

ETHIOPIA POPULATION-BASED HIV IMPACT ASSESSMENT

EPHIA 2017-2018



The Ethiopia Population-based HIV Impact Assessment (EPHIA), a household-based national survey in urban Ethiopia, was conducted between October 2017 and April 2018 in order to measure the status of Ethiopia's national response to the urban HIV epidemic. EPHIA offered household-based HIV counseling and testing with the return of results and referral to clinics for those who tested HIV positive, and collected information about the uptake of HIV prevention, care, and treatment services. This was the first survey to estimate HIV incidence, viral load suppression (VLS), and pediatric prevalence in urban Ethiopia. This survey focused only on the urban population since previous studies showed a less than one percent HIV prevalence in rural areas.

The survey estimated HIV prevalence and VLS at a population level among people ages 0-64 years, and HIV incidence among adults (defined as those aged 15-64 years, unless otherwise noted) living in urban areas. The seroprevalences of syphilis and hepatitis B surface antigen among adults living with HIV were also estimated. The survey also collected information on sociodemographic determinants of the epidemic and uptake of prevention, care, and treatment services. The results provide information on national and regional progress towards control of the HIV epidemic in urban Ethiopia.

EPHIA was led by the Government of Ethiopia through the Ethiopia Public Health Institute with funding from the United States (U.S.) President's Emergency Plan for AIDS Relief (PEPFAR) and technical assistance from the U.S. Centers for Disease Control and Prevention (CDC). The survey was implemented by ICAP at Columbia University in collaboration with EPHI, the Federal HIV/AIDS Prevention and Control Office and other local partners, including the Central Statistical Agency of Ethiopia.

KEY FINDINGS

HIV Indicator	Female	95% CI	Male	95% CI	Total	95% CI
Incidence (%)						
15-49 years	*	*	*	*	0.04	0.00-0.09
15-64 years	*	*	*	*	0.05	0.00-0.10
Prevalence (%)						
0-14 years	0.3	0.1-0.6	0.3	0.1-0.5	0.3	0.1-0.5
15-49 years	4.0	3.5-4.6	1.7	1.3-2.1	2.9	2.5-3.3
50-64 years	4.7	3.3-6.0	4.2	2.8-5.6	4.4	3.4-5.4
15-64 years	4.1	3.6-4.7	1.9	1.5-2.4	3.0	2.6-3.4
Viral load suppression (%)						
15-49 years	71.4	66.3-76.4	60.6	49.1-72.2	68.2	62.8-73.5
15-64 years	71.7	67.2-76.3	66.8	57.1-76.4	70.1	65.4-74.8

95% confidence intervals (95% CI) are ranges calculated such that if the survey were repeated multiple times, the resulting range would include the true population value 95% of the time. Viral load suppression is defined as HIV RNA <1,000 copies per milliliter of plasma among HIV-positive individuals.

* Incidence estimates were based on a very small number of recent infections. As the survey was not powered to estimate sex-disaggregated incidence in Ethiopia's urban centers, those estimates are not presented.

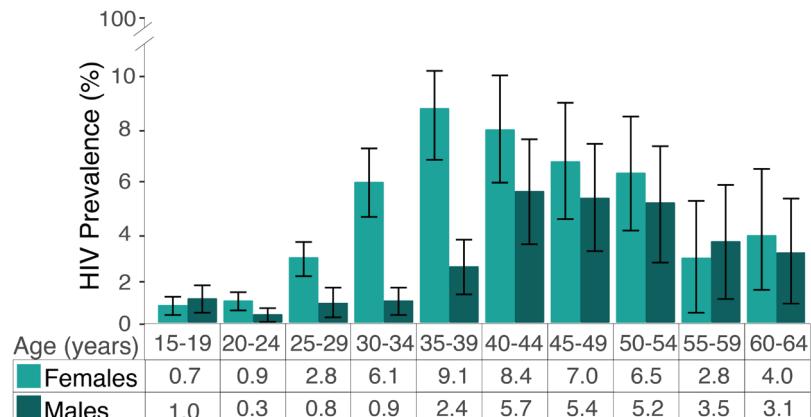
The annual incidence of HIV among adults (ages 15-64 years) in urban Ethiopia was 0.05%, which corresponded to approximately 6,000 new cases of HIV annually among adults living in urban Ethiopia.

Prevalence of HIV among adults in urban Ethiopia was 3.0%: 4.1% among women and 1.9% among men. This corresponds to approximately 380,000 adults living with HIV in urban Ethiopia as of April 2018. Prevalence of HIV among children (defined as those aged 0-14 years) in urban Ethiopia was 0.3%, the same among both girls and boys. This corresponds to approximately 19,000 children living with HIV in urban Ethiopia.

Prevalence of VLS among HIV-positive adults in urban Ethiopia was 70.1%: 71.7% among women and 66.8% among men. Note, these findings of VLS among people living with HIV were regardless of knowledge of HIV status or use of antiretroviral (ART).

HIV PREVALENCE, BY AGE AND SEX, IN URBAN AREAS

Among adults (ages 15-64 years) in urban Ethiopia, there were gender differences in HIV prevalence by age. This was most pronounced among 30-34 year-olds where the prevalence was almost seven times higher among women (6.1%) than among men (0.9%). Among women, HIV prevalence peaked at 9.1% among ages 35-39 years. Among men, HIV prevalence peaked at 5.7% among ages 40-44 years.

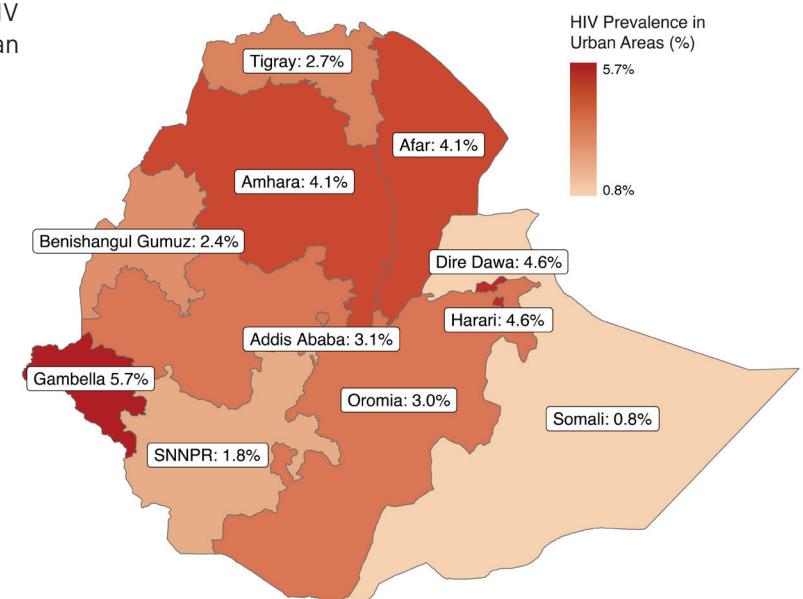


Error bars represent 95% confidence intervals (95% CI), ranges calculated such that if the survey were repeated multiple times, the resulting range would include the true population value 95% of the time.

HIV PREVALENCE AMONG ADULTS IN URBAN AREAS, BY REGION

Among adults in urban Ethiopia, prevalence of HIV varied geographically, ranging from 0.8% in Ethiopian Somali region to 5.7% in Gambella region.

Region	HIV Prevalence in Urban Areas (%)	95% CI
Tigray	2.7	1.3-4.0
Afar	4.1	2.1-6.1
Amhara	4.1	3.0-5.2
Oromia	3.0	2.2-3.8
Somali	0.8	0.0-1.6
Benishangul Gumuz	2.4	1.5-3.4
SNNPR	1.8	1.0-2.5
Gambella	5.7	2.2-9.2
Harari	4.6	3.2-6.0
Addis Ababa	3.1	2.1-4.0
Dire Dawa	4.6	2.2-7.1
Total	3.0	2.6-3.4

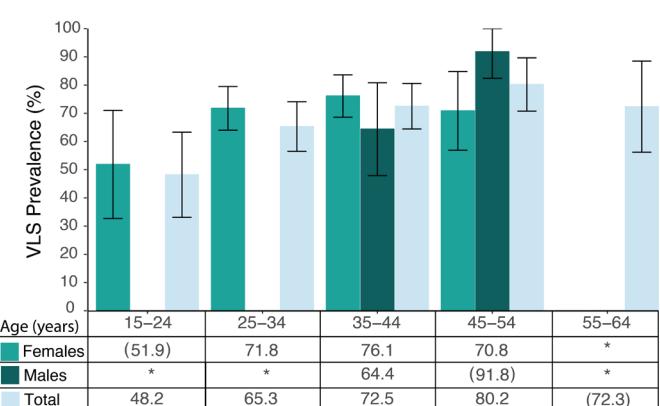


95% confidence intervals (95% CI), ranges calculated such that if the survey were repeated multiple times, the resulting range would include the true population value 95% of the time.

VIRAL LOAD SUPPRESSION AMONG HIV-POSITIVE PEOPLE, BY AGE AND SEX, IN URBAN AREAS

Prevalence of VLS among HIV-positive adults in urban Ethiopia peaked at 80.2% among adults aged 45-54 years. In contrast, VLS was distinctly lower (48.2%) in young people (those aged 15-24 years). Among women, VLS peaked at 76.1% among those aged 35-44 years. Among men VLS peaked at 91.8% among those aged 45-54 years. Note, these findings of VLS among people living with HIV were regardless of knowledge of HIV status or use of ART.

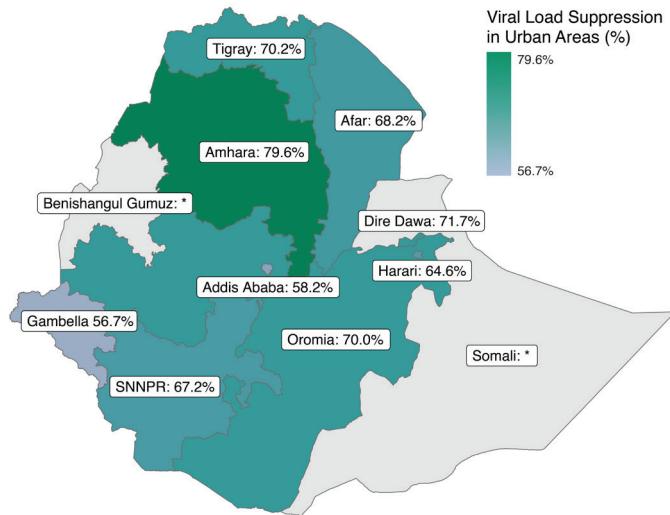
Estimates based on a denominator less than 25 have been suppressed with an asterisk. Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.
Error bars represent 95% confidence intervals (95% CI), ranges calculated such that if the survey were repeated multiple times, the resulting range would include the true population value 95% of the time.



VIRAL LOAD SUPPRESSION AMONG HIV-POSITIVE ADULTS IN URBAN AREAS, BY REGION

Among HIV-positive adults (ages 15-64 years), VLS varied geographically in urban areas across regions from 56.7% in Gambella region to 79.6% in Amhara region.

Region	VLS Prevalence in Urban Areas (%)	95% CI
Tigray	(70.2)	56.2- 84.1
Afar	(68.2)	53.1- 83.2
Amhara	79.6	69.2- 89.9
Oromia	70.0	61.2- 78.8
Somali	*	*
Benishangul Gumuz	*	*
SNNPR	(67.2)	52.4- 81.9
Gambella	(56.7)	38.3- 75.1
Harari	(64.6)	50.3- 78.9
Addis Ababa	58.2	46.4- 70.1
Dire Dawa	(71.7)	49.3- 94.1
Total	70.1	65.4-74.8



95% confidence intervals (95% CI) are ranges calculated such that if the survey were repeated multiple times, the resulting range would include the true population value 95% of the time. Estimates based on a denominator less than 25 have been suppressed with an asterisk. Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

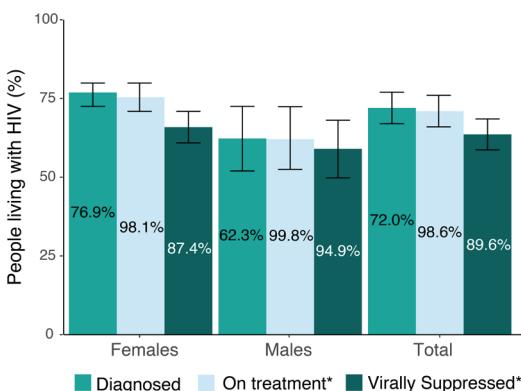
ACHIEVEMENT OF THE 90-90-90 GOALS AMONG HIV-POSITIVE ADULTS, BY SEX, IN URBAN AREAS

90-90-90: An ambitious treatment target to help end the AIDS epidemic

The Joint United Nations Programme on HIV/AIDS (UNAIDS) has set targets that by 2020, 90% of all people living with HIV will know their HIV status; 90% of all people with diagnosed HIV infection will receive sustained ART; and 90% of all people receiving ART will have viral suppression.

Diagnosed

In urban Ethiopia, 79.0% of adults living with HIV knew their HIV status, based upon self-report or the detection of ARVs: 83.3% of HIV-positive women and 70.0% of HIV-positive men .



Percentages shown in the graph refer to the conditional 90-90-90 targets described in the text at left. The height of the bars represents the overall HIV treatment and care cascade. Error bars represent 95% confidence intervals (95% CI)-ranges calculated such that if the survey were repeated multiple times, the resulting range would include the true population value 95% of the time.

On Treatment

Among adults living with HIV who knew their HIV status, 97.1% were on ART, based upon self-report or the detection of ARVs: 96.4% of HIV-positive women and 98.9% of HIV-positive men.

Virally Suppressed

Among adults living with HIV in urban Ethiopia on ART, based on self-report or ARV detection, 87.6% achieved VLS: 86.1% of HIV-positive women and 91.1% of HIV-positive men.

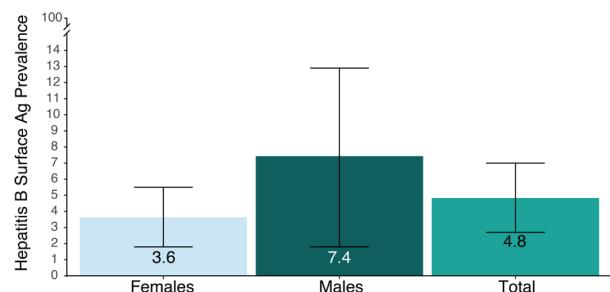
Overall HIV Treatment and Care Cascade

Among all adults living with HIV in urban Ethiopia (including those not yet diagnosed), 76.7% were on treatment, and 67.2% had achieved VLS on ART.

SEROPREVALENCE OF HEPATITIS B SURFACE ANTIGEN AMONG HIV-POSITIVE ADULTS, IN URBAN AREAS

The seroprevalence of hepatitis B surface antigen among adults in urban Ethiopia was 4.8%. The prevalence was 3.6% in women and 7.4% in men. Hepatitis B testing was conducted using a serological rapid diagnostic test for hepatitis B surface antigen.

Error bars in the figure to the right represent 95% confidence intervals (95% CI), ranges calculated such that if the survey were repeated multiple times, the resulting range would include the true population value 95% of the time.

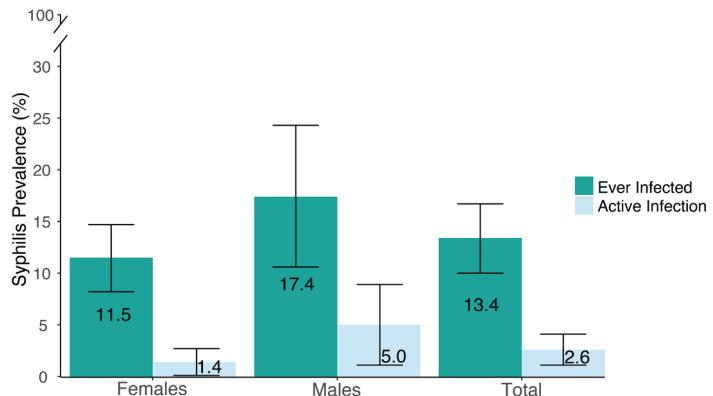


SYPHILIS PREVALENCE AMONG HIV-POSITIVE ADULTS, BY SEX, IN URBAN AREAS

Syphilis testing was conducted for HIV-positive adults (ages 15-64 years), using a serological dual nontreponemal and treponemal rapid diagnostic test. Among HIV-positive adults in urban Ethiopia, 11.5% of women and 17.4% of men have ever been infected with syphilis.¹ The prevalence of active syphilis infection differed among HIV-positive women and men: 1.4% among women and 5.0% among men.

¹ The percentage of adults ever infected with syphilis includes people with active infection. Participants whose test was reactive only to treponemal antibodies were considered ever infected.

Error bars represent 95% confidence intervals.



CONCLUSIONS

- Ethiopia has made considerable progress toward the UNAIDS targets of 90-90-90 in urban areas for adults ages 15-64 years. There is room for improvement in achieving the first 90, particularly for men. Case finding through expansion of targeted HIV testing will be essential to achieving epidemic control in urban Ethiopia by 2020.
- Among the overall HIV-positive adult population in urban areas, 67.2% achieved VLS on treatment—close to the UNAIDS target for 2020 (90%*90%*90% = 73%), but this varied by age, gender, and geographic region. (Note, the estimate for VLS on treatment was slightly lower than the estimate reported for VLS at the population level, which may have included some individuals with low viral load measurements who were not yet diagnosed or on treatment). Interventions to improve VLS—particularly among younger age groups—are needed.
- HIV prevalence in urban Ethiopia varied by age, gender, and geographic region.

RESPONSE RATES AND HIV TESTING METHODS

Of 11,581 eligible households, 90.9% completed a household interview. Of 12,618 eligible women and 8,920 eligible men ages 15-64 years, 91.9% of eligible women and 84.5% of eligible men were interviewed and tested for HIV. Of 5,536 eligible children ages 0-14 years, 85.4% were tested for HIV. The overall response rates for adults ages 15-64 years was 80.8%; 83.6% for women, 76.8% for men ages 15-64 years. The overall response rate for children ages 0-14 years was 77.6%.

HIV prevalence testing was conducted in each household using a serological rapid diagnostic testing algorithm based on Ethiopia's national guidelines, with laboratory confirmation of seropositive samples using a supplemental assay. A laboratory-based incidence testing algorithm (HIV-1 limiting antigen avidity plus viral load and ARV detection) was used to distinguish recent (within the last year) from long-term infections and incidence estimates were then obtained using the formula recommended by the World Health Organization Incidence Working Group and Consortium for Evaluation and Performance of Incidence Assays, and were calculated using the following parameters: mean duration of recent infection of 130 days with a time cutoff = 1.0 year and residual proportion false recent = 0.00. Survey weights were utilized for all estimates.

The PHIA Project is a multi-country project funded by PEPFAR to conduct national HIV-focused surveys that describe the status of the HIV epidemic. Results measure important national and regional HIV-related parameters in urban areas, including progress toward 90-90-90 goals, and will guide policy and funding priorities. ICAP at Columbia University is implementing the PHIA Project in close collaboration with CDC and other partners.

See phia.icap.columbia.edu for more details.



The mark "CDC" is owned by the US Dept. of Health and Human Services and is used with permission. Use of this logo is not an endorsement by HHS or CDC of any particular product, service, or enterprise.

This project is supported by the U.S. President's Emergency Plan for AIDS Relief (PEPFAR) through CDC under the terms of cooperative agreement #U2GGH001226. The findings and conclusion are those of the authors and do not necessarily represent the official position of the funding agencies. The results presented here should be considered preliminary and are subject to change.