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## Short Communication

## Revisiting aid dependency for HIV programs in Sub-Saharan Africa



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## ABSTRACT

**Objective:** The overall increase in global domestic HIV expenditure obscures the specific performances of many sub-Saharan Africa (SSA) countries in local resourcing of their HIV programs. In this study, we explored the pattern and correlates of domestic HIV expenditure in SSA.

**Study design:** This is a cross-sectional ecological study.

**Methods:** Data were obtained from the Joint United Nations Programme on HIV/AIDS, World Bank, and the World Health Organization. We included 30 countries with available country-reported HIV expenditures between 2012 and 2017. From the most recent data, we examined the domestic (public and private) HIV expenditure as percentage of the total HIV expenditure. Using Spearman's rho, we assessed the correlation between domestic expenditure as percentage of the total HIV expenditure and HIV prevalence, antiretroviral coverage, gross national income (GNI) per capita, domestic general government health expenditure (GGHE-D) as percentage of general government expenditure, and GGHE-D per capita. Significant correlates at bivariate level were included in a multivariate median regression model.

**Results:** The median domestic HIV expenditure as percentage of the total HIV expenditure was 24.9% (interquartile range [IQR]: 8.5–39.3%). In 15 of 30 (50%) countries, domestic HIV expenditure as percentage of the total HIV expenditure was  $\leq 25\%$ . In 23 of 30 (77%) countries, public source accounted for  $>75\%$  of the domestic HIV expenditure. There was a significant positive correlation between domestic expenditure as percentage of total HIV expenditure and GNI per capita ( $r = 0.52$ ,  $P = 0.003$ ) and GGHE-D per capita ( $r = 0.494$ ,

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$P = 0.005$ ). In the multivariate median regression model, only GNI per capita remained statistically significant ( $\beta = 0.006$ ,  $P = 0.004$ ).

**Conclusions:** Some countries in SSA are still overly dependent on external support for their HIV response. Although increasing domestic HIV expenditure in these countries may require growth in the economy, governments can improve the fiscal space for HIV response by looking inward for innovative and sustainable funding mechanisms.

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## Background

The significant investment in the global HIV response has been critical to the progress recorded so far in the fight against HIV. Recent estimates show that about US\$ 21.3 billion was available in 2017 for the HIV response in low- and middle-income countries compared with US\$ 4.8 billion that was available in 2000.<sup>1</sup> However, meeting the 90-90-90 fast track target to end the HIV epidemic will require further and sustained investment in the response. According to the Joint United Nations Programme on HIV/AIDS (UNAIDS) estimates, about US\$ 23.9 billion will be needed for HIV response in 2020 in low- and middle-income countries.<sup>1</sup>

The sources of HIV expenditure in low- and middle-income countries are broadly classified into domestic and external (or international).<sup>2</sup> Domestic sources are HIV expenditures that emanate from within the country, which could be public (government) or private (philanthropic organizations, individuals, and household). External sources are largely from donor governments, provided through bilateral and multilateral channels. Remarkably, domestic expenditure has overtaken external funding in the total resources for HIV in low- and middle-income countries.<sup>1</sup> This is partially attributable to the growing political commitment and adherence to principle of additionality, where countries have to increase their domestic HIV funding in response to external funding.<sup>3</sup> Economic growth has also been reported to be associated with increasing domestic spending in low- and middle-income countries.<sup>4</sup>

Evidence indicates that sub-Saharan Africa (SSA)—which bears the largest burden of HIV—has had the highest growth in domestic expenditure in recent time compared with Latin America, South Asia, and Southeast Asia.<sup>4</sup> However, this aggregate increase masks the overreliance on external sources in some of these countries. Although not specific to SSA, an assessment of HIV expenditure in 38 high-burden, low-income, and middle-income countries from 2009 to 2013 reported that external funding was responsible for more than 75% of the HIV expenditure in 19 countries.<sup>5</sup>

With the flattening of external funding for HIV and increasing transitioning of funding responsibilities to host countries, improving ownership and domestic funding of HIV response in SSA has become important for sustainability of HIV programs. To advance policy discussion, an assessment of current status of domestic HIV funding with particular focus on SSA is imperative. In this study, we examined domestic HIV expenditure in SSA and its association with HIV

prevalence, government expenditure on health, and economy-related factors.

## Methods

The study was a cross-sectional, ecological analysis of country-reported HIV expenditures. We obtained the most recent available and validated data on annual country-reported HIV expenditures in SSA countries between 2012 and 2017 from the UNAIDS (<http://aidsinfo.unaids.org/>). Many countries use the National AIDS Spending Assessment classifications and definitions developed by the UNAIDS as framework to report HIV expenditures in a standardized way.<sup>2</sup> In addition, we obtained data on the antiretroviral therapy (ART) coverage and HIV prevalence corresponding to the year of the country-reported HIV expenditure from the UNAIDS. Data on gross national income (GNI) per capita, by Atlas method (current US\$) corresponding to the period of country-reported HIV expenditure, were obtained from the World Bank (<https://data.worldbank.org/indicator>). Data on domestic general government health expenditure (GGHE-D) as percentage of general government expenditure (GGE) and GGHE-D per capita in Int\$ were retrieved from the World Health Organization (<http://apps.who.int/nha/database/>). Thirty SSA countries with available data on all the variables were included in the study. The most recent available country-reported HIV expenditures ranged between 2012 and 2017: 2017 (7 countries), 2016 (3 countries), 2014 (6 countries), 2013 (9 countries), and 2012 (5 countries). Based on the GNI per capita, we stratified the countries into four income levels: low, lower-middle, upper-middle, and high.

From the total HIV expenditure, we estimated proportions of the domestic (public and private) HIV expenditure per country. Using Spearman's rho, we conducted bivariate analyses between domestic expenditure as percentage of the total HIV expenditure and HIV prevalence, proportion of people living with HIV (PLHIV) receiving ART, GGHE as percentage GGE and GNI per capita, and GGHE-D per capita. Multivariate median regression was performed with domestic expenditure as percentage of total HIV expenditure as the dependent variable and significant correlates at the bivariate analyses as the independent variables.  $P$ -value  $< 0.05$  was considered statistically significant. The data analysis was conducted using Stata 13.0.

## Results

### Domestic HIV expenditure as percentage of total HIV expenditure

The median annual total HIV expenditure per country was US\$ 60.7 million (interquartile range [IQR]: US\$ 17.6–244 million). Domestic HIV expenditure as percentage of the total HIV expenditure varied across the countries with a median of 24.9% (IQR: 8.5–39.3%). In approximately 13% (4/30) of the countries, domestic HIV expenditure as percentage of total HIV expenditure was >75%, whereas it was ≤25% in half of the countries (15/30). All the countries that had domestic HIV expenditure as percentage of total HIV expenditure of ≤25% were low-income and lower-middle-income countries (Fig. 1a). The median percentage of public contribution to domestic HIV expenditure was 96.7% (IQR: 76.5–100%). In approximately 77% (23/30) of the countries, public sources accounted for >75% of the domestic HIV expenditure (Fig. 1b).

### Bivariate and multivariate analyses

There were significant positive correlations between domestic HIV expenditure as percentage of the total HIV expenditure and GNI per capita ( $r = 0.52$ ,  $P = 0.003$ ) and GGHE-D per capita ( $r = 0.49$ ,  $P = 0.005$ ). However, correlations between domestic HIV expenditure as percentage of total HIV expenditure and HIV prevalence ( $r = 0.16$ ,  $P = 0.329$ ), GGHE-D as percentage of GGE ( $r = 0.23$ ,  $P = 0.223$ ), and ART coverage ( $r = -0.17$ ,  $P = 0.368$ ) were not statistically significant. In the multivariate median regression model that included GNI per capita and GGHE-D per capita, only GNI per capita remained statistically significant ( $\beta = 0.006$ ,  $P = 0.004$ ).

## Discussion

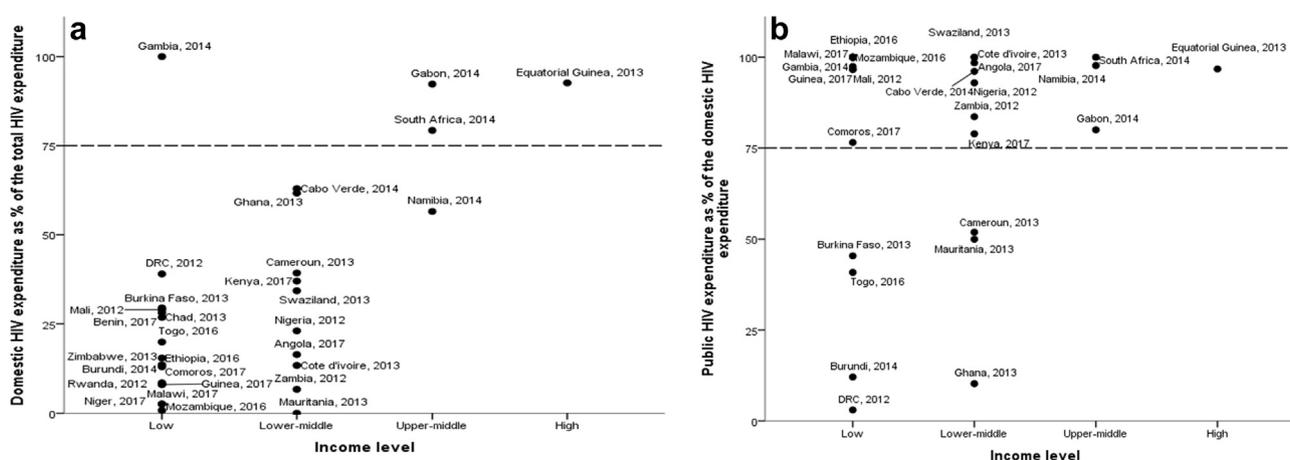
In our study that included 30 countries in SSA, we found that 50% relied on external sources for more than 75% of their total HIV expenditure, and public expenditure accounted for most domestic HIV expenditure in about two-thirds of the

countries. In addition, income level was found to be significantly associated with domestic HIV expenditure as percentage of the total HIV expenditure.

In response to the HIV epidemic in SSA, external funding has been fundamental to provision of antiretroviral drugs for PLHIV, commodities, equipment, infrastructure, and training of healthcare workers to deliver quality HIV services. Although there may be a debate on the impact of the heavy investment in HIV programs on the overall health system in SSA,<sup>6</sup> the role external funding has played in mitigating the burden in many countries is hardly contested. Despite the importance of external health funding, its instability makes it unreliable. Indeed, owing to economic downturn in donor countries and competing global priorities, there has been a flatlining in external support for HIV.<sup>7</sup> This potentially threatens sustainability of HIV response and progress toward ending the HIV epidemic particularly in countries that we found to be overreliant on external funding in our study.

Generally, government health expenditure is low in many SSA countries, with only a few allocating up to 15% of their expenditure to health in line with the 2001 Abuja Declaration.<sup>8</sup> The lack of political will to prioritize health may be a contributing factor, but more important is the poor fiscal capacity that inhibits many countries to mobilize revenues and allocate to health. Nevertheless, our findings indicate that government spending accounts for the majority of the domestic HIV expenditure. While this is commendable, private expenditure from corporations can also be an essential source of domestic funding, especially in countries with fiscal constraints in the public sector. Unfortunately, there has been limited involvement of corporate organizations in many countries partly due to influx of international donors and lack of engagement by the government.<sup>9</sup> Efficient engagement of corporate organizations may involve creating platforms for regular dialog, building strong relationships, and providing organizations with program options in line with the direction of their corporate social responsibilities.<sup>10</sup> Out-of-pocket spending is also an important constituent of private HIV expenditure in some countries. However, this can be catastrophic or impoverishing for the poor in the absence of financial protection mechanisms.

Consistent with a similar study,<sup>4</sup> we found economic status to be very important to domestic funding of HIV. Upper-



**Fig. 1 – (a) Domestic HIV expenditure as percentage of the total HIV expenditure by income level. (b) Public HIV expenditure as percentage of the domestic HIV expenditure by income level.**

middle-income and high-income countries are more likely to have fiscal space for health and be less reliant on external sources. Moreover, richer countries often attract larger co-financing demands from external donors. Of note, there was no sufficient evidence in our analysis to suggest an association between HIV prevalence and domestic HIV expenditure as percentage of HIV total expenditure. Mixed evidence exists in literature on the relationship between prevalence of HIV and HIV expenditure,<sup>4,5</sup> and thus, it warrants further investigation.

In addition to budgetary allocation, there is a need for innovative financing mechanisms to improve domestic HIV expenditure in SSA. Some countries have started exploring alternative means such as earmarked levies, taxes, and debt conversion instrument, which have contributed moderately to their domestic expenditure.<sup>11</sup> Undoubtedly, domestic expenditure alone cannot meet the required investment for ending HIV epidemic in SSA, but it can significantly complement international support toward achieving this goal.

The limitations in our studies included the lack of up-to-date data on HIV expenditure for most countries. Owing to unavailability of 2016–2017 data on GGHE-D, we used 2015 data as proxy. Thus, our findings should be interpreted with caution. Also, we were unable to conduct subanalysis of private domestic HIV expenditure because the data were not disaggregated by the UNAIDS.

## Conclusions

Some countries in SSA are still overly dependent on external support for their HIV response, and income level appears to be an influential factor. For sustainability of HIV programs and to end the HIV epidemic, governments across SSA need to demonstrate stronger commitment and leadership by ensuring more domestic funding of HIV. While this may require economic growth, governments can improve their fiscal space for HIV response by looking internally for innovative and sustainable funding mechanisms.

## Author statements

### Ethical approval

No ethical approval was required for the study. It did not involve human subjects, and the data used were publicly available.

### Funding

None declared.

### Competing interests

None declared.

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