

Disseminating U=U at HIV counseling improves retention in care and viral suppression: a pilot RCT in South Africa

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BACKGROUND

- People living with HIV (PLHIV) who are virally suppressed cannot transmit the virus sexually: “Undetectable = Untransmittable (U=U)”.¹
- However, in many settings, PLHIV do not learn about U=U as part of HIV counselling.
- Disseminating U=U has been shown to increase HIV testing;² however, the impact of U=U on ART adherence and viral suppression is unknown.



We conducted an RCT to determine the effect of disseminating U=U on retention in care and viral suppression in South Africa.

METHODS

- We developed a video-based App, called “Undetectable & You”, to deliver information on U=U through testimonials of PLHIV and their partners and piloted the App in an RCT.
- Adult PLHIV (n=135) were recruited from public sector clinics in Johannesburg after HIV counselling. Participants were recruited from both HIV post-test and adherence counselling.
- After a baseline survey, participants were randomized 1:1 to interact with the App (~20 min) or to control. Intervention participants also received monthly text messages about U=U.
- Knowledge and attitudes were assessed immediately after the intervention.
- Participants were followed passively in clinical charts to assess retention in care through 6 months and documented viral suppression (<200 copies at 3-10 months, primary outcome).

INTERVENTION

A video-based App providing accurate scientific information on U=U alongside real testimonials of PLHIV and their partners. Developed through Intervention Mapping; co-created with PLHIV and clinicians; informed by behavioral theory and extensive formative research.³⁻⁷

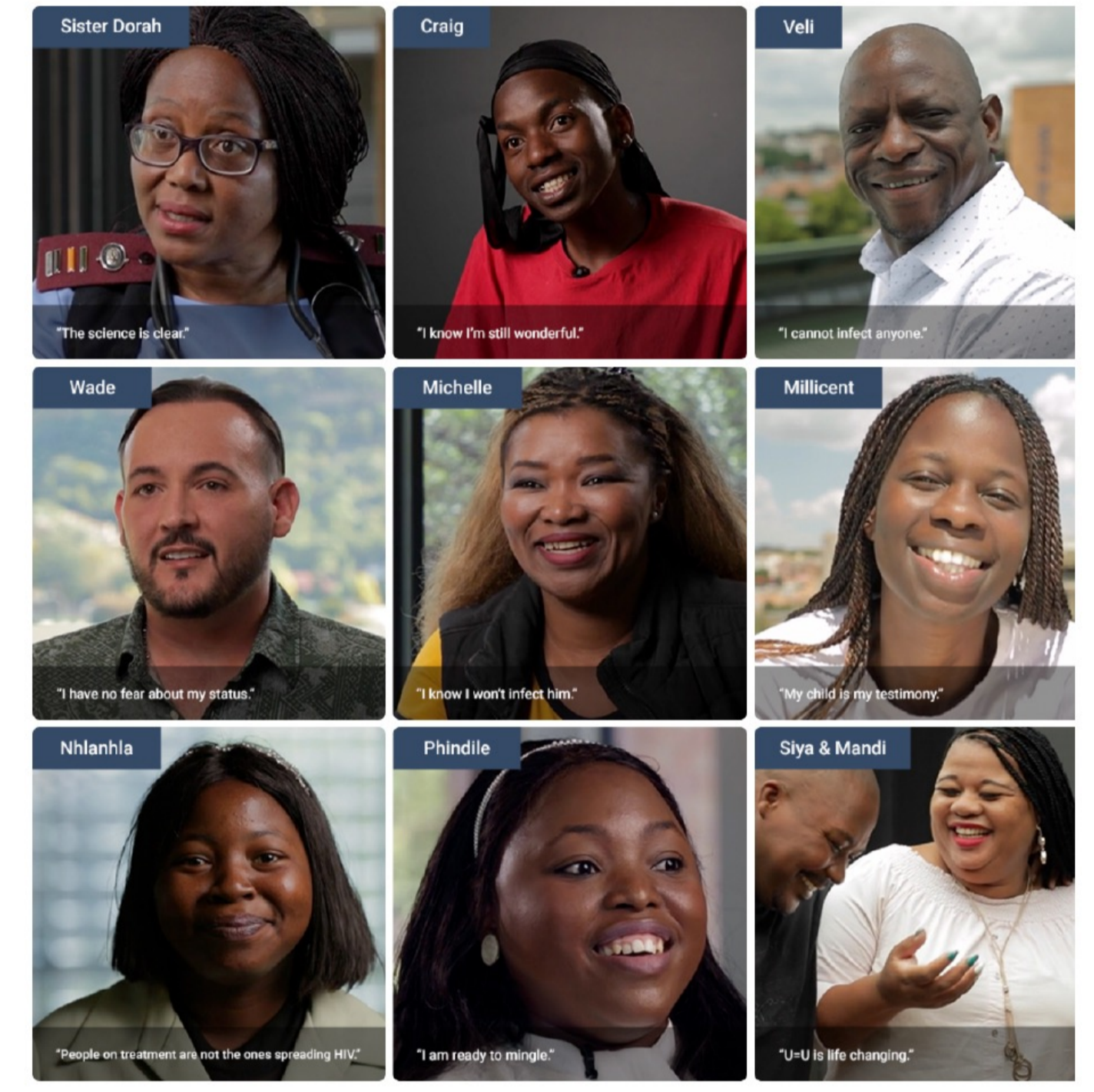


undetectableu.co.za/

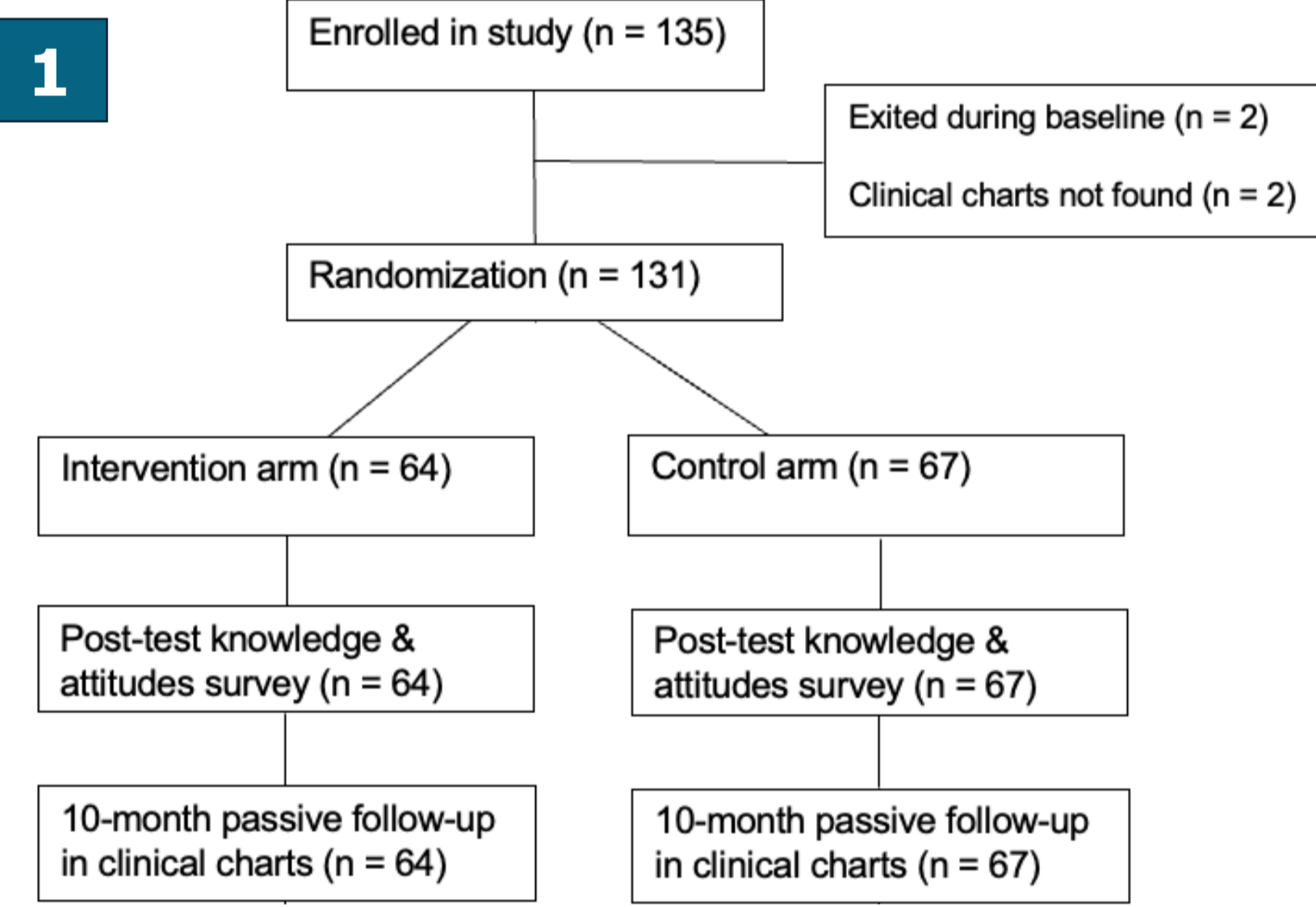
Undetectable HIV is as easy as 1-2-3



“This is what U=U means to us”



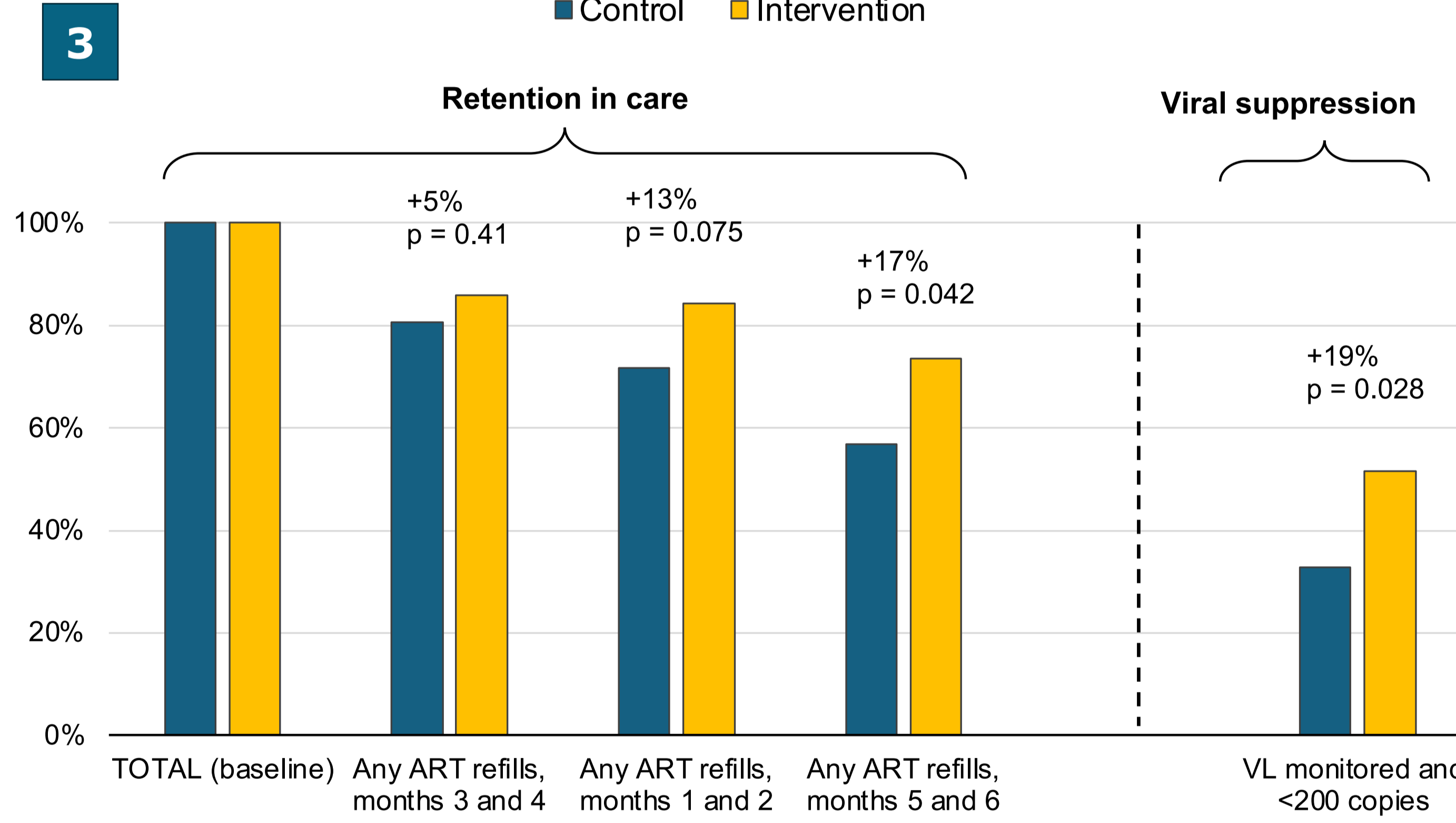
RESULTS



Baseline characteristics of respondents	Intervention (N=64)	Control (N=67)
Female (vs. male or neither male nor female)	52%	64%
Education: matric or higher (vs. less than matric)	25%	16%
Can read very well in English (vs. somewhat well, cannot)	17%	18%
Married or in a relationship (vs. single, dating, widowed)	58%	67%
Main source of income: paid job (vs. govt grant, partner, family)	61%	42%
Employed part time or full time (vs. not employed)	52%	40%
Has a cellphone that can access internet (vs. does not)	80%	67%
Health is fair or poor	29%	30%
Moderate mental distress (Kessler-6 score ≥5)	31%	33%
Serious mental distress (Kessler-6 score ≥13)	8%	10%
Recently diagnosed with HIV	45%	39%
Reported prior ART	45%	54%
Defaulted / received enhanced adherence counseling	44%	52%
Ever heard of HIV treatment-as-prevention	56%	49%

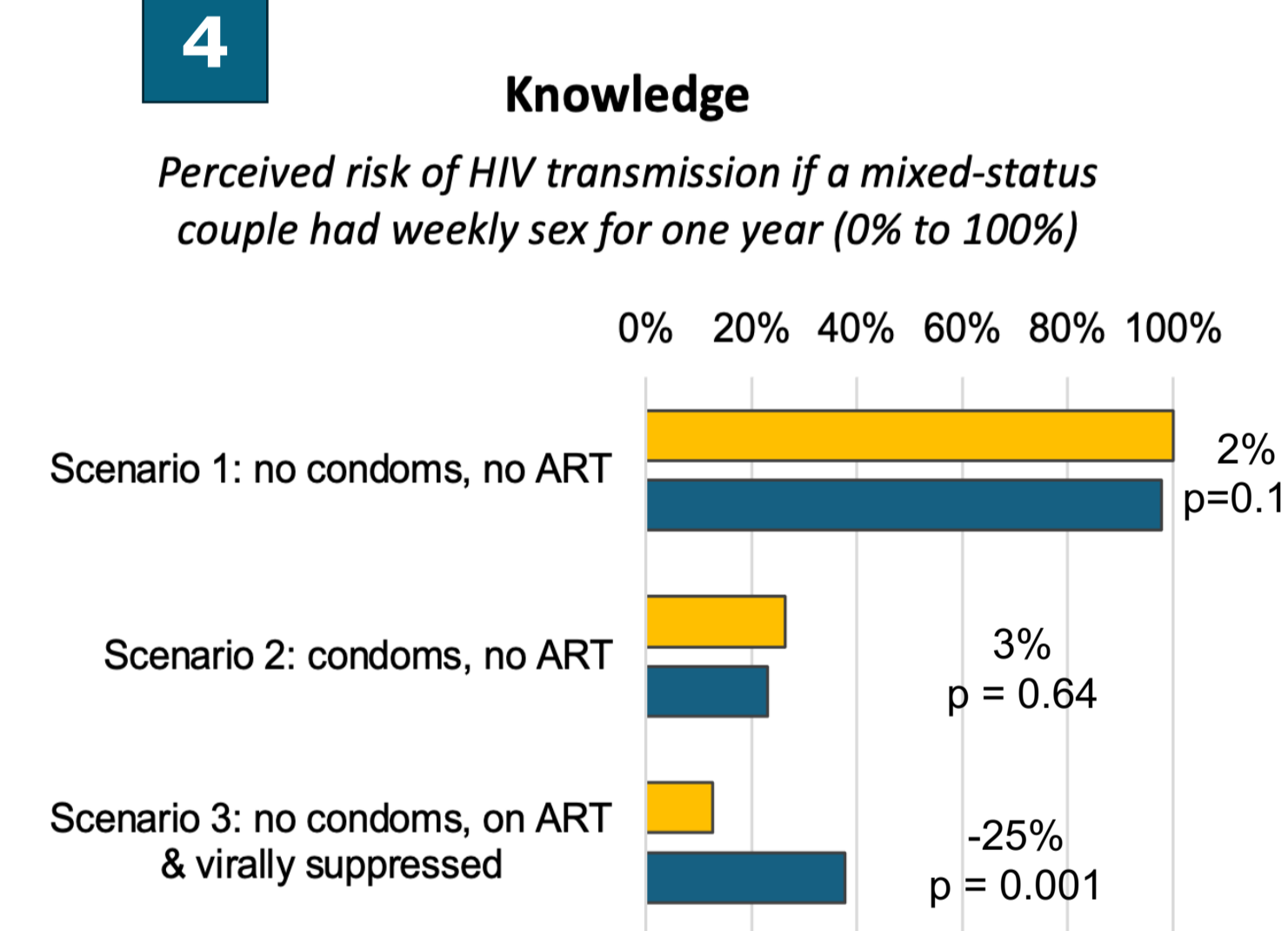
References

- 1) Broyles LN, et al. Lancet. 2023. Risk of sexual transmission of HIV...: a systematic review
- 2) Smith P, et al. U=U messaging increases uptake of HIV testing... AIDS and Behavior. 2021 Oct;25(10):3128-36.
- 3) Bor J, et al. A failure to disseminate transformative science... NEJM. 2021.
- 4) Bor J, et al. “U=U...”: a systematic review. AIDS and Behavior. 2021.
- 5) Sineke T, et al. Integrating “U=U” into HIV counselling in South Africa: development of locally acceptable tools using intervention mapping. BMC Public Health. 2024.
- 6) Sineke T, et al. “I was scared dating... who would take me with my status?” Living with HIV in the era of U=U... PLOS Global Public Health. 2023.
- 7) Onoya D, et al. Designing effective U=U communication strategies. Plos ONE. 2023.



	Intervention		Control		Crude Risk Difference			Adjusted Risk Difference		
	N	%	N	%	Est.	95% CI	p-value	Est.	95% CI	p-value
A. ART Uptake & Retention										
TOTAL (baseline)	64	100%	67	100%	-	-	-	-	-	-
Started ART	64	100%	64	96%	4%	(-0%, 9%)	0.087*	-	-	-
ART refill within 60 days	53	83%	50	75%	8%	(-6%, 22%)	0.251	7%	(-7%, 21%)	0.311
Any ART refills beyond 30 days	60	94%	55	82%	12%	(1%, 23%)	0.037**	12%	(2%, 22%)	0.022**
Any ART refills, months 1 and 2	55	86%	54	81%	5%	(-7%, 18%)	0.413	4%	(-9%, 16%)	0.574
Any ART refills, months 3 and 4	54	84%	48	72%	13%	(-1%, 27%)	0.075*	11%	(-2%, 25%)	0.094*
Any ART refills, months 5 and 6	47	73%	38	57%	17%	(1%, 33%)	0.042**	16%	(0%, 32%)	0.050**
B. Viral Suppression at 3-10 months										
VL recorded and <50 copies	22	34%	16	24%	10%	(-5%, 26%)	0.186	6%	(-9%, 21%)	0.434
VL recorded and <200 copies	33	52%	22	33%	19%	(2%, 35%)	0.028**	12%	(-4%, 29%)	0.146
VL recorded and <1000 copies	35	55%	25	37%	17%	(0%, 34%)	0.044**	13%	(-4%, 30%)	0.135
Viral load (VL) monitored	40	63%	30	45%	18%	(1%, 35%)	0.039**	16%	(-2%, 33%)	0.081*
VL result recorded	36	56%	27	40%	16%	(-1%, 33%)	0.065*	11%	(-6%, 29%)	0.197

Note: VL data are for 3-10 months after baseline; risk differences are marginal effects estimated after logistic regression models; adjusted risk differences are marginal effects after estimating logistic models adjusting for baseline covariates involved in the design of the study (clinic, wave, just diagnosed with HIV) or strongly associated with intervention status (paid job is main source of income, has cellphone with internet, adherence self-efficacy score). *p<0.1, **p<0.05



Engagement & Acceptability	
Engagement with the App	
Time spent with the App, in minutes (median, IQR)	21, 16 to 30
Average star rating for the videos, 0 to 5 (mean)*	4.7
Acceptability (% Agree/Strongly Agree)	
"It was easy to use the App"	95%
"The videos were engaging"	95%
"The information presented was clear"	98%
"I would feel comfortable using the App on my own"	94%
"I could relate to some of the characters in the videos"	97%
Downloading and Sharing the App (% Yes)*	
Participant chose to download the App on their phone	96%
Participant chose to share the App with someone	100%
Shared the App with a current partner	52%

“Since my partner tested negative, if he could see this couple’s story it will help us in our relationship.”

“His message gave me hope for the future. Knowing that I will be able to date again as normal. I need only to take my pill everyday.”

CONCLUSIONS

In a pilot RCT, the “Undetectable & You” App significantly increased U=U knowledge, retention in care, and viral suppression. Disseminating the science of U=U with personal testimonials may increase adherence motivations, leading to improved clinical outcomes, and reducing the spread of HIV.



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