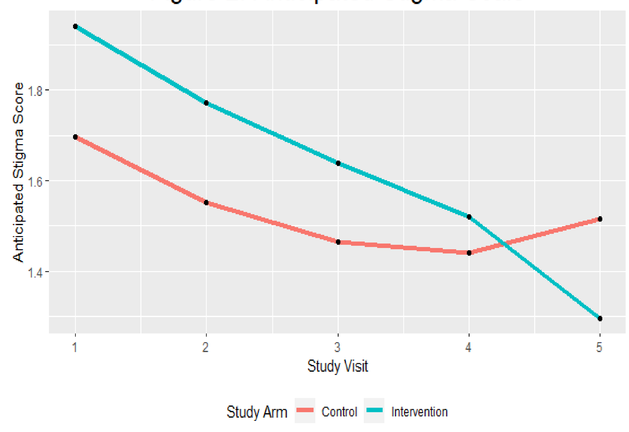
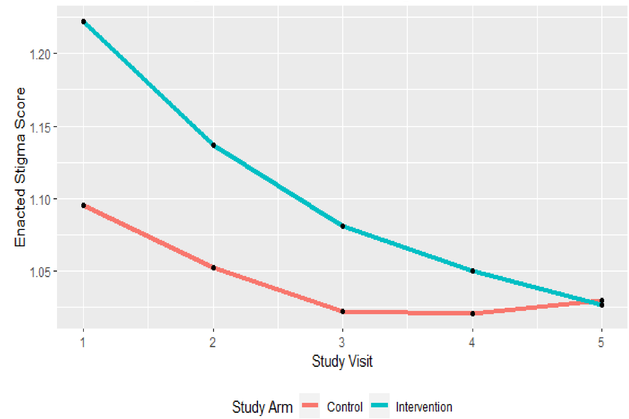


Figure 3: Enacted Stigma Scale



CONCLUSIONS

- In this study, a climate adaptive agricultural livelihood intervention reduced internalized, anticipated, and enacted stigma among PLHIV.
- We hypothesize that the intervention reduced stigma by several mechanisms including: 1) improved economic productivity and reduced food insecurity, weakening symbolic associations between HIV and economic incapacity and premature death; 2) positive changes in core self-evaluations; 3) enhanced social capital due to success in farming, including sharing of best practices with neighbors
- Livelihood interventions may be a novel strategy to reduce HIV stigma by targeting some of the core drivers of negative attitudes towards PLHIV.

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