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| **Appendix Table 1. Sensitivity analyses: effect of VMMC on recent sex** **and sexual behaviors associated with increased risk of HIV transmission** | | | | | | |
| **Circumcision status:** | Recent sex, past 12 months | No condom use,  last sex | Never use condoms with last partner | Concurrent  partners | Multiple partners, past 12 months | Any HIV risk-related sexual behavior |
| ***PP (95% CI)*** | ***PP (95% CI)*** | ***PP (95% CI)*** | ***PP (95% CI)*** | ***PP (95% CI)*** | ***PP (95% CI)*** |
|  |  |  |  |  |  |  |
| ***Sensitivity analysis 1: Complete case analysis*** | | | | | | |
|  |  |  |  |  |  |  |
| *Non-circumcised* | *ref* | *ref* | *ref* | *ref* | *ref* | *ref* |
| *Circumcised* | 0.0 (-1.2 to 1.3) | -1.2 (-3.8 to 1.3) | -1.6 (-4.1 to 0.8) | -2.5 (-3.5 to 0.6) | -0.2 (-2.2 to 1.8) | -1.2 (-4.2 to 1.7) |
| ***N*** | **5,061** | **4,162** | **5,062** | **4,950** | **4,860** | **3,938** |
|  |  |  |  |  |  |  |
| ***Sensitivity analysis 2: Dropped individuals with errors in circumcision status self-reporting*** | | | | | | |
|  |  |  |  |  |  |  |
| *Non-circumcised* | *ref* | *ref* | *ref* | *ref* | *ref* | *ref* |
| *Circumcised* | -0.4 (-1.8 to 1.0) | -1.9 (-4.7 to 0.9) | -1.3 (-4.0 to 1.4) | -1.1 (-3.4 to 1.2) | -0.4 (-2.6 to 1.9) | -1.3 (-4.5 to 2.0) |
| ***N*** | **4,934** | **4,051** | **4,935** | **4,828** | **4,730** | **3,828** |
|  |  |  |  |  |  |  |
| **Abbreviations:** voluntary medical male circumcision (VMMC); percentage point change (PP); confidence interval (CI)  We measured effect sizes (percentage point changes) using linear models with individual fixed effects. Any HIV risk-related sexual behaviors included at least one of the following four behaviors: not using a condom at last sex, never using condoms with the last sexual partner, concurrent sexual partners at present, and multiple sexual partners in the past 12 months (effect size estimates for these in hollow blue). | | | | | |  |
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| **Appendix Table 2. Sensitivity analyses: effect of time since circumcision on recent sex and sexual behaviors associated with increased risk of HIV transmission.** | | | | | | |
| **Time since VMMC:** | Recent sex, past 12 months | No condom use,  last sex | Never use condoms with last partner | Concurrent  partners | Multiple partners, past 12 months | Any HIV risk-related sexual behavior |
| ***PP (95% CI)*** | ***PP (95% CI)*** | ***PP (95% CI)*** | ***PP (95% CI)*** | ***PP (95% CI)*** | ***PP (95% CI)*** |
|  |  |  |  |  |  |  |
| ***Sensitivity analysis 1: Complete case analysis*** | | | | | | |
|  |  |  |  |  |  |  |
| *>1 year prior* | -0.9 (-2.7 to 1.0) | -2.2 (-5.8 to 1.3) | -0.7 (-4.1 to 2.8) | -0.9 (-3.8 to 2.0) | 0.2 (-3.1 to 2.6) | -1.6 (-5.7 to 2.4) |
| *1 year prior* | *ref* | *ref* | *ref* | *ref* | *ref* | *ref* |
| *1 year post* | -0.4 (-2.0 to 1.2) | -2.2 (-5.3 to 0.9) | -1.9 (-4.9 to 1.1) | -1.3 (-3.9 to 1.3) | 0.4 (-2.1 to 2.9) | -1.5 (-5.0 to 2.1) |
| *>1 year post* | -1.1 (-2.2 to 2.0) | -2.1 (-6.2 to 2.1) | -2.1 (-6.0 to 1.9) | -2.9 (-6.3 to 0.4) | -1.7 (-5.0 to 1.6) | -2.8 (-7.6 to 2.0) |
| ***N*** | **5,061** | **4,162** | **5,062** | **4,950** | **4,860** | **3,938** |
|  |  |  |  |  |  |  |
| ***Sensitivity analysis 2: Dropped individuals with errors in circumcision status self-reporting*** | | | | | | |
|  |  |  |  |  |  |  |
| *>1 year prior* | -0.6 (-2.6 to 1.4) | -1.6 (-5.5 to 2.2) | 0.2 (-3.5 to 4.0) | -0.8 (-4.0 to 2.4) | -0.1 (-3.2 to 3.0) | -2.6 (-7.0 to 1.8) |
| *1 year prior* | *ref* | *ref* | *ref* | *ref* | *ref* | *ref* |
| *1 year post* | -0.5 (-2.2 to 1.3) | -2.9 (-6.2 to 0.5) | -1.3 (-4.6 to 2.0) | -0.8 (-3.6 to 2.0) | 0.6 (-2.1 to 3.4) | -2.3 (-6.1 to 1.6) |
| *>1 year post* | -1.1 (-3.7 to 1.4) | -1.9 (-6.9 to 3.0) | -1.0 (-5.8 to 3.8) | -3.0 (-7.0 to 1.1) | -2.9 (-6.8 to 1.0) | -2.6 (-8.3 to 3.1) |
| ***N*** | **4,934** | **4,051** | **4,935** | **4,828** | **4,730** | **3,828** |
|  |  |  |  |  |  |  |
| **Abbreviations:** voluntary medical male circumcision (VMMC); percentage point change (PP); confidence interval (CI)  We measured effect sizes (percentage point changes) using linear models with individual fixed effects. Any HIV risk-related sexual behaviors included at least one of the following four behaviors: not using a condom at last sex, never using condoms with the last sexual partner, concurrent sexual partners at present, and multiple sexual partners in the past 12 months (effect size estimates for these in hollow blue). | | | | | |  |
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| **Appendix Table 3. Sub-group analyses: effect of VMMC on recent sex** **and sexual behaviors associated with increased risk of HIV transmission** | | | | | | |
| **Circumcision status:** | Recent sex, past 12 months | No condom use,  last sex | Never use condoms with last partner | Concurrent  partners | Multiple partners, past 12 months | Any HIV risk-related sexual behavior |
| ***PP (95% CI)*** | ***PP (95% CI)*** | ***PP (95% CI)*** | ***PP (95% CI)*** | ***PP (95% CI)*** | ***PP (95% CI)*** |
|  |  |  |  |  |  |  |
| ***Sub-group 1: Age at baseline < median (18 years)*** | | | | | | |
|  |  |  |  |  |  |  |
| *Non-circumcised* | *ref* | *ref* | *ref* | *ref* | *ref* | *ref* |
| *Circumcised* | -0.7 (-3.5 to 2.0) | -1.8 (-8.1 to 4.4) | -3.9 (-8.9 to 1.2) | -3.9 (-8.3 to 0.6) | -1.7 (-6.1 to 2.7) | -2.0 (-9.6 to 5.7) |
| ***N*** | **2,617** | **1,799** | **2,618** | **2,533** | **2,430** | **1,606** |
|  |  |  |  |  |  |  |
| ***Sub-group 2: Age at baseline > median (18 years)*** | | | | | | |
|  |  |  |  |  |  |  |
| *Non-circumcised* | *ref* | *ref* | *ref* | *ref* | *ref* | *ref* |
| *Circumcised* | 0.5 (-0.4 to 1.5) | -0.6 (-2.4 to 1.2) | -0.1 (-1.9 to 1.7) | -0.3 (-1.7 to 1.2) | 0.2 (-1.2 to 1.5) | -1.0 (-3.1 to 1.1) |
| ***N*** | **2,504** | **2,404** | **2,504** | **2,475** | **2,479** | **2,365** |
|  |  |  |  |  |  |  |
| **Abbreviations:** voluntary medical male circumcision (VMMC); percentage point change (PP); confidence interval (CI)  We measured effect sizes (percentage point changes) using linear models with individual fixed effects. Any HIV risk-related sexual behaviors included at least one of the following four behaviors: not using a condom at last sex, never using condoms with the last sexual partner, concurrent sexual partners at present, and multiple sexual partners in the past 12 months (effect size estimates for these in hollow blue). | | | | | |  |
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| **Appendix Table 4. Sub-group analyses: effect of time since circumcision on recent sex and sexual behaviors associated with increased risk of HIV transmission.** | | | | | | |
| **Time since VMMC:** | Recent sex, past 12 months | No condom use,  last sex | Never use condoms with last partner | Concurrent  partners | Multiple partners, past 12 months | Any HIV risk-related sexual behavior |
| ***PP (95% CI)*** | ***PP (95% CI)*** | ***PP (95% CI)*** | ***PP (95% CI)*** | ***PP (95% CI)*** | ***PP (95% CI)*** |
|  |  |  |  |  |  |  |
| ***Sub-group 1: Age at baseline < median (18 years)*** | | | | | | |
|  |  |  |  |  |  |  |
| *>1 year prior* | -3.5 (-7.6 to 0.7) | -6.2 (-15.4 to 3.1) | -4.8 (-12.5 to 2.9) | -2.2 (-8.9 to 4.6) | -0.3 (-7.0 to 6.4) | -3.1 (-14.5 to 8.3) |
| *1 year prior* | *ref* | *ref* | *ref* | *ref* | *ref* | *ref* |
| *1 year post* | -2.2 (-5.9 to 1.4) | -6.7 (-14.9 to 1.5) | -5.7 (-12.5 to 1.1) | -3.4 (-9.3 to 2.6) | -0.7 (-6.6 to 5.2) | -2.9 (-12.9 to 7.1) |
| *>1 year post* | -2.9 (-7.4 to 1.5) | -2.0 (-12.2 to 8.1) | -7.2 (-15.4 to 1.1) | -7.3 (14.5 to -0.0) | -3.6 (-10.8 to 3.6) | -4.4 (-16.7 to 7.9) |
| ***N*** | **2,617** | **1,799** | **2,618** | **2,533** | **2,430** | **1,606** |
|  |  |  |  |  |  |  |
| ***Sub-group 2: Age at baseline > median (18 years)*** | | | | | | |
|  |  |  |  |  |  |  |
| *>1 year prior* | 0.5 (-7.6 to 1.7) | -0.9 (-3.2 to 1.5) | 1.7 (-0.8 to 4.1) | -0.4 (-2.3 to 1.5) | 0.0 (-1.8 to 1.9) | -1.0 (-3.8 to 1.7) |
| *1 year prior* | *ref* | *ref* | *ref* | *ref* | *ref* | *ref* |
| *1 year post* | 0.4 (-0.6 to 1.5) | -0.0 (-2.1 to 2.00 | 0.4 (-1.8 to 2.5) | -0.3 (-2.0 to 1.4) | 0.7 (-0.9 to 2.3) | -0.7 (-3.2 to 1.7) |
| *>1 year post* | 1.4 (-0.0 to 2.9) | -3.1 (-6.0 to -0.1) | 1.0 (-1.9 to 4.0) | -0.6 (-3.9 to 1.7) | -1.0 (-3.3 to 1.2) | -3.1 (-6.5 to 0.4) |
| ***N*** | **2,504** | **2,404** | **2,504** | **2,475** | **2,479** | **2,365** |
|  |  |  |  |  |  |  |
| **Abbreviations:** voluntary medical male circumcision (VMMC); percentage point change (PP); confidence interval (CI)  We measured effect sizes (percentage point changes) using linear models with individual fixed effects. Any HIV risk-related sexual behaviors included at least one of the following four behaviors: not using a condom at last sex, never using condoms with the last sexual partner, concurrent sexual partners at present, and multiple sexual partners in the past 12 months (effect size estimates for these in hollow blue). | | | | | |  |
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