Estimating the prevalence of over- and under-reporting in HIV testing, status and treatment in rural South Africa

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BACKGROUND

- Population-based surveys are an important tool in epidemic monitoring. Surveys provide valuable insight in the absence of biomarkers or individual health records.
- Self reported measures are vulnerable to measurement error, including through social desirability or telescoping.
- A meta-analysis by Soni et al. found an average of 9% underreporting of HIV status compared to biomarkers in general population studies.
- Few studies have addressed the accuracy of self reported measures of HIV testing history.

We evaluate the accuracy of self-reported measures of HIV testing, status, and current treatment comparing responses from a population-based survey with longitudinal clinic records in a rural setting of Ehlanzeni District, South Africa.

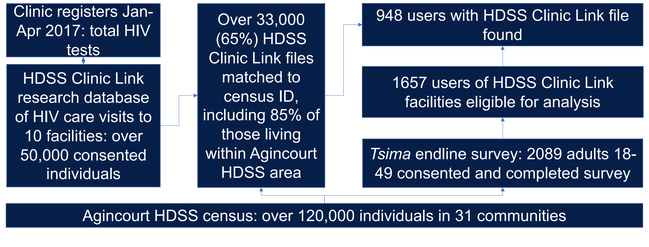
METHODS

We linked respondents in a 2018 population-based survey to longitudinal clinical records at 10 local health facilities. We calculated agreement, sensitivity, and specificity of self-reported measures compared to clinic records for:

- HIV testing within 12 months (among those not previously diagnosed)
- HIV status
- Current ART use

We audited clinic testing records and found 29% of tests were not documented in patient files. We used imputation to account for this under-documentation in estimating population prevalence of recent testing. We compared population testing to aggregate district data on total number of tests and adult population size.

Data sources and connections



Survey-based self report substantially *overestimated* recent testing - 69% reporting vs. 34% confirmed - and *underestimated* HIV prevalence: 16% vs. 28%

RESULTS

- 1657 individuals were eligible for analysis. 63% were women. Nearly all reported a study facility as their usual source of care

Testing

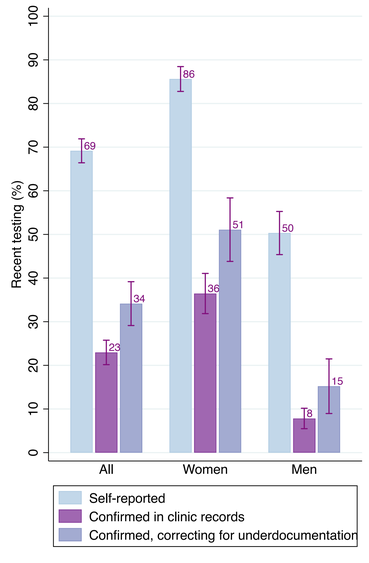
- 69% of respondents reported an HIV test within 12 months; one third of reported tests could be confirmed in clinic records
- Self report was 96% sensitive and 24% specific
- District data suggest a maximum of 56% population testing *if each adult tested only once*

Status

- 59% of 424 individuals documented to be living with HIV self-reported positive status. 12% of those reporting a negative HIV test and 17% of those not reporting a status were living with HIV
- Self report was 53% sensitive and 99% specific

Treatment

- 95% of those reporting living with HIV reported current ART use; clinic documentation suggested 68% current treatment overall, 88% limited to those with a participant file
- Self report for current ART was 99% sensitive and 16% specific



Prevalence of HIV testing within 12 months based on self-report and with clinic record confirmation

CONCLUSIONS

- Relative to clinical records among confirmed clinic users, self report of HIV testing and of current treatment were highly sensitive but non-specific, while self report of HIV status was highly specific but not sensitive.
- Clinic documentation is imperfect, particularly for negative HIV tests; we took multiple approaches to account for gaps in documentation and triangulate with aggregate data that supported the conclusion of self-reported testing overestimating true testing behaviors.
- Survey-based measures should be interpreted with ample caution in this rural South African setting.
- Efforts to understand and address mis-reporting during data collection and analysis are warranted, particularly with the expansion of self-testing.

A: HIV testing among those not known to be positive > 12 months (N=1272)

		Testing in HDSS-Clinic Link records				
		Participant file found			No file found	Total
		≤ 12 months	>12 months	No record of test		
Self-reported testing	≤ 12 months	294	115	108	363	880
	> 12 months	12	23	40	205	280
	Never	2	1	7	102	112
	Total	308	139	155	670	1272

B: HIV status among all respondents (N=1657)

		Status in HDSS-Clinic Link records				
		Participant file found			No file found	
		HIV+	HIV-	No record of status		Total
Self-reported status	HIV+	196	3	2	49	250
	HIV-	146	403	146	545	1240
	Unknown / declined[1]	28	12	12	115	167
	Total	370	418	160	709	1657

C: ART among those reporting living with HIV (N=250)

		ART use in HDSS-Clinic Link records				
		Participant file found			No file found	
		Current	Lapsed	No record of ART		Total
Self-reported ART use	Current	168	23	3	44	238
	Lapsed	0	2	1	0	3
	Never	2	1	1	5	9
	Total	170	26	5	49	250

Comparison of self-report to clinic documentation for HIV testing, status, and current ART

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