A Comparison of Self-Reported PrEP Adherence and Objective Measures in Kenya

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BACKGROUND

- Objective adherence metrics for evaluating PrEP adherence are not widely available due to resource constraints.
- Providers often rely on clients' self-reported behaviors to identify suboptimal adherence.
- Clinical trials have found that self-reported PrEP adherence commonly overestimates actual adherence, but little is known about the accuracy of self-reported adherence measures in implementation settings where clients desire PrEP.
- **We aimed to estimate the accuracy of self-reported PrEP adherence among clients retained in care in Kenya.**

METHODS

- We used data from participants enrolled in a randomized implementation trial (JiPime-JiPrEP, CT.gov: NCT03593629) evaluating six-month PrEP dispensing supported with interim HIV self-testing at three months in Kenya.
- At six months, we measured PrEP adherence two ways: 1) via self-reported adherence using five commonly-used items and 2) via biological samples (dried blood spots [DBS]).
- To measure tenofovir-diphosphate (TFV-DP) in the DBS samples, we used liquid chromatography/tandem mass spectrometry.
- We used multivariate logistic regressions adjusted for age, risk group, and study arm to estimate adjusted odds ratios (aORs) of biologic PrEP adherence (undetectable TFV-DP & <700 fmol/punch TFV-DP) for each self-reported measure.

RESULTS

- From December 2018 to September 2020, 80% (398/495) of enrolled participants returned for a six-month PrEP visit and provided a DBS sample.
- 26% (103/398) had no detectable TFV-DP, and 49% (194/398) had <700 fmol/punch TFV-DP (i.e., below protective levels).
- All self-reports of poor PrEP adherence, **Figure 1**, in the selected questions were significantly (p<0.01) associated with undetectable and <700 fmol/punch TFV-DP concentrations, **Table 1**.
- The strongest associations with undetectable TFV-DP were observed for low self-rated adherence (aOR 11.8, 95% CI 5.5-25.2) and low self-reported frequency of PrEP taking (aOR 11.1, 95% CI 5.1-24.1).
- The strongest associations with <700 fmol/punch TFV-DP were observed for low self-rated adherence (aOR 36.3, 95% CI 8.3-158.1) and reported PrEP discontinuation (aOR 37.6, 95% CI 4.8-294.4).

Self-reporting poor PrEP adherence is uncommon. In the absence of biologic adherence metrics, self-reported PrEP discontinuation ('*Are you still taking your PrEP medication?*') or self-rated PrEP adherence ('*How well have you taken PrEP since initiation?*') may be the best indicators of suboptimal adherence.

Figure 1. Proportions of self-reported PrEP adherence by biologic measures (i.e., TFV-DP concentration)

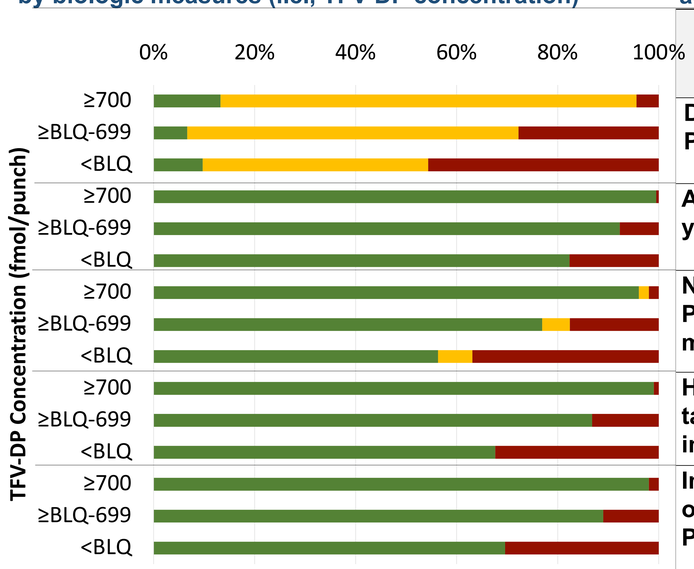

Table 1. Adjusted odds ratios (aORs) of suboptimal biologic PrEP adherence for self-reported adherence measures among PrEP clients in Kenya (N=398)

Self-Reported Adherence Measures		No TFV-DP detected[1]		TFV-DP concentration <700 fmol/punch	
		aOR[2] (95% CI)	p-value	aOR[2] (95% CI)	p-value
Days since last PrEP dose taken[3]	*0*	REF	--	REF	--
	1	0.6 (0.3 – 1.5)	0.28	1.0 (0.5 – 2.1)	0.99
	>1	5.1 (2.0 – 12.7)	<0.01	16.4 (6.0 – 44.8)	<0.01
Are you still taking your PrEP?[3]	*Yes*	REF	--	REF	--
	No	10.0 (3.8 – 26.4)	<0.01	37.6 (4.8 – 294.4)	<0.01
No. days missed PrEP (past month)?	*0-8*	REF	--	REF	--
	9-16	2.3 (0.7 – 6.9)	0.15	3.0 (0.9 – 10.5)	0.08
	17-30	10.0 (5.0 – 19.8)	<0.01	23.2 (7.8 – 68.4)	<0.01
How well have you taken PrEP since initiation?[3]	*Excellent, very good, or good*	REF	--	REF	--
	Fair, poor, or very poor	11.8 (5.5 – 25.2)	<0.01	36.3 (8.3 – 158.1)	<0.01
In general, how often do you take PrEP?[3]	*All, most, or a good bit of the time*	REF	--	REF	--
	Some, a little bit, or none of the time	11.1 (5.1 – 24.1)	<0.01	15.7 (5.2 – 47.2)	<0.01

aOR=adjusted odds ratio, BLQ=below the limit of quantification, CI=confidence interval, PrEP=pre-exposure prophylaxis, TFV-DP=tenofovir-diphosphate
[1]Below the limit of quantification (<31.3 fmol/punch),
[2] Adjusted for study arm, risk group (men in serodifferent couple, women in serodifferent couple, singly-enrolled women), and age group (<34 years, ≥34 years),
[3]Missing for 1 participant

CONCLUSIONS

- In this implementation setting in Kenya, PrEP participants had generally high adherence, and self-reporting poor PrEP adherence was uncommon.
- Most self-reported poor adherence measures were associated with biologic poor adherence.
- In the absence of biologic PrEP adherence measures, a simple self-rating of adherence ('How well have you taken PrEP since initiation?') and continuation ('Are you still taking your PrEP medication?') may help identifying clients' suboptimal PrEP adherence in Kenya, as compared to other commonly-used self-reported adherence metrics.
- Despite the statistical significance of these findings, self-reported PrEP adherence and continuation is not reliable for accurately identifying PrEP clients' adherence challenges.

ACKNOWLEDGEMENTS

We would like to acknowledge all trial participants and research staff at Partners in Health and Research Development research and care clinic in Thika that contributed to this study.

FUNDING

NIMH R01 MH113572 & NCATS TL1 TR002318

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