

# Who are the missing men?

## Characterizing men who have never tested for HIV from population-based surveys in six sub-Saharan African countries

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### Background

Attaining the first of the 90-90-90 global HIV targets requires focused testing approaches to reach people with undiagnosed HIV. In 2014, men took only 30% of all HIV tests in 122 LMICs. Typically, men receive care at later stages of disease and have been shown to experience nearly twice the mortality rate of women. Men are also more likely to delay, refuse or discontinue HIV treatment. Identifying more men at high-risk and providing them HIV testing is an important starting point for meeting targets.

#### Study aims:

- Identify the characteristics of men who had never tested for HIV
- Understand factors associated with not testing for HIV
- Measure men's uptake of HIV testing within population-based surveys

### Methods

#### Study population:

We analysed nationally-representative Demographic and Health Surveys (DHS) from six Sub-Saharan countries: Malawi, Zimbabwe, Lesotho, Rwanda, Zambia and Ethiopia. For the analysis, we included countries with standard DHS data and corresponding HIV laboratory results collected in 2013 or later. We included adult men and women and their corresponding HIV laboratory results for the most recent survey year. Eligible men were 15-59 years in Lesotho, Rwanda, Zambia and Ethiopia; 15-54 years in Malawi and Zimbabwe. Eligible women were 15-49 years. All survey respondents were household residents or overnight visitors.

#### Sampling strategy:

Men were sampled from all households in Ethiopia, Zimbabwe and Zambia, from every second household in Rwanda and Lesotho and from every third household in Malawi.

#### HIV testing in survey:

Blood spot samples were collected via finger-prick for voluntary HIV testing from consenting men and women. All men were offered HIV testing. All women were offered HIV testing in Ethiopia, Zimbabwe and Zambia; women in half of the households in Lesotho and Rwanda, and in one-third of households in Malawi, were offered testing. HIV testing in each country followed the national testing algorithm.

#### Data analysis:

We analysed self-reported questionnaire responses on HIV testing, known behavioural risk factors and corresponding HIV test results. We included survey participants who responded to the question on whether they had previously been tested for HIV. Survey results were weighted using country-specific sampling weights provided by DHS.

### Results

Approximately double the proportion of men had never tested for HIV compared to women in four of six countries:

- Malawi (30% of men never tested vs. 17% of women,  $p < 0.0001$ )
- Zimbabwe (35% vs. 19%,  $p < 0.0001$ )
- Lesotho (34% vs. 15%,  $p < 0.0001$ )
- Zambia (36% vs. 20%,  $p < 0.0001$ )
- Rwanda (19% vs. 14%,  $p < 0.0001$ )
- Ethiopia (54% vs. 56%,  $p = 0.12$ )

#### Factors associated with never testing for HIV among men:

Across countries, factors associated with never having tested for HIV after adjusting for age, are:

- never being married (aOR 1.46-10.39)
- not having children (OR 1.36-3.59)
- having primary education (aOR 2.34-3.49) or less (aOR 2.77-5.59)

Table 1. Factors associated with never testing for HIV among men

Variable	Ethiopia (2016) N=12,688		Malawi (2015-16) N=7,478		Zimbabwe (2015) N=8,396		Lesotho (2014) N=2,931		Rwanda (2014-15) N=6,217		Zambia (2013-14) N=14,765	
	aOR	95% CI	aOR	95% CI	aOR	95% CI	aOR	95% CI	aOR	95% CI	aOR	95% CI
Constant	0.08**	0.04 0.15	0.02**	0.01 0.07	0.02**	0.01 0.04	0.05**	0.01 0.18	0.00**	0.00 0.04	0.04**	0.03 0.07
Age	1.01	1.00 1.02	1.00	0.99 1.01	1.01	0.98 1.17	0.98**	0.96 0.99	1.06**	1.05 1.08	1.02**	1.01 1.02
Education attainment												
No education	4.09**	2.94 5.68	5.59**	2.92 10.70	3.73**	1.89 7.35	3.66**	2.00 6.72	2.77*	1.36 5.62	3.81**	2.73 5.33
Primary	2.40**	1.78 3.22	3.26**	1.80 5.93	3.49**	2.56 4.76	2.68**	1.59 4.52	2.34*	1.27 4.33	2.87**	2.24 3.68
Secondary	0.87	0.60 1.25	1.39	0.76 2.55	1.95**	1.48 2.56	1.31	0.76 2.27	1.13	0.59 2.15	1.59**	1.27 1.99
Residence (rural vs. urban)	2.29**	1.73 3.04	1.13	0.84 1.54	0.94	0.80 1.11	1.74**	1.31 2.29	1.25	0.91 1.71	1.00	0.87 1.16
Marital Status												
Never in union	1.56*	1.11 2.20	2.26**	1.66 3.07	2.12**	1.65 2.71	1.46	0.99 2.17	10.39**	6.82 15.84	2.34**	1.89 2.90
Formerly in union	0.82	0.57 1.17	1.31	0.88 1.93	1.06	0.80 1.41	1.18	0.80 1.74	1.82	0.98 3.36	1.52**	1.20 1.92
Has no children	0.98	0.78 1.25	2.41**	1.80 3.22	1.36*	1.05 1.75	1.55*	1.05 2.29	3.59**	2.34 5.49	2.04**	1.66 2.49
Unemployed	2.23*	1.15 4.35	1.15	0.90 1.46	1.14	0.96 1.36	1.16	0.94 1.44	2.15**	1.41 3.28	1.03	0.88 1.19
No health insurance	2.11**	1.59 2.81	1.70	0.73 3.98	1.34*	1.04 1.73	3.29	1.04 10.42	-	-	1.06	0.76 1.48
Lifetime sex partners	1.38**	1.20 1.60	1.41**	1.17 1.69	1.47**	1.24 1.75	1.03	0.73 1.43	1.27*	1.03 1.57	1.43**	1.25 1.63
Mobile	0.46**	0.39 0.54	1.05	0.90 1.23	1.01	0.88 1.17	1.08	0.89 1.32	0.85	0.67 1.06	0.83**	0.75 0.93
Uncircumcised	1.00	0.73 1.38	1.42**	1.19 1.70	3.07**	2.20 4.29	1.93	1.53 2.45	2.29**	1.71 3.05	1.63**	1.42 1.87

\* <0.05

\*\* <0.001

#### Characteristics of men who had never tested for HIV:

Compared to men who had previously tested, in most countries men who had never tested for HIV:

- were younger (58-75% were <25 years old)
- lived predominantly in rural areas (56-88%)
- had less education (51-90% had primary education or less)
- were never married (62-85%)
- did not have children (51-85%)
- had higher unemployment (24-39%, compared to 9-27% of tested men)
  - Those employed were less likely to be in professional services, more likely in agriculture
- had less wealth (%16-21 in lowest wealth quintile compared with 9-16% of tested men)
- had no health coverage

Fig. 1 Sexual behavioural characteristics of men and women who had ever had sex and who had never tested for HIV, weighted

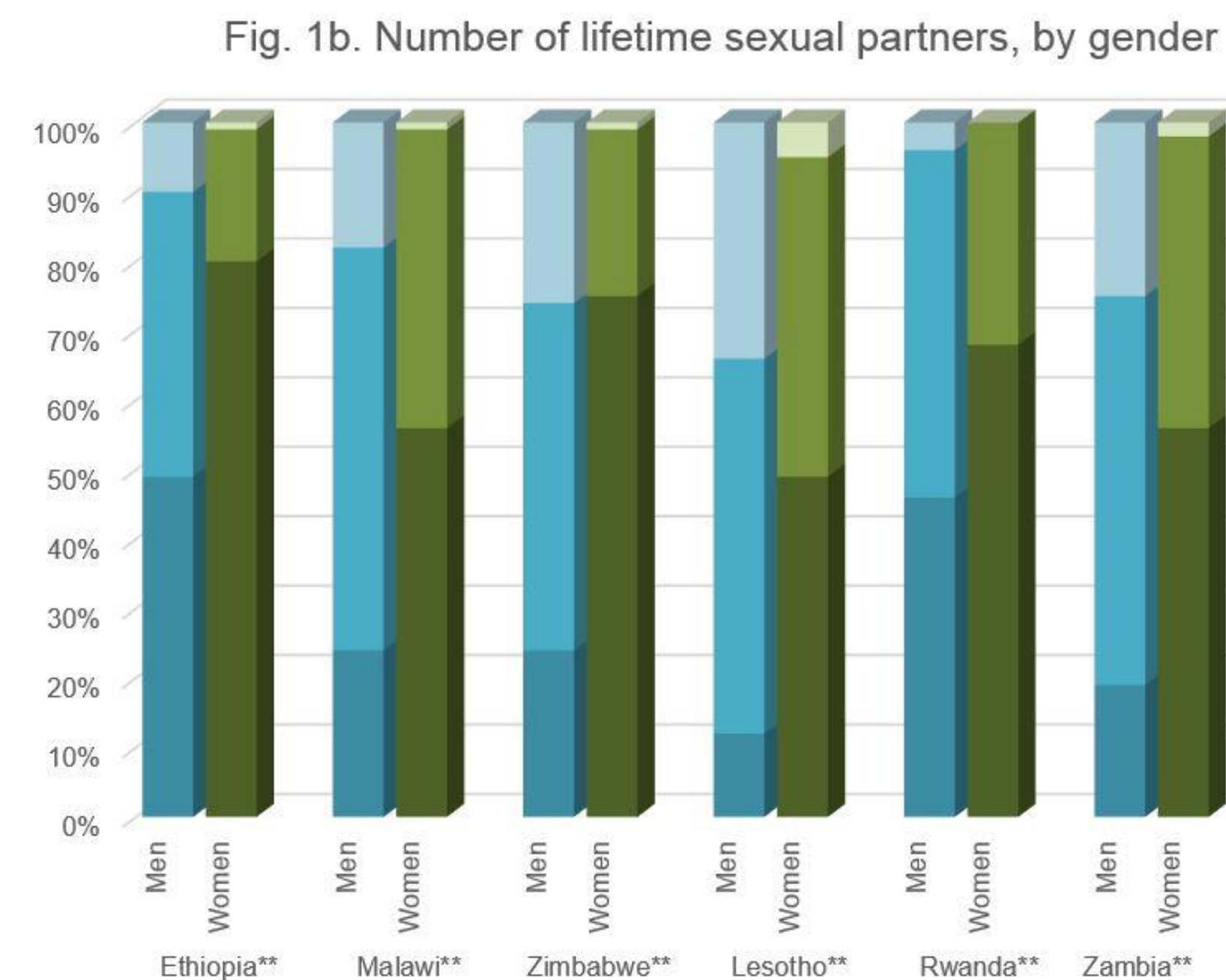
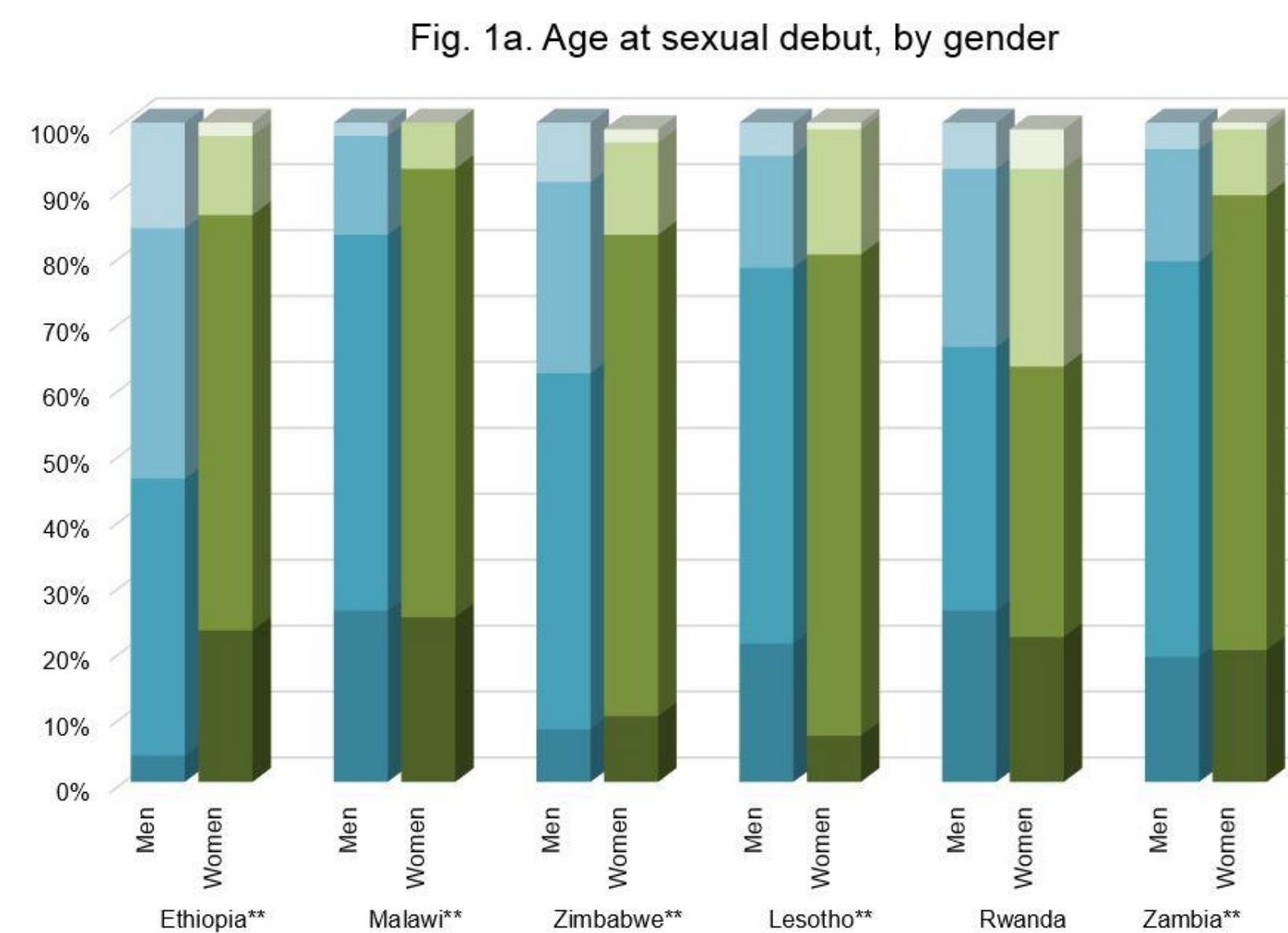
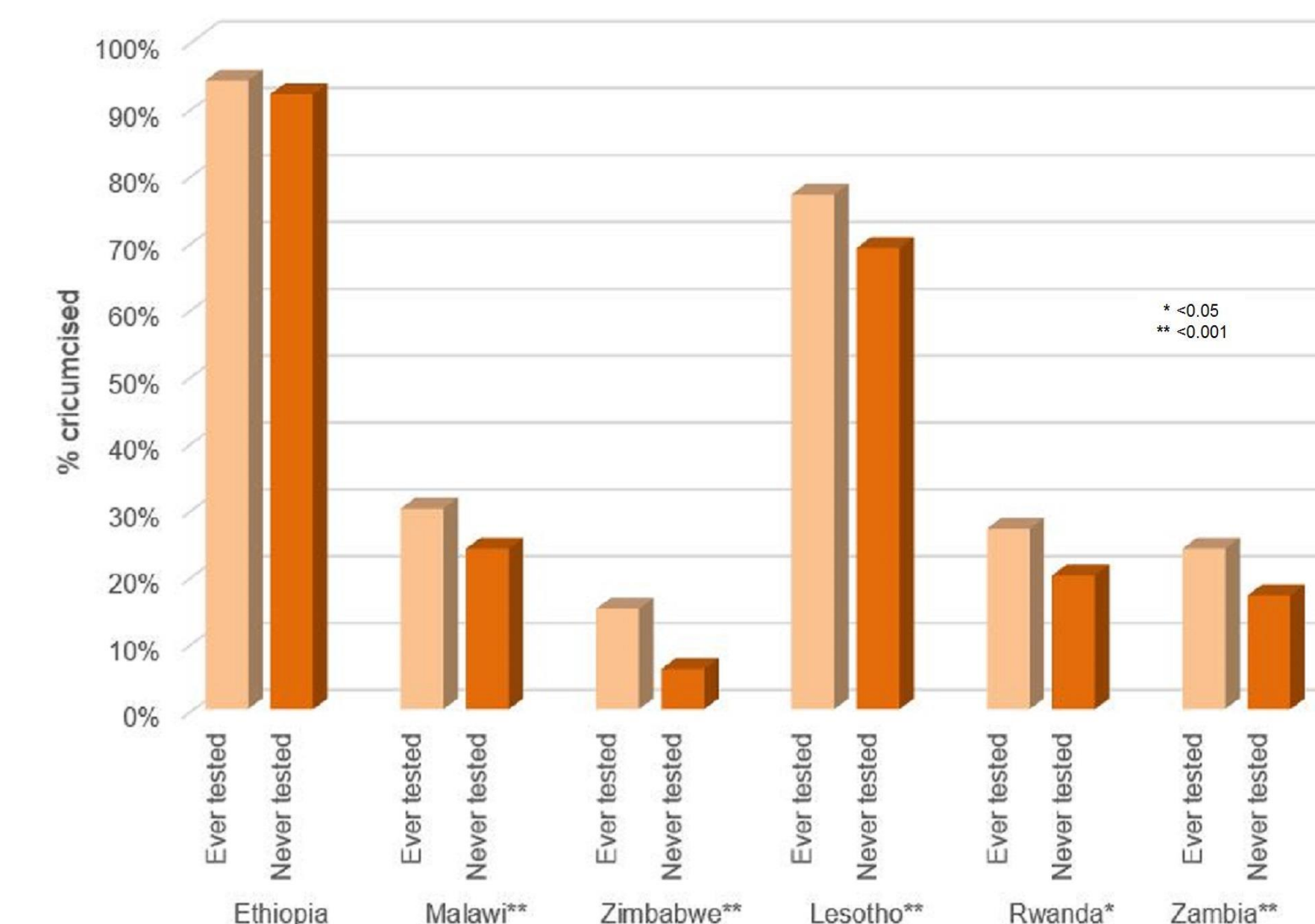


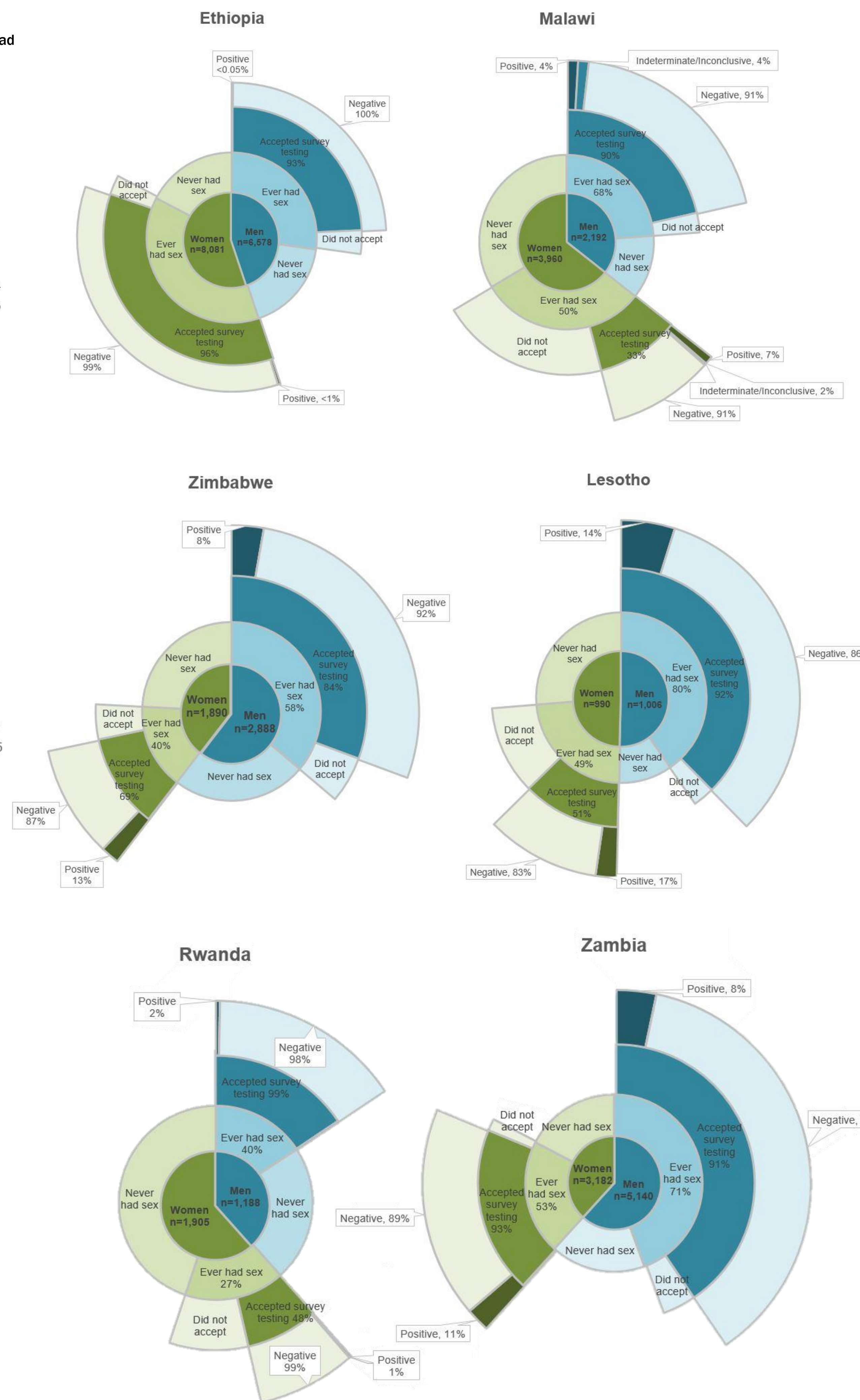
Fig. 1c. Circumcised men by testing status



#### Uptake of HIV survey testing among men:

Although higher proportions of men than women had never tested for HIV, between 84-99% of men who had never tested before did accept testing when offered during the survey.

Fig. 2. Survey HIV testing results of individuals who had ever had sex and never tested before



#### HIV positivity of men who had previously never tested for HIV:

HIV positivity refers to the proportion of individuals testing HIV-positive. In the survey testing, HIV positivity ranged from <1-14% among men who had ever had sex and never previously tested. Among men who had ever tested and ever had sex, HIV positivity ranged from 1%-24%.

In all countries except Rwanda, total HIV positivity was significantly higher for men who had tested previously than men who had never tested before.

Table 2. HIV positivity of men who ever had sex and tested in the survey by prior testing and age group, weighted

Age	Ethiopia (2016) N=8,137		Malawi (2015-16) N=5,868		Zimbabwe (2015) N=5,765		Lesotho (2014) N=2,447		Rwanda (2014-15) N=4,605		Zambia (2013-14) N=11,717	
	Ever tested	Never tested	Ever tested	Never tested	Ever tested	Never tested	Ever tested	Never tested	Ever tested	Never tested	Ever tested	Never tested
15-19	0 (0%)	1 (0.07%)	9 (1.58%)	2 (0.33%)	5 (1.94%)	2 (0.34%)	6 (1.64%)	6 (5.32%)	0 (0%)	0 (0%)	29 (3.71%)	32 (3.21%)
20-24	2 (0.63%)	1 (0.07%)	9 (1.34%)	4 (0.83%)	27 (4.25%)	9 (2.49%)	21 (9.21%)	8 (5.30%)	9 (1.81%)	0 (0%)	100 (7.56%)	31 (5.79%)
25-29	10 (0.59%)	4 (0.02%)	48 (6.86%)	8 (4.15%)	62 (8.41%)	13 (4.86%)	51 (16.89%)	14 (15.86%)	14 (1.67%)	1 (1.52%)	142 (10.00%)	40 (10.19%)
30-34	7 (0.52%)	4 (0.05%)	70 (8.32%)	8 (12.24%)	109 (13.74%)	29 (12.36%)	68 (23.49%)	19 (23.32%)	14 (3.48%)	4 (8.54%)	158 (14.97%)	41 (10.15%)
35-39	18 (1.46%)	1 (0.07%)	83 (11.88%)	11 (12.37%)	132 (19.47%)	29 (12.36%)	78 (41.14%)	19 (40.12%)	21 (3.39%)	0 (0%)	221 (18.28%)	36 (11.52%)
40-44	26 (2.49%)	4 (0.71%)	68 (14.55%)	7 (11.65%)	170 (31.41%)	16 (10.67%)	67 (45.78%)	11 (34.97%)	18 (3.97%)	0 (0%)	208 (22.26%)	38 (15.70%)
45-49	14 (2.97%)	1 (0.16%)	64 (20.38%)	12 (15.14%)	115 (26.47%)	20 (15.20%)	39 (33.65%)	8 (20.67%)	36 (9.71%)	1 (3.37%)	136 (21.35%)	28 (13.31%)
50-54	12 (1.48%)	4 (1.01%)	58 (24.12%)	3 (6.10%)	82 (30.85%)	14 (22.19%)	44 (33.05%)	6 (21.13%)	20 (6.04%)	1 (2.54%)	102 (22.81%)	19 (12.16%)
55-59	2 (1.20%)	1 (0.05%)	-	-	-	-	31 (29.17%)	6 (17.36%)	11 (4.49%)	3 (3.78%)	60 (20.11%)	10 (4.82%)
Total	91 (1.27%)	21 (0.32%)	409 (8.13%)	55 (4.49%)	702 (15.84%)	132 (7.80%)	405 (24.30%)	97 (14.08%)	143 (3.30%)	10 (1.78%)	1,206 (14.67%)	275 (8.35%)

\* <0.05

\*\* <0.001

When analysed by age group, HIV positivity generally increased with age. HIV positivity was higher in older men who never previously tested compared to adolescents and young men. Reaching older male first-time testers could lead to finding men with undiagnosed HIV.

### Conclusions

A gender gap in HIV testing persists in sub-Saharan Africa. Compared to women, men were approximately twice as likely to have never been tested for HIV in four out of six countries studied. In this analysis, we found being single, having lower levels of education and not having any children were associated with increased likelihood for never previously testing for HIV.

Although higher proportions of men than women had never tested for HIV, between 84-99% of male first-time testers did test when offered during a survey. We found that <1-14% of men who had ever had sex and never previously tested were found to be HIV-positive during the survey. HIV positivity in the survey was higher in older men.

Finding more opportunities to offer HIV testing to single men with no children and lower levels of education may increase testing and treatment coverage among a group often missed for HIV testing in sub-Saharan Africa.

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### Contact information

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