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Towards achieving the fast-track targets and ending the epidemic of HIV/AIDS in Ethiopia: Successes and challenges

Yibeltal Assefa[a,*], Charles F. Gilks[a], Judith Dean[a], Betru Tekle[b], Meskele Lera[c], Taye Tolera Balcha[d], Yimam Getaneh[e], Wim Van Damme[f], Peter S. Hill[a]

[a] School of Public Health, the University of Queensland, Brisbane, Australia
[b] United Nations Programme on HIV/AIDS, Kigali, Rwanda
[c] Federal Ministry of Health, Addis Ababa, Ethiopia
[d] Armauer Hansen Research Institute, Addis Ababa, Ethiopia
[e] Ethiopian Public Health Institute, Addis Ababa, Ethiopia
[f] Department of Public Health, Institute of Tropical Medicine, Antwerp, Belgium

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ABSTRACT

Background: Ethiopia has adopted the global plan to end the epidemic of HIV/AIDS. The aim of this study was to assess the progress made towards achieving this plan.
Methods: A review and analysis of national population-based surveys, surveillance, and routine programme data was executed. The data analysis was conducted using Excel 2016 and Stata 14 (StataCorp LP, College Station, TX, USA).
Results: Between 2011 and 2016, the number of HIV-related deaths dropped by 58%, while that of new HIV infections dropped by only 6%. Discriminatory attitudes declined significantly from 77.9% (95% confidence interval (CI) 77.3–78.4%) in 2011 to 41.5% (95% CI 40.6–42.4%) in 2016. Around 79% of adult people living with HIV (PLHIV) were aware of their HIV status; 90% of PLHIV who were aware of their HIV status were taking antiretroviral treatment (ART) and 88% of adult PLHIV on ART had viral suppression in 2016. The proportion of people aged 15–49 years who had ever been tested for HIV and had received results increased from 39.8% (95% CI 39.2–40.4%) in 2011 to 44.8% (95% CI 44.2–45.4%) in 2016. This proportion was very low among children below age 15 years at only 6.2% (95% CI 5.9–6.5%). Among regions, HIV testing coverage varied from 13% to 72%. Female sex workers had lower coverage for HIV testing (31%) and ART (70%) than the national average in the adult population. International funding for HIV dropped from more than US$ 1.3 billion in 2010–2012 to less than US$ 800 million in 2016–2018.
Conclusions: Ethiopia is on track to achieve the targets for HIV testing, ART, viral suppression, and AIDS-related deaths, but not for reductions in new HIV infections, discriminatory attitudes, and equity. Ending the epidemic of HIV/AIDS requires a combined response, including prevention and treatment, tailored to key populations and locations, as well as increased funding.

Introduction

Concerted international solidarity and national efforts during the era of the Millennium Development Goals (MDGs) resulted in declining trends in AIDS-related deaths and new HIV infections (UNAIDS, 2014a, 2016). The Sustainable Development Goals (SDGs), based on the lessons learned from the MDGs, aim to end the epidemic of HIV/AIDS by 2030 (Sidibé, 2015; USAID, 2016). This will result in a 90% decline in the number of new HIV infections and AIDS-related deaths between 2010 and 2030 (UNAIDS, 2014c).

The plan towards ending the epidemic of HIV/AIDS has three fast-track milestones to be reached by 2020: reduce new HIV infections and HIV-related deaths to fewer than 500 000 globally and eliminate HIV-related stigma and discrimination. The fast-track response also sets out targets on the HIV treatment cascade: 90% of people living with HIV (PLHIV) knowing their HIV status, 90% of people who know their status receiving treatment, and 90% of people on treatment having a suppressed viral load (UNAIDS, 2014b).

Since the launch of this global plan, substantial progress has been made: in 2017, three quarters of PLHIV globally knew their HIV status

* Corresponding author.
E-mail address: y.alemu@uq.edu.au (Y. Assefa).

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and among those who knew their HIV status, 79% were accessing antiretroviral therapy (ART). Furthermore, 81% of people accessing ART had suppressed viral loads (UNAIDS, 2018). This contributed to a 37% global decline in HIV-related deaths and an 18% global decline in new HIV infections between 2010 and 2017 (UNAIDS, 2018).

Ending the epidemic of HIV/AIDS has received significant support at the global and national levels, even though it is believed to be an ambitious goal. Ethiopia is one of the countries that has adopted this ambitious goal and developed an investment case towards achieving the fast-track targets and ending the epidemic of HIV/AIDS by 2030 (FMOH, 2015). A recent study, reviewing the performance of the ART programme in Ethiopia, identified successes and challenges of the programme and recommended further and systematic analysis of the overall HIV/AIDS response in the country (Assefa et al., 2017).

The objective of this follow on study is to review the progress made towards achieving the fast-track targets and ending the epidemic of HIV/AIDS in Ethiopia. It was hypothesized that there are lessons, in terms of both successes and challenges, which need to be identified and utilized towards ending the epidemic of HIV/AIDS in Ethiopia and other countries with a similar context.

Methods

Setting

Ethiopia has a federal government structure consisting of nine regional states (Tigray, Afar, Amhara, Oromia, Somali, Southern Nation Nationalities and Peoples Region (SNNPR), Benishangul-Gumuz (BG), Gambela, and Harari) and two city administrations councils (Dire Dawa (DD) and Addis Ababa (the capital city)). More than 80% of the population live in rural areas. The proportion of rural population varies across regions, ranging from 75% in Tigray to 90% in SNNPR (Federal Democratic Republic of Ethiopia-Population Census Commission, 2008). The burden of HIV varies across these regions, with the highest prevalence in Gambela region (4.8%) and the lowest in Somali region (0.1%) (Central Statistical Agency, 2017).

Since the first AIDS cases were identified in 1986, the HIV/AIDS epidemic has passed through various phases, from a concentrated epidemic among key populations (such as female sex workers (FSWs)), followed by rapid expansion into the general population, to the current phase of declining incidence (Berhane et al., 2008; Kloos and Mariam, 2000). The country has responded to the epidemic in phases (Okubagzhi and Singh, 2002). The early phase of the response focused primarily on the health sector (Kebede et al., 2000). In the next phase (multisectoral response), the government issued a national AIDS policy in 1998 (Federal Democratic Republic of Ethiopia, 1998), and established a National AIDS Council (NAC) and its Secretariat, the Federal HIV and AIDS Prevention and Control Office (FHAPCO) in 2000 (Okubagzhi and Singh, 2002). Three consecutive 5-year strategic frameworks were developed and implemented to intensify the multisectoral response to HIV/AIDS: (1) strategic framework for the national response to HIV and AIDS in Ethiopia (2001–2005) (FHAPCO, 2004); (2) strategic plan for intensifying the multisectoral HIV/AIDS response in Ethiopia, SPM-I (2004–2008) (FHAPCO, 2009); and (3) strategic plan for intensifying the multisectoral HIV/AIDS response in Ethiopia, SPM-II (2010–2014) (FHAPCO, 2010). The response to the epidemic has also been guided by the health policy and the health sector development plans (I–IV) since 1997 (FMOH, 2016; Assefa and Kloos, 2008).

Study design

A retrospective study was conducted to review and analyze national population-based surveys, surveillance, and routine programme data reported by the Federal Ministry of Health and its agencies. A set of complementary methods and a variety of nationally representative data sources were used, including the 2005 (Central Statistical Agency, 2006), 2011 (Central Statistical Agency, 2012), and 2016 (Central Statistical Agency, 2017) Ethiopian Demographic and Health Surveys (DHSs). The standard DHS wealth index was employed to categorize the population into the five wealth quintiles (ranging from the lowest to the highest) (Rutstein et al., 2004).

Estimates for new HIV infections, HIV-related deaths, comprehensive knowledge, sexual activity, condom use, discrimination, HIV testing, ART, viral suppression, and funding for HIV were calculated. The data for new HIV infections and HIV-related deaths were extracted from estimates and projections conducted by the Ethiopian Public Health Institute (EPHI) and its partners (EPHI, 2012, 2017; FHAPCO, 2007).

The data came from different national offices (Federal Ministry of Health (FMOH), FHAPCO, EPHI, and the Ethiopian Central Statistics Authority) and global agencies (Joint United Nations Programme on HIV and AIDS (UNAIDS) and President's Emergency Plan for AIDS Relief (PEPFAR)) working in Ethiopia. The data for population-level HIV prevalence and HIV prevention activities and testing services were acquired from the DHSs. The data for stigma and discrimination were obtained from the DHSs and reports from FHAPCO and UNAIDS. The data for HIV testing, treatment, and viral suppression were synthesized from programme reports on HIV testing and treatment from FMOH, FHAPCO, PEPFAR, and UN agencies. Table 1 below summarizes the indicators used in the study and the associated data sources.

Data analysis

Data were entered and cleaned using Excel 2016. The data analysis was conducted using Excel 2016 and Stata 14 (StataCorp LP, College Station, TX, USA). Trends in coverage indicators and equity measures across wealth quintiles, regions, and residential groups were produced. Correlation analysis was conducted to estimate the association between coverage for HIV testing and other variables. The z-test was used, with statistical significance defined at a p-value of <0.05.

Ethical approval for this study was obtained from the Scientific and Ethics Review Committee of the Ethiopian Public Health Institute.

Results

The findings of this study are organized to show levels and trends in (1) the number of PLHIV, new HIV infections, and deaths; (2) discriminatory attitudes; (3) fast-track targets; (4) inequity in HIV services; and (5) funding for HIV.

Number of PLHIV, new HIV infections, and deaths

The prevalence of HIV among 15–49-year-olds declined from 1.5% (95% CI 1.3–1.7%) in 2011 to 0.9% (95% CI 0.7–1.1%) in 2016 (Central Statistical Agency, 2006, 2012, 2017). Figure 1 shows that there was a marked drop in adult PLHIV, new infections, and deaths between 2005 and 2011. New infections dropped by almost 90% (from 101 144 to 10 556) and deaths dropped by 54% (from 87 860 to 16 782) between 2005 and 2011.

The estimated number of adult PLHIV continued to decline by 18% from 607 711 (95% CI 550 991–664 431) in 2011 to 495 720 (95% CI 429 624–561 816) in 2016. There was a small drop, by 6%, in number of new HIV infections from 11 228 in 2011 to 10 556 in 2016. On the other hand, the number of deaths dropped markedly, by 58%, from 40 082 in 2011 to 16 782 in 2016 (Figure 1) (Central Statistical Agency, 2012, 2017).

Table 1
Indicators used in the study and the associated data sources.

Indicators	Data sources
New HIV infections and AIDS-related deaths	
Number of new HIV infections	HIV-related estimates and projections
Number of AIDS-related deaths	HIV-related estimates and projections
Stigma and discrimination	
Percentage with discriminatory attitudes towards people living with HIV	DHS 2005, 2011, 2016
HIV prevention	
Percentage with comprehensive knowledge of HIV	DHS 2000, 2005, 2011, 2016
Percentage who had 2+ partners in the past 12 months	DHS 2000, 2005, 2011, 2016
Percentage who had intercourse in the past 12 months with a person who was neither their husband nor de facto partner	DHS 2000, 2005, 2011, 2016
Condom use at last higher-risk sex (with a non-marital, non-cohabiting partner)	DHS 2000, 2005, 2011, 2016
Percentage of adults age 15–49 years using condom with non-regular partner during the last sexual act	DHS 2000, 2005, 2011, 2016
HIV testing in the general population	
Adults tested for HIV	DHS 2005, 2011, 2016
Children tested for HIV	DHS 2005, 2011, 2016
Pregnant women tested for HIV	DHS 2005, 2011, 2016
People living with HIV: testing, treatment, and viral suppression	
Adults on ART	FMOH, FHAPCO, and PEPFAR
Pregnant women on ART	FMOH, FHAPCO, and PEPFAR
Adults on ART and with viral suppression	FMOH, FHAPCO, and PEPFAR

DHS, Demographic and Health Survey; ART, antiretroviral therapy; FMOH, Federal Ministry of Health; FHAPCO, Federal HIV and AIDS Prevention and Control Office; PEPFAR, President's Emergency Plan for AIDS Relief.

Discriminatory attitudes towards PLHIV

The plan to end the epidemic of HIV also aims to end discrimination. It was found that discriminatory attitudes declined significantly from 77.9% (95% CI 77.3–78.4%) in 2011 to 41.5% (95% CI 40.6–42.4%) in 2016 (Central Statistical Agency, 2006, 2012, 2017).

Fast-track targets

The proportion of PLHIV who already knew their HIV diagnosis increased significantly from 4.7% (95% CI 4.32–5.08%) in 2005 to 71.8% (95% CI 70.9–78.3%) in 2011 to 78.7% (95% CI 73.4–84.0%) in 2016. HIV testing services were targeting those at higher risk of HIV: 78.7% (95% CI 73.4–84.0%) of HIV-positive people knew their HIV status compared to only 44.8% (95% CI 44.2–45.4%) of HIV-negative people in 2016 (Central Statistical Agency, 2006, 2012, 2017).

Close to 90% of adult PLHIV, who were aware of their HIV diagnosis, were taking ART in 2016. ART coverage among all adult PLHIV increased significantly from less than 1% in 2005 to 71% in 2016 (Assefa et al., 2017; UNAIDS, 2017a). It was also found that 73% of HIV-positive pregnant women were receiving ART by 2016. Close to 88% of adult PLHIV taking ART had viral suppression, which was also equivalent to 63% of all adult PLHIV in the country (Figure 2) (Assefa et al., 2017; Central Statistical Agency, 2017).

Comprehensive knowledge about HIV

Comprehensive knowledge remained very low, although it increased from 19.8% (95% CI 19.24–20.36%) in 2005 to 27.9% (95% CI 27.4–28.4%) in 2016. Comprehensive knowledge increased from

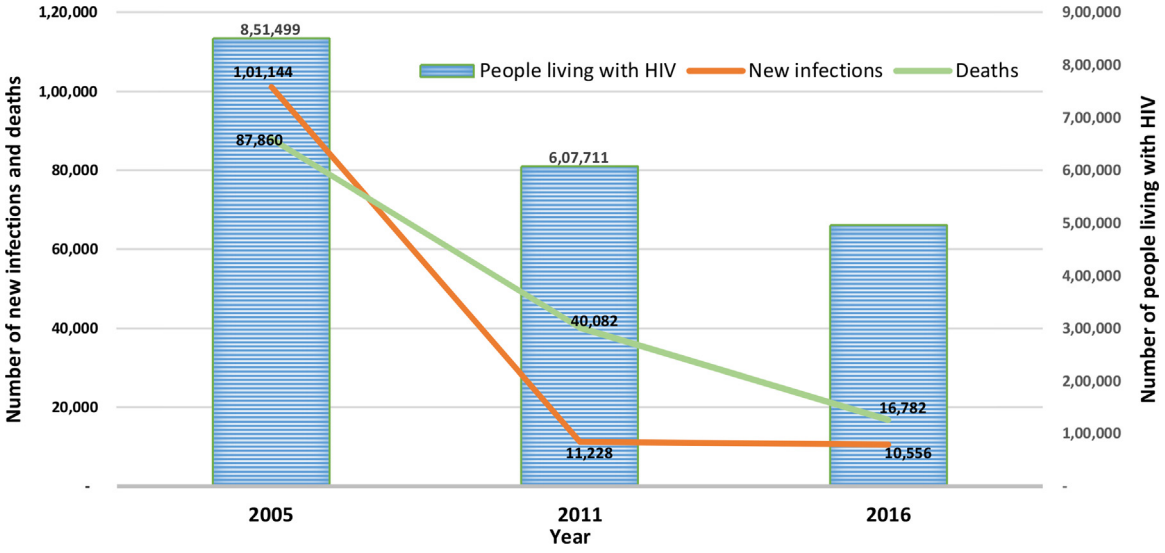

Figure 1. Estimated numbers of the adult population living with HIV, new HIV infections, and AIDS-related deaths in Ethiopia in 2005, 2011, and 2016.

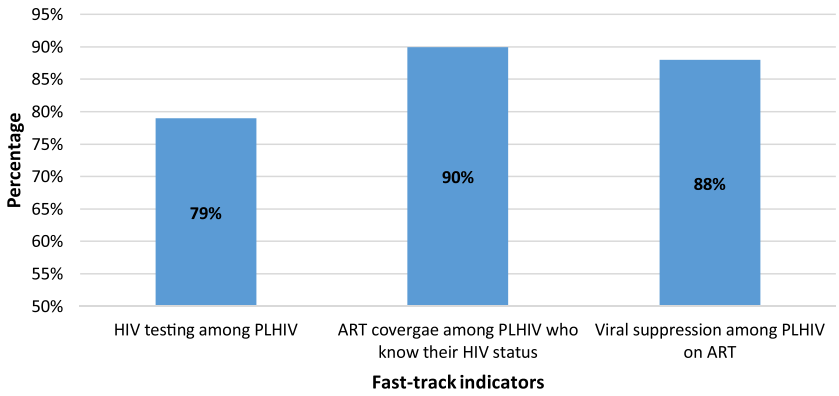

Figure 2. Fast-track targets for HIV testing, treatment, and viral suppression among the adult population living with HIV in Ethiopia, 2016[a].
[a]The data for level of viral suppression are estimated from multi-site advanced clinical monitoring and nationwide treatment failure studies in Ethiopia: https://www.ncbi.nlm.nih.gov/pubmed/28465649.

15.8% (95% CI 15.2–16.4%) in women and 30% (95% CI 28.8–31.2%) in men aged 15–49 years in 2005 to 20.2% (95% CI 19.6–20.8%) in women and 38.3% (95% CI 37.4–39.2%) in men aged 15–49 years in 2016. Comprehensive knowledge among young people aged 15–24 years remained low, although it increased from 24% in 2005 to 31% in 2016. Urban youth (42% of women and 48% of men) were found to be more likely than rural youth (19% of women and 37% of men) to have comprehensive knowledge (Central Statistical Agency, 2006, 2012, 2017).

Multiple sexual partners and condom use

The proportion of people with multiple sexual partners remained low over time: 1.8% (95% CI 1.5–2.1%) in 2005, 1.8% (95% CI 1.65–1.95%) in 2011, and 1.7% (95% CI 1.55–1.85%) in 2016 (Central Statistical Agency, 2006, 2012, 2017). Condom use at last sex with a non-marital or non-cohabiting partner was very low at 23.8% (95% CI 17.5–30.1%) among young women and was 54.5% (95% CI 49.6–59.4) among young men (Central Statistical Agency, 2017). The percentage of women who had sexual intercourse before age 15 years was 22% among women with no education and 1% among those with more than secondary education (Central Statistical Agency, 2006, 2012, 2017).

Inequity

Discriminatory attitudes varied across regions with the lowest in Addis Ababa (18% of women and 17% of men) and highest in the Somali region (78% of women and 73% of men). Higher education, wealth, and urban residence were related to less discriminatory attitudes. For example, in 2016, 27% of women and 34% of men with a secondary education had discriminatory attitudes compared with 80% of women and 67% of men with no education (Central Statistical Agency, 2006, 2012, 2017).

There were notable differences in comprehensive knowledge between women (20.2%) and men (38.3%). Comprehensive knowledge increased with education: 8% of women and 27% of men with no education demonstrated comprehensive knowledge compared to 51% of women and 58% of men with more than secondary education (Central Statistical Agency, 2006, 2012, 2017).

It was found that the proportion of women and men who had been tested for HIV in the past 12 months was twice as high in urban areas (36% of women and 33% of men) as in rural areas (15% of both women and men). HIV testing coverage ranged from 13% in the Somali region to 72% in Addis Ababa (Table 2) (Central Statistical Agency, 2006, 2012, 2017).

Table 2
HIV testing coverage in Ethiopia in 2005, 2011, and 2016.

Background characteristics	General adult population tested for HIV and received results		
	2005	2011	2016
Urban	16.6% (16.2–17.0)	61.2% (60.6–61.8)	66.7% (65.1–68.3)
Rural	1.0% (0.6–1.4)	27.8% (27.2–28.4)	38.2% (37.6–38.9)
Somali region	1.9% (1.5–2.3)	10.6% (10.0–11.2)	12.8% (12.2–13.4)
Gambela	1.0% (0.2–2.0)	48.9% (46.7–51.1)	64.3% (48.4–80.2)
Addis Ababa	26.5% (26.1–26.9)	65.2% (64.6–65.8)	71.6% (71.0–72.2)
No education	0.6% (0.2–1.0)	24.1% (23.5–24.7)	31.4% (30.8–32.0)
Secondary and higher education	20.8% (20.4–21.2)	65.1% (64.5–65.7)	57.6% (57.0–58.2)
Lowest wealth quintile	0	18.2% (17.6–18.8)	21.2% (20.6–21.8)
Highest wealth quintile	12.5% (12.1–12.9)	61.3% (60.7–61.9)	64.1% (63.5–64.7)
Total	4.7% (4.32–5.08)	39.8% (39.2–40.4)	44.8% (44.2–45.4)

HIV testing tended to increase with the level of education from 14% of women and 13% of men with no education to 44% of women and 39% of men with more than secondary education. Women who were living in urban areas, highly educated, and with the highest wealth quintile reported higher HIV testing prior to getting married or living with a partner than the other women (Central Statistical Agency, 2017).

More than half of the women in urban areas (56%) had been tested for HIV and had received results compared to 14% of those in rural areas. HIV testing during pregnancy increased with education: 24% in women with no education and 88% in women with more than a secondary education (Central Statistical Agency, 2017).

Only 6.2% (95% CI 5.9–6.5) of children below age 15 years (22% (95% CI 20.5–23.5%) in urban areas and 5% (95% CI 4.7–5.3) in rural areas) had been tested for HIV. HIV testing in children was highest in Addis Ababa (23%), followed by Tigray (14.6%), and lowest in Somali region (2%). Children born to mothers with more than a secondary education (28.6%) and in the highest wealth quintile (17.3%) were almost seven times more likely to have been tested for HIV than those born to mothers with no education (4.4%) and in the lowest wealth quintiles (2.8%) (Central Statistical Agency, 2017).

A positive correlation was found between proportions of HIV testing and ART, with a Pearson correlation coefficient of 0.64 across regions in the country. On the other hand, a negative correlation was found between the proportions of HIV testing and the drop in number of PLHIV, with a Pearson correlation coefficient of −0.60 across regions in the country (Assefa et al., 2017; Central Statistical Agency, 2017).

Key populations

FSWs are one of the recognized key populations in the country. In spite of the high HIV prevalence in FSWs (23%, 95% CI 19–28%), coverage of HIV testing and ART services in this population group were less than the coverage in the general population: only 31% of FSWs living with HIV were aware of their HIV status, and of those FSWs who knew their HIV status, close to 70% were taking ART (EPHI, 2014).

Other globally recognized key populations (people who inject drugs, transgender people, prisoners, and men who have sex with men, and their sexual partners) have not been studied and described in the country. There is indeed a lack of data on the epidemiology of and service delivery to these population groups.

Funding for HIV

External funding from the Global Fund and PEPFAR increased by almost two-fold from less than US$ 700 million in 2004–2006 to more than US$ 1.3 billion in 2010–2012. Since this significant increment, there has been a sustained decline since 2013, to less than US$ 800 million in 2016–2018. Furthermore, the recent national health account indicated that external funding for HIV dropped from 80% in 2007–2008 to 50% in 2013–2014 of the total resource for HIV/AIDS, which also dropped from 20% of the total health expenditure (THE) in 2007–2008 to 10% of the THE in 2013–2014 (FMOH, 2017; Glassman, 2012; Health Works Collective, 2012). On the other hand, domestic funding for HIV and other health programmes has increased in Ethiopia over time (Assefa et al., 2018). However, more resources are still required to finance the implementation of the country's investment case towards achieving the fast-track targets and ending the epidemic of HIV/AIDS (FHAPCO, 2014).

Figure 3 shows the funding for HIV from the Global Fund and PEPFAR in Ethiopia for the period 2004–2018.

Discussion

In this study, it was found that Ethiopia is on track to achieve the fast-track targets (HIV testing, ART, viral suppression) and reduction in AIDS-related deaths. However, achieving these targets is not sufficient to end the epidemic of HIV, as the country is lagging behind the targets for reductions in new HIV infections, discriminatory attitudes, and HIV prevention. Moreover, there is inequity in coverage of HIV services among populations and locations. International funding for HIV has also been declining recently. These successes and challenges are also present in other parts of the world (Levi et al., 2016; UNAIDS, 2017b).

This study identified that there was a marked drop in HIV-related deaths from 40 082 to 16 782 between 2011 and 2016. This can be explained by the large-scale expansion of HIV testing and ART services in the country. On the other hand, a gap in HIV testing will definitely establish a gap in the fast-track targets, as HIV testing is an entry point for HIV-related care and treatment services. It was found that around 21% of PLHIV are not aware of their HIV status due to inadequacies in HIV testing, and this has contributed to 73% of the gap in ART coverage. As for many countries around the globe (Cori et al., 2014), addressing this limitation in HIV testing is, indeed, an ongoing challenge that requires urgent action.

In general, multiple factors, including individual (Underwood et al., 2014), societal (Musheke et al., 2013), and structural (Group TAS, 2015), can influence the uptake of HIV testing (Bolsewicz et al., 2015). A range of interventions, such as information, education, and behavioural change programmes (Musheke et al., 2013), and innovative approaches addressing the complex intersection of individual, societal, and structural factors, including partner testing, opt-out testing, community-based testing, and self-testing, are required to address these factors (Sabapathy et al., 2012; Napierala Mavedzenge et al., 2013). In addition, to achieve high yield and impact, it is crucial that people are tested for HIV regularly (Mayer et al., 2013; Granich et al., 2010).

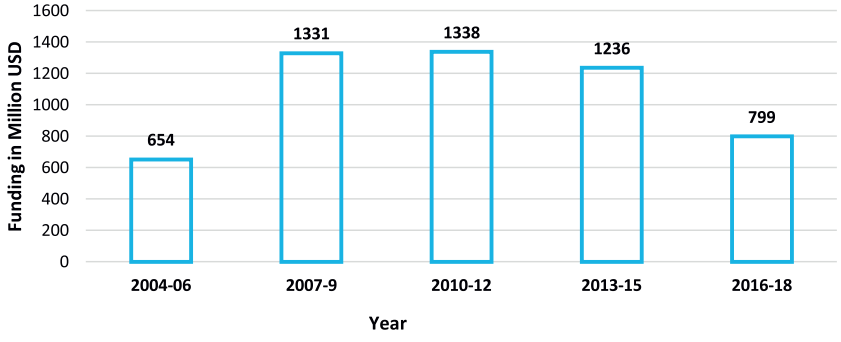

Figure 3. HIV funding from the Global Fund and PEPFAR in Ethiopia, 2004–2018.

Furthermore, HIV testing should be accompanied by strong linkage to care and ART provision (Olney et al., 2016). It was found that 27% of the gap in ART coverage was due to inadequacies in linkage to care, pre-ART retention, and timely initiation of ART (Assefa et al., 2010). Moreover, with an increasing patient caseload, both short- and long-term retention in care is crucial towards improved outcomes. These need appropriate models of care (Assefa et al., 2014), including differentiated care models (WHO, 2016). These are critical steps that influence the treatment cascade from HIV testing to viral suppression (Medley et al., 2015; Liau et al., 2013), which, in turn, is a measure of success of ART programmes (Camoni et al., 2015) that leads to reduced HIV transmission (Quinn et al., 2000) and related morbidity and mortality (Parra, 2016).

It is equally important to note that the level of viral suppression was based on viral load measurements in PLHIV who were alive and taking ART. The level of viral suppression (88%) in the country, therefore, represents the level of viral suppression in PLHIV who have managed to survive and stay in care. The 88% level of viral suppression does not reflect the full picture as it does not take into account PLHIV who were dead or lost to follow-up. It is rather appropriate to report that 63% of all PLHIV had achieved viral suppression. This could be due in part to the limited access to treatment monitoring and second-line ART services in Ethiopia (less than 2%, contrary to the 12% treatment failure) (Assefa et al., 2017; Assefa and Gilks, 2017). It is imperative that the country invests in these services to gain maximally from the prevention and survival benefits of both first- and second-line ART.

This study identified that the number of new HIV infections declined by only 6% (although it was expected to drop by 27%) between 2011 and 2016. This may be explained by the inadequate coverage of HIV prevention services, including low condom utilization (only 41% among adults 15–49 years of age who had sex with a non-regular partner) and low comprehensive knowledge on HIV prevention in 2016 (only 28%) (Central Statistical Agency, 2006, 2012, 2017). These data call for a much stronger combined HIV prevention response, including not only biomedical but also behavioural and structural dimensions. These need to be improved by providing consistent and tailored information, education, and behavioural change communication (Musheke et al., 2013). The scope of these services needs to be expanded enough so that they have an effect on reducing discriminatory attitudes towards PLHIV. Moreover, appropriate interventions that address structural issues, such as socio-economic status, that affect vulnerable population groups should be designed and implemented (Abdul-Quader and Collins, 2011). The pre-exposure prophylaxis (PrEP) programme, which has not yet started in the country, could also be an option for HIV prevention in key populations (Cowan et al., 2016).

This study found that there was a huge inequity in service coverage among regions, socio-economic status groups, age groups, and the sexes. These equity gaps can be explained by differentials in access to and utilization of services due to discrepancies in health-seeking behaviour and health systems capacity (EPHI, 2015). Services, therefore, need to be expanded with a focus on these special and key populations and locations by using appropriate models of service delivery that address the unique context and conditions of the locations and populations (WHO, 2010; Marmot et al., 2008). On the other hand, the inequity in service coverage could also be due to variations in epidemiology of HIV; however, further analysis is required to validate this.

This study identified that data on recognized key populations (FSWs, long-distance truck drivers, youth) are inadequate and that there is an absence of data on the epidemiology of HIV/AIDS and its response in globally recognized key populations (intravenous drug users, men having sex with men) in Ethiopia (Global Fund Observer, 2018). Therefore, an in-depth analysis of the epidemic in key populations and locations is of paramount importance for a targeted and effective response. Moreover, the goal of ending HIV/AIDS requires the recognition of key populations and the design of effective service delivery and monitoring and evaluation systems tailored to these population groups (WHO, 2015).

Finally, the goal of ending HIV/AIDS requires increased funding now more than ever. However, the data show that there has been a declining trend in international funding for HIV over time. This needs due attention and urgent action so that sustained and reliable funding is available and used efficiently. This is possible with enhanced government leadership to increase domestic resources and sustained global solidarity towards ending the epidemic of HIV/AIDS.

This study has both strengths and limitations. The strengths are (1) it is the first of its kind in the country that reviews the progress made towards fast-track targets and ending HIV/AIDS; (2) it used a variety of data sources; (3) it explored multiple programme components (prevention, treatment, new infections, death, and discriminatory attitudes); and (4) it assessed the progress across locations and population groups. The study also has limitations: (1) it is a retrospective observational study, based on secondary datasets, which may have inherent limitations related to data quality (including availability); however, these limitations are not systematic and will not affect the conclusions of the study; and, (2) it did not review the progress in children less than 15 years of age and pregnant women due to the lack of updated data on ART and viral suppression. Nevertheless, we argue that similar successes and challenges to those identified in this study could also be present in children and pregnant women. The following areas of future research are proposed: in-depth analyses of the epidemiology of HIV and access and utilization of services in key populations and locations, and a study to explain the variability in epidemiology of HIV and service delivery among regions in the country.

In conclusion, Ethiopia is on track towards achieving the fast-track targets and reduction in AIDS-related deaths. However, there are gaps in reducing new HIV infections, discriminatory attitudes, HIV prevention, equity, and funding. The response to end the epidemic of HIV/AIDS should employ combination prevention and enhanced treatment approaches, tailored to key populations and locations. These require sustained and predictable funding from both international and domestic sources.

Author contributions

YA: conceived the research idea, designed the study, conducted data collection and analysis, wrote the first and subsequent drafts of the manuscript; CFG and PSH: participated in the research design; YA, CFG, JD, BT, ML, TTL, YG, WVD, and PSH: critically reviewed and provided extensive feedback on all drafts of the manuscript. All authors approved the final version of the manuscript for submission.

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Data sharing

Data are available from the corresponding author.

Conflict of interest

None.

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