Vuka+, Novel Smartphone-based PrEP Adherence Support Intervention for Adolescent Girls and Young Women, Pilot Study

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HIV TREATMENT AND PREVENTION ADHERENCE

Background

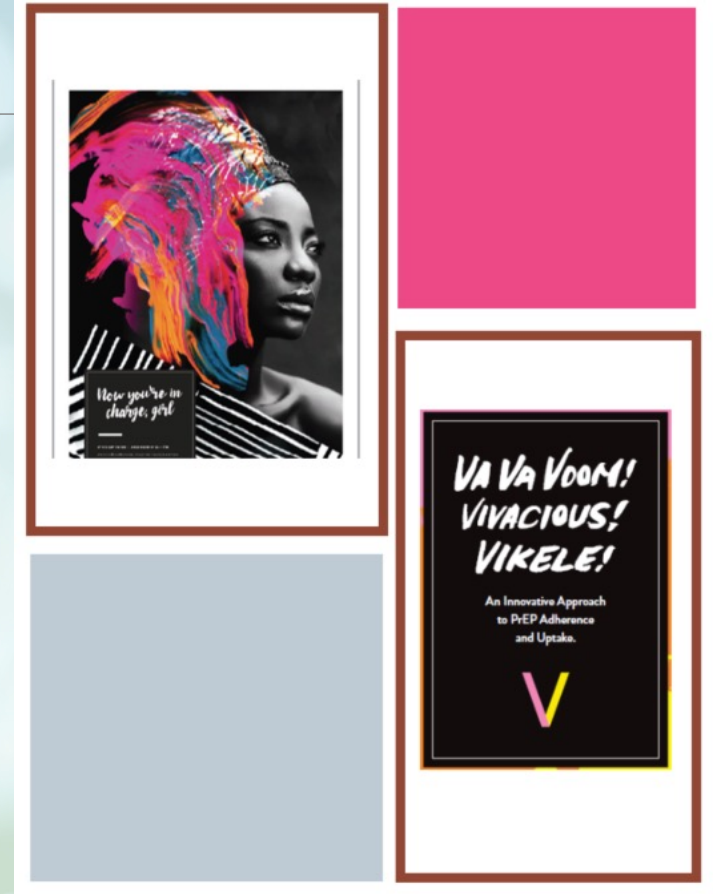Adherence to a daily pill is challenging, especially for young populations

New technologies could provide significant improvements for individuals and providers to monitor and support adherence and engage with them **outside of the clinic** on their own time

Vuka+ is a smartphone intervention app tailored to support medication adherence, persistence and social support for adolescent girls and young women (AGYW) in South Africa

Vuka+ development

- Developed a smartphone application tailored to **African AGYW** that is educational, practical, engaging and culturally appropriate
- Ultimate goal of <u>supporting consistent use and adherence</u>
- UNC BATLab had 2 apps (HealthMpowerment and AllyQuest) developed for US MSM
- CONRAD, BATLab, and OCS, tech collaborator, developed **Vuka+** customizing and enhancing platform features and adding new features:
  - **Medication tracker**
  - **Offline/low-bandwidth connectivity**
  - **Branding and aesthetic changes**: HCD **V** brand (www.conrad.org/launchingV)

Now you're in charge, girl

VA VA VOOM!
VIVACIOUS!
VIKELE!

An Innovative Approach
to PrEP Adherence
and Uptake.

V

Vuka+ App Features

- o Customized motivational messages
- o Customized reminders
- o Incentivized app use –gamification features
- o Resources on PrEP and other relevant topics
- o Adherence tracking
- o Appointment and refill tracking
- o Side effects tracking
- o Adherence support groups
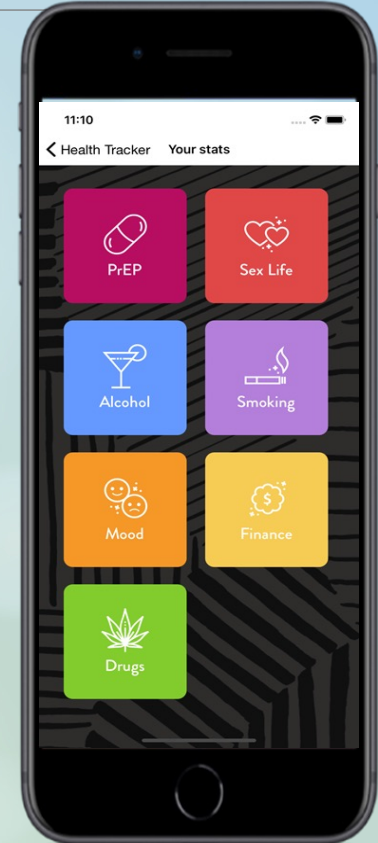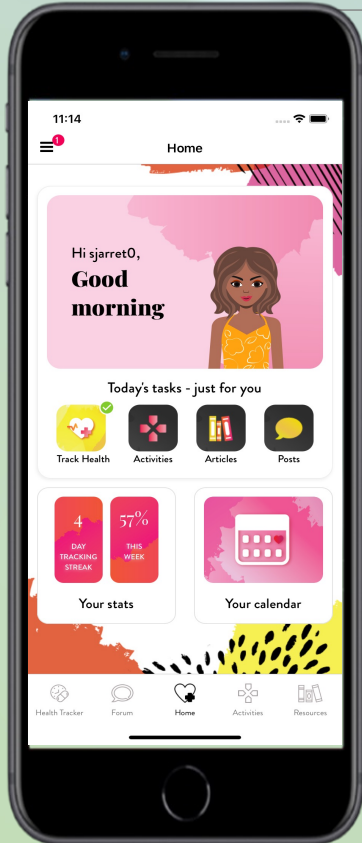
Pilot Study Aims

➢ **Primary:** Intervention acceptability and usability – to describe user experiences with the smartphone app and its contents.

➢ **Secondary:** Study implementation – to optimize the usability, rigor and reproducibility of all study procedures, tools and data systems in preparation for RCT.

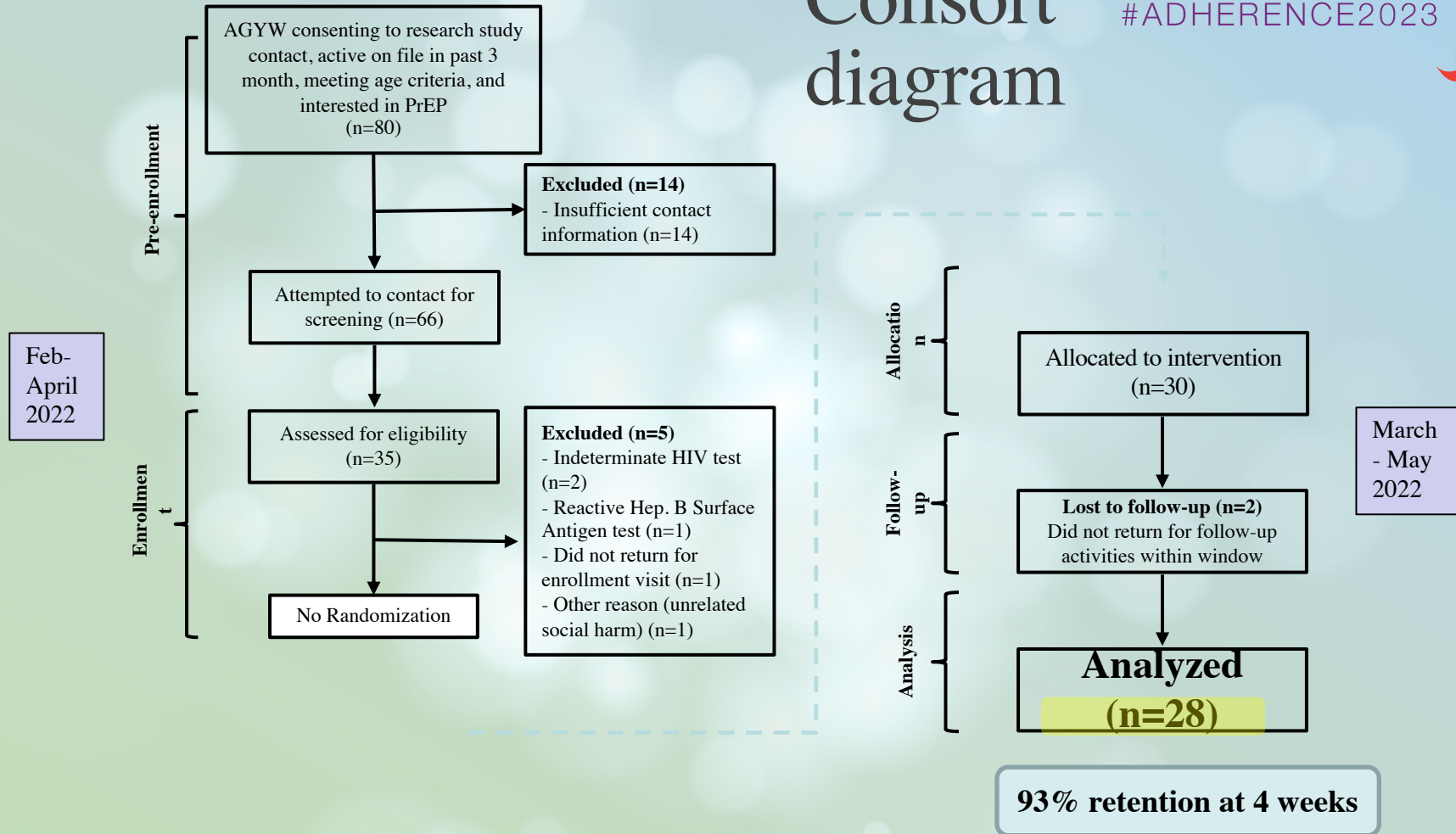| Formative Research/App Adaptation | 2-week Beta Testing | App refinement | 4-week Pilot | 6-month RCT |

Methods

➤ **Study design:** Single arm, 4-weeks, pre-post measures

➤ **Participants:** AGYW attending Desmond Tutu Health Foundation (DTHF) PrEP clinics in Cape Town SA, age 16 – 24, sexually active, HIV-uninfected and PrEP-eligible with regular smartphone access.

➤ **Intervention:**

➤ 30-day supply of Truvada, DTHF standard of care PrEP initiation

➤ Vuka+ intervention app: Participants were instructed to use the app at least once daily to log medication taking behavior and complete suggested activities.

Vuka♀

Consort diagram

Pre-enrollment

AGYW consenting to research study contact, active on file in past 3 month, meeting age criteria, and interested in PrEP
(n=80)

Feb-April 2022

Excluded (n=14)
- Insufficient contact information (n=14)

Attempted to contact for screening (n=66)

Enrollment

Assessed for eligibility
(n=35)

Excluded (n=5)
- Indeterminate HIV test (n=2)
- Reactive Hep. B Surface Antigen test (n=1)
- Did not return for enrollment visit (n=1)
- Other reason (unrelated social harm) (n=1)

No Randomization

Allocation

Allocated to intervention
(n=30)

March - May 2022

Follow-up

Lost to follow-up (n=2)
Did not return for follow-up activities within window

Analysis

Analyzed
(n=28)

93% retention at 4 weeks

Sample Demographics	Total (n=30)
Age (years), median (range)	20 (16-24)
Xhosa Spoken at Home, n (%)	30 (100.0)
Currently in School, n (%)	13 (43.3)
Highest Level of Education, n (%)	
Primary school, complete	1 (3.3)
Secondary school, not complete	6 (20.0)
Secondary school, complete	15 (50.0)
Attended technical/trade school, college or university	5 (16.7)
College or university, complete	3 (10.0)
Marital Status, n (%)	
Regular partner/boyfriend/fiancé	21 (70.0)
Casual partner	6 (20.0)
No partner	3 (10.0)
Ever Pregnant, n (%)	7 (23.3)
Number of Children under Care, mean (SD)	1.9 (2.6)
Experience Food Insecurity in past 4wks, n (%)	13 (43.3)
Household has Access to…, n (%)**	
Electricity/Solar	24 (80.0)
A radio	21 (70.0)
A car	6 (20.0)
Internet	10 (33.3)

Baseline technology use	Total (n=30)
Owns a Smartphone, n (%)	27 (90.0)
Shares a smartphone, n (%)	14 (46.7)
Typically Use Smartphone to Access Internet, n (%)*	24 (80.0)
Hours Spent Online Daily in Past Month, n (%)	
Less than an hour	4 (13.3)
1 to 3 hours	11 (36.7)
4 or more	15 (50.0)
App Use Frequency, n (%)	
A few times a week or less	3 (10.0)
Most days	11 (36.7)
Every day	16 (53.3)
Sometimes or Often Use Internet of Apps to..., n (%)**	
Find a date	6 (20.0)
Track health behaviors	20 (66.7)
Get infromation about PrEP. HIV, or other STIs	18 (60.0)
Get other health or medical information	16 (53.3)
Create event reminder (daily pill, exercise, etc.)	17 (60.7)

*not mutually exclusive categories

**individual items; % represents number of participant endorsements out of total n

App Acceptability and usability at 4-week follow-up	Total (n=28)
System Usability Scale	%
I would like to use this app frequently	75.0
I thought the app was easy to use	57.2
I found all the parts of the app worked well together	82.1
Most people would learn to use this app very quickly	82.1
I felt very confident using this app	89.3
I found the app complicated to use	17.9
I would need help to learn how to use this app	17.9
I thought there was too much inconsistency in the app	32.1
I found this app very difficult to use	14.3
I needed to learn a lot of things before I could use this app	35.7
Supplemental Items	
I trust the information in the Vuka+ app	92.9
The app helped me deal with challenges taking PrEP	85.7
I understand how to use all the features in the app	89.3
The app helped me to take PrEP	85.7
I enjoy using the app	89.3
I like the look and style of the app	89.3

2023

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Overall System Usability Score: 68.0
Equivalent to average usability of over 500 other applications of this measure

2023

Intervention app use (4 weeks)

- One third of participants used the app consistently to track PrEP and reported high medication adherence (50% self-reported >80% pills taken).

- Participants used the app an average of 5.6 times/week

  ➢ 63% (19) tracked PrEP adherence *most-utilized feature*

  ➢ 60% (18) completed 74 unique activities

  ➢ 57% (17) read 60 unique knowledge articles

  ➢ 33% (10) used their avatar page

The medication and behavioral trackers were the most utilized features and positively evaluated

"Yes, it did [medication tracker] it helped me to be a very consistent person reminding me to take my Prep, daily. Made me see that yeah, I'm gravitating to the right direction. I'm changing my behaviour in certain things, so it actually helped with my mood" (ID 1002)

"It [health tracker] influenced my decisions because every time I take a look at the calendar, I would actually see that I was becoming more responsible. And meaning the app has a lot of influence because it helps you take your medication, track different habits because without the app who would have known?" (ID 1017)

"It [using the app] has been really impactful because it would constantly remind me to take my medication, and maybe if I didn't have it, I would've forgotten and skipped some days." (ID 1031)

Educational app features were highly utilized and positively evaluated

"Those multi choice questions kept me busy! I liked that it teaches you by giving you correct information, for example if you are doing an activity then you answer your questions incorrect then it will instantly correct and you learn as well, so yes it good." (#1014)

"Going through the app and coming to the study I've gained more information than I knew before coming to the study....getting to know information about Prep and getting to know how to protect yourself and also got to track my lifestyle. It was fun while learning about Prep" (#1008)

"Those activities were great! I think I completed about 50 of them. I learned a lot because of those activities...it also equipped me with how to effectively communicate in a relationship like how to negotiate condom use..." (#1006)

App resources and features provided social support

"I think it's [resources] very useful and informative. Helps me learn what other people are going through and how they cope irrespective of what they're experiencing. (#1030)

"I truly feel it's [the forum] helpful, especially the people that felt the need to share their stories or seek help on the forum. And I could also relate and see how others thought of certain things in general, especially if you're going through something similar." (#1020)

Challenges identified in exit interviews

Running out of gifted data limited continued app use; shared phones meant some participants did not have full control over data use.

Limited/inconsistent access to Wi-Fi and some app features not working as expected off-line.

Participants who are in school are not permitted to have/use their phones during school hours, restricting study enrollment and app use during these times.

Miscellaneous technical issues: difficulty resetting app password, limited storage space on phone, phone lost or broken after enrollment.

Conclusion

The Vuka + app, designed based on AGYW preferences, was acceptable and usable to study participants

Opportunity to engage with AGYW outside of the clinic environment

Pilot study completed and improvements made in app and implementation procedures

Vuka+ app refined and tested with end-users for Type I Hybrid Effectiveness & Implementation study currently underway

Acknowledgements