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Prevalence of Unsuppressed Viral Load: Comparison of 2016-17 and 2022-23 Tanzania HIV Impact Surveys

U.S. CENTERS FOR DISEASE CONTROL AND PREVENTION

Abbas Ismail[1], Damian Damian[1], Prosper Njau[2], Tepa Nkumbula , Emilian Karugendo[4], Fahima M. Issa[5], Rebecca L. Laws[6], Malewo Optatus[1], George S. Mgomella[1], Mahesh Swaminathan[1], Alexander Kailembo[1] , Nicolas Schaad[1], Sarah E. Porter[1]

(1) Division of Global HIV and TB, U.S. Centers for Disease Control and Prevention (CDC), Tanzania, (2) National AIDS, STIs, and Hepatitis Control Programme (NASHCoP), (3) ICAP at Columbia University, Tanzania, (4) National Bureau of Statistics, Tanzania (5) Office of the Chief Government Statistician, Zanzibar, Tanzania, (6) Division of Global HIV and TB, U.S. CDC, Atlanta, United States

BACKGROUND

- Antiretroviral therapy (ART) improves clinical outcomes of people living with HIV (PLHIV). Achieving viral suppression through ART can prevent HIV transmission.
- The Government of Tanzania has implemented strategies to ensure regular viral load monitoring for assessing treatment effectiveness.
- We used data from rounds of the Tanzania HIV Impact Survey (THIS) to report the prevalence and correlates of unsuppressed HIV viral load (VL) among PLHIV.

METHODS

- Both THIS surveys were nationally representative household surveys with multistage sampling designs. THIS 2016-2017, conducted between October 2016 and August 2017, included 33,004 participants aged ≥15 years. THIS 2022-2023, conducted between November 2022 and March 2023, included 35,957 participants aged ≥15 years.
- Consenting participants responded to questionnaires and provided venous blood for biomarker testing. Questionnaires contained items on sociodemographic data, HIV status, and alcohol use.
  - HIV infection was determined though a national two-test rapid algorithm with laboratory confirmation.
  - HIV VL quantification was conducted among participants with confirmed HIV infection, with unsuppressed HIV VL defined as HIV VL ≥1,000 copies/mL.
- We reported prevalence of unsuppressed HIV VL among PLHIV as weighted proportions with 95% confidence intervals (CI), overall and by age and sex. We used chi-square tests to assess the change in prevalence of unsuppressed HIV VL among PLHIV between surveys.
- We used multivariable logistic regression models to assess association of sociodemographic variables with unsuppressed HIV VL in each survey, reporting results as adjusted odds ratios (aOR). All analyses used pooled jackknife weights from both surveys and accounted for complex survey design.

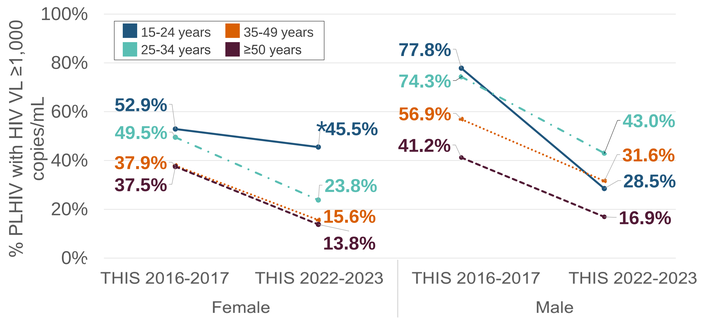
Prevalence of **unsuppressed HIV VL** decreased **by over half** in Tanzania between 2017 and 2023.The smallest decrease was among females aged15-24 years.

RESULTS

Table 1. Prevalence of HIV VL ≥1,000 copies/mL among PLHIV aged ≥15 years – Tanzania, THIS 2016-2017 and 2022-2023

Survey	n	Unsuppressed HIV VL % (95% CI)
THIS 2016-2017	1,850	48.1% (44.9-51.4%)
THIS 2022-2023	1,831	22.0% (19.6-24.6%)

Figure. Change in prevalence of HIV VL ≥1,000 copies/mL among PLHIV aged ≥15 years, by age and sex – Tanzania, THIS 2016-2017 and 2022-2023



**Change between survey rounds is not statistically significant at p<0.05 among females aged 15-24. Change between survey rounds is statistically significant at p<0.05 in all other age/sex groups presented.*

Table 2. Sociodemographic factors associated with HIV VL ≥1,000 copies/mL among PLHIV aged ≥15 years – Tanzania, THIS 2016-2017 and 2022-2023

Characteristic	THIS 2016-2017 aOR[1] (95% CI)	THIS 2022-2023 aOR[1] (95% CI)
Sex		
Male	2.1 (1.6-2.7)	1.8 (1.3-2.5)
Female	Ref	Ref
Age (years)		
15-24	3.2 (1.9-5.1)	4.1 (2.1-8.1)
25-34	2.4 (1.6-3.6)	2.6 (1.7-4.1)
35-49	1.4 (1.0-2.0)	1.5 (1.0-2.3)
≥50	Ref	Ref
Educational attainment		
None	1.6 (0.9-2.8)	1.8 (1.0-3.3)
Primary	1.1 (0.7-1.7)	1.3 (0.9-2.1)
Secondary and above	Ref	Ref
Wealth Quintile		
Lowest	Ref	Ref
Second	0.8 (0.5-1.4)	0.7 (0.5-1.2)
Middle	0.7 (0.4-1.1)	0.6 (0.4-1.0)
Fourth	1.0 (0.5-1.7)	0.8 (0.5-1.3)
Highest	0.9 (0.5-1.7)	1.2 (0.6-2.3)

[1] *Odds ratio for each factor is adjusted for other variables shown on table, marital status, place of residence and alcohol use .*

RESULTS

- Our analysis included 1,830 and 1,849 participants aged ≥15 years with confirmed HIV infection in THIS 2016-2017 and 2022-2023, respectively.
- The proportion of PLHIV with unsuppressed HIV VL decreased significantly from 48.1% (95%CI: 44.9-51.4%) in 2016-2017 to 22.0% (95%CI: 19.6-24.6%) in 2022-2023 (Table 1).
- Prevalence of unsuppressed VL decreased between surveys in all age and sex groups (Figure).
  - The magnitude of the decrease was greatest in males aged 15-24 years (77.8% [52.9-91.6%] to 28.5% [13.0-51.4%]).
  - The magnitude of the decrease was smallest in females aged 15-24 years (52.9% [43.1-62.4%] to 45.5% [33.4-58.0%]).
- In both surveys, male sex (compared to female sex) and age 15-24 (compared to age ≥50 years) were significantly associated with increased odds of unsuppressed VL. Education and wealth were not significantly associated with unsuppressed VL in either survey (Table 2).

CONCLUSIONS

Prevalence of unsuppressed HIV VL among PLHIV aged ≥15 years in Tanzania was 22.0% in THIS 2022-23, representing a reduction of more than half in the 6-year period between THIS surveys. Targeted approaches to address unsuppressed HIV VL among populations in which progress has been slower, including females aged 15-24 years and males overall, may help improve HIV viral suppression among these groups in Tanzania.

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CONTACT: Abbas Ismail Kihame | U.S. Centers for Disease Control and Prevention | Division of Global HIV and TB, Tanzania | akihame@cdc.gov

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