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IMPACT OF FOOD INSECURITY ON THE HIV EPIDEMIC IN SUB-SAHARAN AFRICA (2015–2017)

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Background

As interventions are increasingly developed targeting the structural drivers of HIV transmission, such as cash transfers to alleviate poverty and encourage school attendance, understanding how to target these interventions requires accurate knowledge of their prevalence and contexts. Food insecurity has been linked to increases in sexual risk behaviors and 'desperation migration' in the past. There is increasing evidence that climate change impacts food security in sub-Saharan Africa. Severe climate events such as drought, extinction of pollinators and temperature extremes impact crops and displace populations. Without considerable efforts to improve climate resilience, it is estimated that hunger and malnutrition could increase by 20% by 2050. As health ministries around the world prepare for future emergencies, there is a need to focus on anticipating, preparing and alleviating climate-related disruptions in health and behaviors.

To assess associations between food insufficiency (FI) and HIV-related outcomes, including infection, we used data from nationally representative population-based HIV impact assessment (PHIA) surveys in Zambia, Eswatini, Lesotho, Uganda, Tanzania, and Namibia (2015–2017).

Methods

The PHIAs are nationally representative household-based surveys collecting data on risk behaviors, HIV prevalence, viral load suppression and the treatment cascade. We collected FI data, defined as having any time with no food in the house in the past 4 weeks, from the household head. We also offered household-based HIV testing with return of results. Recent infection (<130 days) was measured using HIV-1 Limited Avidity (LAg) assays combined with lack of viral load suppression (VLS, <1000 copies/mL) and antiretroviral (ARV) testing data. Recent infection indications were those with LAg<1.5 Optical Density (ODn), VL>1000 copies/mL, and no detectable ARVs. We performed pooled analyses to determine the association between FI and several HIV-related outcomes on weighted data on adults aged 15–59 years using logistic regression adjusted for age, sex, urban/rural residence, wealth quintile, and education, fitting an interaction term between country and FI. We stratified by sex for transactional and intergenerational sex (>10 years older male partner) and for recent HIV as outcomes. As part of the analytic framework, we also assessed whether secondary or greater education was associated with HIV infection in young adults (aged 15-24). Maps were generated using inverse density weighting interpolation of weighted data from adults aged 15-59 at the primary sampling unit (PSU) level, and included adult HIV prevalence, migration, and severe food insecurity, where households reported no food in the household sometimes or often.

Results

Of the 112,964 enrolled adults aged 15–59 years, 23% lived in households reporting FI. HIV prevalence, migration and severe food insecurity ranged from 0% to 80% in certain PSUs (Figures 1a-c). FI was associated with migration (away for >1 month in past 1–3 years), and in older adolescents (aged 15–17 years), lower odds of current school enrolment (Figure 2). Higher educational attainment was associated with lower odds of prevalent HIV in men and women aged 15–24 years.

FI was associated with intergenerational sex in women aged 15–24 years and, in all women, with transactional sex and with a two-fold increase in recent HIV infection (adjusted odds ratio [aOR], 2.08; 95% confidence interval [CI]: 1.04–4.17). FI was not associated with lower odds of VLS, but migrants were less likely to be virally suppressed (aOR, 0.48; 95% CI: 0.35–0.67).

Conclusion

With predicted rises in food insecurity in areas of high HIV prevalence due to the climate crisis, FI could negatively impact the HIV epidemic- both in the short-term, by increasing high-risk sexual behaviors and HIV infection rates in women, and in the long-term, by impeding educational attainment and increasing desperation migration.

Interpolated maps in 15-59 year old participants

Figure 1a: HIV prevalence

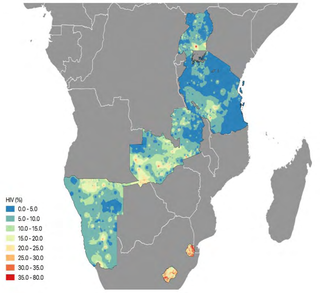


Figure 1b: Migration (as away for at least a month in the past 1-3 years)

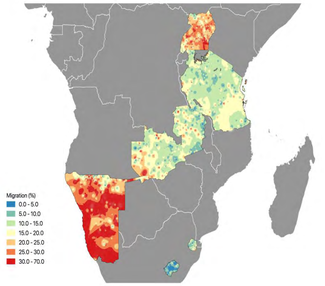
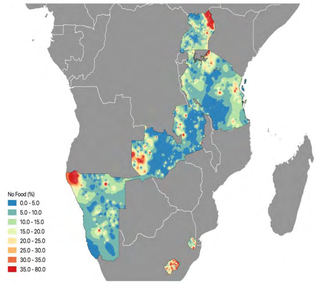


Figure 1c: Severe food insecurity (no food in the house sometimes or often)



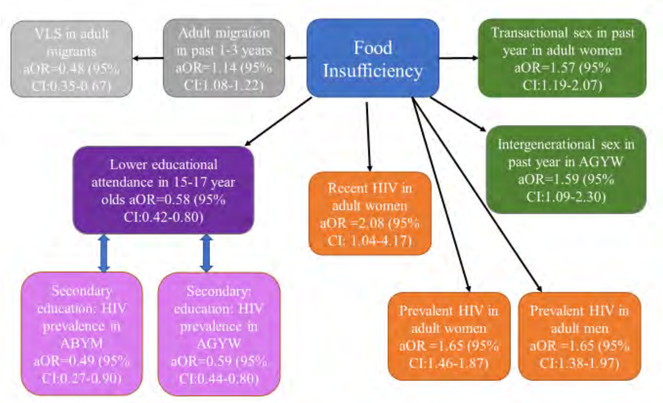


Figure 2: Food insufficiency and its association with HIV-related outcomes in sub-Saharan Africa (2015–2017)

Migration was defined as being away from home for more than 1 month in the past 1 year (3 in Namibia). Secondary education was defined as having attended at least secondary school, compared to only attending primary school or no formal education. Abbreviations: VLS, viral load suppression; aOR, adjusted odds ratio; CI: confidence intervals; AGYW, adolescent girls and young women, aged 15-24 years; ABYM, adolescent boys and young men aged 15-24 years; adults: participants aged 15-59 years.

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