

How close to 90-90-90? Measuring undiagnosed HIV infection, ART use, and viral suppression in a community-based sample from Namibia's highest prevalence region [TUPDC0104]

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Background

Data on the continuum of HIV care are necessary to track progress in the response to the epidemic; however, they are difficult to obtain, particularly at a sub-national level. We directly measured HIV diagnosis, receipt of ART, and viral suppression in a community-based sample of adults in Zambezi, the region of highest HIV prevalence in Namibia.

Methods

A cross-sectional, household survey was conducted from 12/2014 - 7/2015 in five purposefully selected sentinel community sites of Namibia's Zambezi region that are serviced by a home-based testing and case management program called Total Control of the Epidemic (TCE). Adults (≥ 15 years) received HIV rapid testing using the national algorithm, completed behavioral interviews, and submitted dried blood spots (DBS) in their homes. Previous HIV diagnosis and receipt of ART within the past 90 days were measured through self-report and verified in patient-carried records when available. HIV-RNA viral load was quantified using DBS (Abbott Real-Time HIV-1 m2000 platform). Multivariable logistic regression was used to characterize disparities in care outcomes.



Figure 1. Map showing the five sentinel, community sites in the Zambezi region of Namibia from which participants were enrolled. Sites were purposely selected to be heterogeneous by cultural/linguistic group, urban vs. rural residential type, and proximity to the constituency health center.

Figure 2. Satellite image showing example of contiguous clusters of houses within sentinel, community sites in the Zambezi region of Namibia from which participants were enrolled. For our study, we enrolled clients who were living in clusters two or three within each site.



Figure 3. Photograph of TCE Field Officers - a lay cadre of community health workers - en route from a health clinic to the homes of clients who would be reached with home-based HIV testing and invited to participate in our study.

Figure 4. Photograph showing TCE Field Officers performing a home-based counseling and testing session, during which their clients were invited to participate in our study.



Results

We enrolled 2,163 adults, of whom 1,312 [60.7% (95%CI: 58.6-62.7)] were female and 461 [21.3% (95%CI: 19.6-23.1)] were HIV-positive. Among HIV-positives, 293 [63.6% (95%CI: 59.0-68.0)] were previously diagnosed. Among those diagnosed, 242 [82.6% (95%CI: 77.8-86.8)] were receiving ART. Of 209 DBS tested from participants receiving ART, 170 [81.3% (95%CI: 75.4-86.4)] were virally suppressed (i.e., <1000 copies/uL), which equates to 36.9% (95% CI: 32.5-41.5) viral suppression among all HIV-positive adults. HIV diagnosis was significantly lower among men [Adjusted odds ratio (AOR): 0.24, $P<0.001$] and youth (<25 years) (AOR: 0.15, $P=0.02$). Receipt of ART was somewhat lower among rural residents (AOR: 0.33, $P=0.08$). Viral suppression was significantly lower among youth (<25 years) (AOR: 0.27, $P=0.002$).

Figure 5. Summary of enrollment and rates of participation

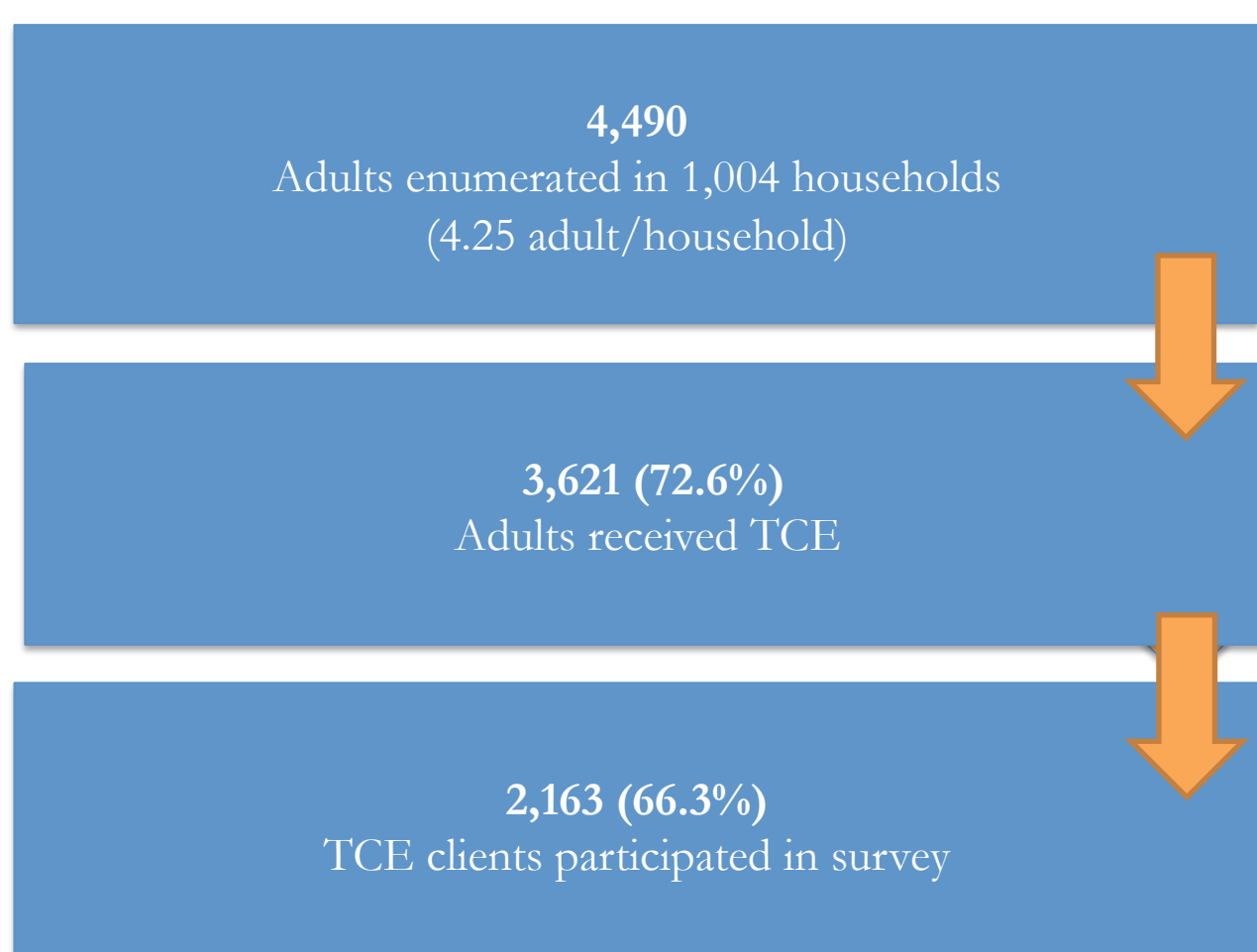
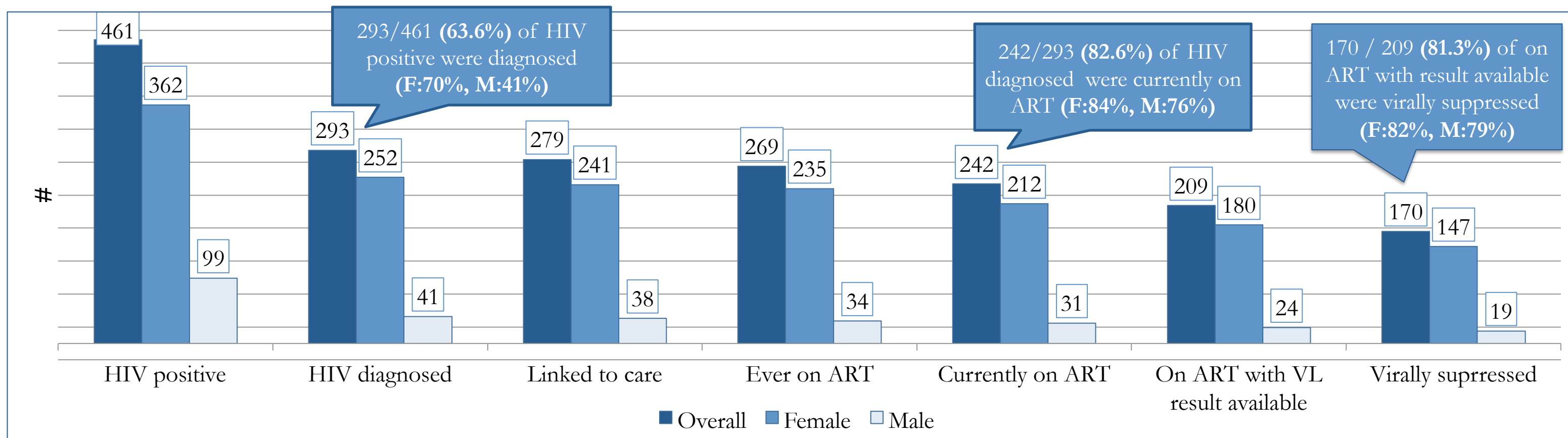


Table 1. Demographic characteristics and HIV serostatus of study participants (N=2,163)

	Overall %	95% CI	Female %	95% CI	Males %	95% CI
Female sex [n=1,312]	60.7	[55.3 - 65.8]	--	--	--	--
Age ≥ 25 years [n=1,373]	63.5	[57.7 - 68.9]	63.7	[58.1 - 69.0]	63.1	[55.0 - 70.5]
Not married or cohabitating with a partner [n=1,526]	70.6	[62.6 - 77.4]	70.5	[62.0 - 77.8]	70.6	[62.2 - 77.8]
Rural resident [n=1,160]	53.6	[19.6 - 84.6]	50.5	[17.6 - 83.0]	58.4	[22.6 - 87.1]
HIV positive serostatus [n=461]	21.3	[6.7 - 9.0]	27.6	[25.2 - 30.9]	11.6	[9.4 - 13.9]
New positive [n=168]	7.8	[5.7 - 10.5]	8.4	[6.3 - 11.1]	6.8	[4.4 - 10.4]
Previously known positive [n=293]	13.5	[11.9 - 15.4]	19.2	[17.3 - 21.2]	4.8	[3.6 - 6.4]

Figure 6. Continuum of engagement in HIV care services among HIV positive adults (N = 461).



Conclusions

With 83% of previously diagnosed adults receiving ART and 81% of those on ART with a viral load result available achieving viral suppression, the second and third benchmarks of the UNAIDS "90-90-90" targets are within reach for adults in Zambezi region. High levels of linkage to care following HIV diagnosis (95%) are also apparent. However, serostatus awareness among HIV-positive adults was well below the 90% target, especially among men and youth. Thus, overall prevention impact may be limited with only 37% of HIV-positive adults having unsuppressed virus. If the population-level prevention benefits of ART are to be maximized, "test and start" policies must be strengthened with new interventions to improve serostatus awareness.