Background

The impact of HIV prevention services on HIV treatment services has not been well documented in southern Africa. This analysis examines nationwide representative data from PHIA surveys in five countries to examine the correlation of self-reported VMMC and condom use among HIV-negative adults with the use of HIV prevention services by people living with HIV (PHLV), represented by the UNAIDS 90-90-90 targets, at the community level.

Methods

We used nationally representative data from the PHIA surveys implemented in five countries in southern Africa (2015–2017). The analysis was performed at the level of the surveys’ smallest geographic area, enumeration areas (EA), to represent a community. Viral load (VL) was performed on all HIV-1 positive samples. Viral load suppression (VLS) was defined as HIV RNA <1000 c/mL. Individuals were considered on ART if they reported current use of ART or had a detectable ARV in the blood.

Among HIV-negative adults in the surveys, we estimated the prevalence of self-reported VMMC status and condom use (during the last sexual act in the prior 12 months) at the EA level. We used multilevel mixed-effects logistic regression, adjusted for demographic and behavior variables at the individual level to estimate the correlation between VMMC and condom use at the EA level with the likelihood of PLHIV being aware of their status, currently on ART, or virologically suppressed (VS).

Results

Among, 10,861 PLHIV aged 15–64 years resided in 1,734 EAs across Eswatini, Lesotho, Malawi, Zambia, and Zimbabwe, (62% women) 76% had a previous HIV diagnosis, 68% were receiving ART, and 60% were VS. The median age was 37 years (IQR, 30-45) and 12% (95% CI, 11-13) had >2 partners.

VMMC prevalence >=15% of the adults reported condom use (adjusted odds ratio [AOR], 1.36** (1.08-1.71) 1.21* (1.00-1.45) 1.21* (1.01-1.45) respectively).

Male

Female

Never married

Married or living together

Widowed

Divorced or separated

Married or living together

Results of the multi-level mixed-effects logistic regression model to examine the relationship between two proxies for utilization of HIV prevention services (i.e. the prevalence of VMMC and condom use) and the odds of HIV positive adults being aware of their status, currently on ART or virologically suppressed.

Conclusion

In these five countries, community utilization of prevention services was positively correlated with the individual use of treatment services, suggesting that combination prevention services can play a synergistic role in epidemic control.

Table 1: Results of the multi-level mixed-effects logistic regression model to examine the relationship between two proxies for utilization of HIV prevention services (i.e. the prevalence of VMMC and condom use) and the odds of HIV positive adults being aware of their status, currently on ART or virologically suppressed.

<table>
<thead>
<tr>
<th>Individual-level variables</th>
<th>Outcome</th>
<th>Aware of HIV status</th>
<th>95% CI</th>
<th>On ART</th>
<th>95% CI</th>
<th>Virologically suppressed</th>
<th>95% CI</th>
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</thead>
<tbody>
<tr>
<td>VMMC Prevalence &gt;=15%</td>
<td></td>
<td>1.19*** (1.06-1.34)</td>
<td>1.14* (1.02-1.26)</td>
<td>1.13* (1.02-1.24)</td>
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<td>VMMC Prevalence &lt;15%</td>
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<tr>
<td>HIV Prevalence &gt;=15%</td>
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<td>1.30*** (1.16-1.46)</td>
<td>1.28*** (1.14-1.40)</td>
<td>1.21*** (1.10-1.33)</td>
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<tr>
<td>HIV Prevalence &lt;15%</td>
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<tr>
<td>Condom use prevalence &gt;=75%</td>
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<td>1.36** (1.08-1.71)</td>
<td>1.21* (1.00-1.48)</td>
<td>1.21* (1.01-1.45)</td>
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<tr>
<td>Condom use prevalence &lt;75%</td>
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