

Quarterly Research Digest on Voluntary Medical Male Circumcision for HIV Prevention

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Combination HIV prevention and HIV testing

1. De Wet, H., et al. **Perceived barriers and facilitators to HIV testing in South African communities.** *J Health Psychol* 2018;23(12): 1635-1645.

We interviewed 15 South Africans seeking HIV testing to understand the factors that influenced their seeking an HIV test. Reasons in favour of testing included having had unprotected sex, availability of social support if testing HIV positive and modelling test-seeking behaviour to others. Reasons against seeking testing included fear testing HIV positive, the possibility of receiving treatment too late, HIV-related stigma and long distances to testing sites. Participants also discussed ways to increase the uptake of HIV testing, such as workplace testing, the role of the media and the role of cultural rituals such as male circumcision.

Costs and costing

1. Galarraga, O., et al. **Cost and cost-effectiveness of voluntary medical male circumcision in street-connected youth: findings from an education-based pilot intervention in Eldoret, Kenya.** *AIDS Res Ther* 2018;15(1): 24.
Online at: <https://aidsrestherapy.biomedcentral.com/articles/10.1186/s12981-018-0207-x>

BACKGROUND: Voluntary medical male circumcision (VMMC) is a critical component of HIV prevention. VMMC policies have achieved initial targets in adult men yet continue to fall short in reaching younger men and adolescents.

SETTING: We present the cost and scale-up implications of an education-based, VMMC intervention for adolescent street-connected males, for whom the street has become their home and/or source of livelihood. The intervention was piloted as part of the Engaging Street Youth in HIV Interventions Project in Eldoret, Kenya.

METHODS: We used a micro-costing approach to estimate the average cost of a VMMC intervention in 116 street-connected youth. Average cost was estimated per individual and per cohort by dividing total cost per intervention by number of clients accessing the intervention over a 30-day period. Total average costs included direct and support procedure costs, educational costs, and direct research costs. Cost-effectiveness was measured in cost per DALYs averted over a 5 and 10-year period.

RESULTS: The total cost of the intervention was \$12,526 over the 30-day period, with an average cost per individual of \$108. The direct VMMC procedure cost was approximately \$9 per individual. Personnel costs contributed the greatest percentage to the total intervention cost (38.2%), with mentors and social workers representing the highest wage earners. Retreat-related and education costs contributed 51% and 13% respectively to the total average cost, with surgical equipment costs contributing less than 1%. At a cost of \$108 per individual, the intervention averted 60166 DALYs in 5 years resulting in a cost per DALY averted of \$267.

CONCLUSION: The VMMC intervention was highly cost-effective in Kenya, despite the additional costs incurred to reach SCY. Further scale-up may be warranted to effectively apply this intervention in comparable populations.

2. Tchuenche, M., et al. **Voluntary medical male circumcision service delivery in South Africa: The economic costs and potential opportunity for private sector involvement.** *PLoS One* 2018;13(12): e0208698.
Online at: <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0208698>

BACKGROUND: In 2010, the South African Government initiated a voluntary medical male circumcision (VMMC) program as a part of the country's HIV prevention strategy based on compelling evidence that VMMC reduces men's risk of becoming HIV infected by approximately 60%. A previous VMMC costing study at Government and PEPFAR-supported facilities noted that the lack of sufficient data from the private sector represented a gap in knowledge concerning the overall cost of scaling up VMMC services. This study, conducted in mid-2016, focused on surgical circumcision and aims to address this limitation.

METHODS: VMMC service delivery cost data were collected at 13 private facilities in three provinces in South Africa: Gauteng, KwaZulu-Natal, and Mpumalanga. Unit costs were calculated using a bottom-up approach by cost components, and then disaggregated by facility type and urbanization level. VMMC demand creation, and higher-level management and program support costs were not collected. The unit cost

of VMMC service delivery at private facilities in South Africa was calculated as a weighted average of the unit costs at the 13 facilities.

KEY FINDINGS: At the average annual exchange rate of R10.83 = \$1, the unit cost including training and cost of continuous quality improvement (CQI) to provide VMMC at private facilities was \$137. The largest cost components were consumables (40%) and direct labor (35%). Eleven out of the 13 surveyed private sector facilities were fixed sites (with a unit cost of \$142), while one was a fixed site with outreach services (with a unit cost of \$156), and the last one provided services at a combination of fixed, outreach and mobile sites (with a unit cost per circumcision performed of \$123). The unit cost was not substantially different based on the level of urbanization: \$141, \$129, and \$143 at urban, peri-urban, and rural facilities, respectively.

CONCLUSIONS: The private sector VMMC unit cost (\$137) did not differ substantially from that at government and PEPFAR-supported facilities (\$132 based on results from a similar study conducted in 2014 in South Africa at 33 sites across eight of the country's nine provinces). The two largest cost drivers, consumables and direct labor, were comparable across the two studies (75% in private facilities and 67% in public/PEPFAR-supported facilities). Results from this study provide VMMC unit cost data that had been missing and makes an important contribution to a better understanding of the costs of VMMC service delivery, enabling VMMC programs to make informed decisions regarding funding levels and scale-up strategies for VMMC in South Africa.

Enhancing uptake of VMMC

1. Kibel, M., et al. **Acceptability of a pilot intervention of voluntary medical male circumcision and HIV education for street-connected youth in western Kenya.** *J Adolesc Health* 2019;64(1): 43-48.
Online at: [https://www.jahonline.org/article/S1054-139X\(18\)30340-9/fulltext](https://www.jahonline.org/article/S1054-139X(18)30340-9/fulltext)

PURPOSE: Street-connected youth (SCY) in Kenya and elsewhere in sub-Saharan Africa are at high risk of HIV. Voluntary Male Medical Circumcision (VMMC) reduces the risk of female-to-male HIV transmission. Circumcision is also a traditional coming-of-age process in many Kenyan ethnic groups. This paper describes the acceptability of VMMC delivered as part of a ten-day healing, educational, and 'coming-of-age' retreat implemented as a pilot with SCY.

METHODS: Male SCY aged between 12 and 24 living on the street for more than 3 months were eligible to participate. The study took place over 10 days. After medical circumcision, youth participated in education modules. Data collected included qualitative semi-structured exit interviews featuring structured and open-ended questions about factors relevant to this intervention's acceptability.

RESULTS: There were 116 SCY (median age 14, IQR 13-15) who participated in the study. All were circumcised successfully, with no major complications. The majority of participants (81%) agreed that the circumcision procedure was uncomplicated, and 99% agreed the education was an important part of the initiation process. Thematic analysis of interview data highlighted four factors important to the program's acceptability: providing food, shelter, security; providing a safe place to heal; including traditional elements; and being with peers.

CONCLUSIONS: This novel implementation of VMMC was found to be acceptable to SCY participants and could likely be adapted and scaled for HIV prevention and education with SCY elsewhere in Kenya and sub-Saharan Africa where circumcision is part of traditional coming-of-age processes.

2. Choko, A. T., et al. **The effect of demand-side financial incentives for increasing linkage into HIV treatment and voluntary medical male circumcision: A systematic review and meta-analysis of randomised controlled trials in low- and middle-income countries.** *PLoS One* 2018;13(11): e0207263.
Online at: <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0207263>

INTRODUCTION: Linkage to HIV treatment is a vital step in the cascade of HIV services and is critical to slowing down HIV transmission in countries with high HIV prevalence. Equally, linkage to voluntary medical male circumcision (VMMC) has been shown to decrease HIV transmission by 60% and increasing numbers of men receiving VMMC has a substantial impact on HIV incidence. However, only 48% of newly diagnosed HIV positive people link to HIV treatment let alone access HIV prevention methods such as VMMC globally.

METHODS: A systematic review investigating the effect of demand-side financial incentives (DSFIs) on linkage into HIV treatment or VMMC for studies conducted in low- and middle-income countries. We searched the title, abstract and keywords in eight bibliographic databases: MEDLINE, EMBASE, Web of Science, Econlit, Cochrane, SCOPUS, IAS Conference database of abstracts, and CROI Conference database of abstracts. Searches were done in December 2016 with no time restriction. We fitted random effects (RE) models and used forest plots to display risk ratios (RR) and 95% CIs separately for the linkage to VMMC outcome. The RE model was also used to assess heterogeneity for the linkage to HIV treatment outcome.

RESULTS: Of the 1205 citations identified from searches, 48 full text articles were reviewed culminating in nine articles in the final analysis. Five trials investigated the effect of DSFIs on linkage to HIV treatment while four trials investigated linkage to VMMC. Financial incentives improved linkage to HIV treatment in three of the five trials that investigated this outcome. Significant improvements were observed among postpartum women RR 1.26 (95% CI: 1.08; 1.48), among people who inject drugs RR 1.42 (95% CI: 1.09; 1.96), and among people testing at the clinic RR 1.10 (95% CI: 1.07;

1.14). One of the two trials that did not find significant improvement in linkage to ART was among people testing HIV positive in clinics RR 0.96 (95% CI: 0.81; 1.16) while the other was among new HIV positive individuals identified through a community testing study RR 0.82 (95% CI: 0.56; 1.22). We estimate an average 4-fold increase in the uptake of circumcision among HIV negative uncircumcised men from our fitted RE model with overall RR 4.00 (95% CI: 2.17; 7.37). There was negligible heterogeneity in the estimates from the different studies with I-squared = 0.0%; p = 0.923.

CONCLUSIONS: Overall, DSFIs appeared to improve linkage for both HIV treatment and VMMC with greater effect for VMMC. Demand-side financial incentives could improve linkage to HIV treatment or VMMC in low- and middle-income countries although uptake by policy makers remains a challenge.

Epidemiological studies

1. Ortblad, K. F., et al. **Predictors of male circumcision incidence in a traditionally non-circumcising South African population-based cohort.** *PLoS One* 2018;13(12): e0209172. Online at: <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0209172>

BACKGROUND: Voluntary medical male circumcision has been promoted in high HIV prevalence settings to prevent HIV acquisition in males. However, the uptake of circumcision in many sub-Saharan African settings remains low. While many studies have measured circumcision prevalence, understanding circumcision incidence and its predictors is vital to achieving ambitious circumcision prevalence targets.

SETTING: Rural KwaZulu-Natal, South Africa.

METHODS: We measured circumcision incidence over the period 2009-2014 in a longitudinal population-based cohort with high HIV prevalence and low circumcision prevalence. Multivariable survival models with Weibull distributions were used to assess socio-demographic, behavioral and biological predictors of circumcision incidence.

RESULTS: Between 2009 and 2014, circumcision prevalence among males 15-49 years in the cohort increased from 3% to 24%. Among 6,203 males 15-49 years, 873 new circumcisions occurred over 13,678 person-years (incidence rate: 6.4/100 person-years, 95% CI 6.0-6.8). Circumcision incidence was substantially higher amongst young males: 15-19 year olds were twice as likely to circumcise as older males. In the survival model, shorter household distance to the nearest healthcare facility, knowledge of HIV status and biological HIV-negative status were associated with an increased likelihood of circumcision incidence.

CONCLUSIONS: Circumcision prevalence among males in rural KwaZulu-Natal remains well below South Africa's national 80% coverage target across age groups. In this population, distance to the nearest healthcare facility and knowledge of HIV status were

important independent predictors of circumcision incidence. Mobile circumcision clinics and innovative HIV testing services may be important tools to help achieve circumcision targets.

2. Douglawi, A., et al. **Penile cancer epidemiology and risk factors: a contemporary review**. *Curr Opin Urol* 2018 Dec 17. [Epub ahead of print]

PURPOSE OF REVIEW: Our objective is to present an overview of epidemiologic, clinical, and molecular risk factors with a focus on contemporary literature.

RECENT FINDINGS: Penile cancer is a rare and aggressive neoplasm that accounts for less than 1% of male malignancies in the United States. Geographical disparities in incidence of disease are evident with high rates concentrated in the developing world (2.8-6.8 per 100 000) where neonatal circumcision is low and socioeconomic conditions predispose patients to multiple risk factors. Western countries have a significantly lower incidence and can be as low as 0.3 per 100 000. Many risk factors have been identified including lack of circumcision, phimosis, balanitis, obesity, lichen sclerosus, smoking, and psoralen UV-A phototherapy. In addition, human papilloma virus (HPV) has been linked to nearly 40% of cases and molecular mediators continue to be investigated.

SUMMARY: Although Penile cancer can be a debilitating disease, several of the known risk factors are modifiable. Public health campaigns aimed to increase awareness, promote better hygiene, and deploy HPV vaccines have had varied success at decreasing disease burden. Focus should be placed on implementing such interventions in developing countries and at-risk populations.

3. Rodriguez-Alvarez, M. I., et al. **Prevalence and risk factors of human papillomavirus in male patients: A systematic review and meta-analysis**. *Int J Environ Res Public Health* 2018;15(10): 2210.
Online at: <https://www.mdpi.com/1660-4601/15/10/2210>

Human papillomavirus (HPV) is one of the most prevalent sexually transmitted infections. Although the research focus has been on women, men are also affected. Thus, the aim was to estimate the prevalence of HPV in men and to analyse its risk factors. A systematic review with meta-analysis was performed. The main health science databases were consulted. The search terms were was: "papilloma virus AND (prevalence OR risk factors) AND men". The final sample of studies was n = 16 and the men sample for the meta-analysis was n = 18,106. The meta-analysis revealed a prevalence of 49% (95% Confidence Interval (CI): 35(-)64%) of any type of human papillomavirus in men and 35% (95% CI: 26(-)45%) of high-risk human papillomavirus in men. The included studies showed that stable sexual habits, circumcision and condom use are protective factors against HPV. In addition, there is a certain positive association with tobacco use and the early initiation of sexual intercourse. In conclusion, the prevalence of HPV in men is high. The risk factors for HPV infection are sexual

promiscuity, early sexual debut, absence of circumcision, lack of condom use and smoking. Further study in this field about the effectiveness of the vaccine and health education should be conducted.

Impact and coverage

1. Baisley, K., et al. **High HIV incidence and low uptake of HIV prevention services: The context of risk for young male adults prior to DREAMS in rural KwaZulu-Natal, South Africa.** *PLoS One* 2018;13(12): e0208689.
Online at: <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0208689>

BACKGROUND: Young men are less likely than young women to engage with HIV prevention and care, and their HIV-related mortality is higher. We describe HIV incidence and uptake of HIV services in men 20-29 years(y) in rural KwaZulu-Natal, South Africa, before the roll-out of DREAMS.

METHODS: We used data from a population-based demographic and HIV surveillance cohort. HIV incidence was estimated from anonymised testing in an annual serosurvey. Service uptake was assessed in 2011 and 2015, through two self-reported outcomes: 1) HIV testing in the past 12 months(m); 2) voluntary medical male circumcision(VMMC). Logistic regression was used to estimate odds ratios(OR) and 95% confidence intervals(CI) for factors associated with each outcome.

RESULTS: HIV incidence in 2011-2015 was 2.6/100 person-years (95%CI = 2.0-3.4) and 4.2 (95%CI = 3.1-5.6) among men 20-24y and 25-29y, respectively, with no significant change from 2006-2010. N = 1311 and N = 1221 young men participated in the 2011 and 2015 surveys, respectively. In both years, <50% reported testing for HIV in the past 12m. In 2011, only 5% reported VMMC, but coverage in 2015 increased to 40% and 20% in men 20-24y and 25-29y, respectively. HIV testing was positively associated with higher education and mobility. Testing uptake was higher in men reporting >1 partner in the past 12m, or condom use at last sex, but lower in those reporting a casual partner (adjusted (a)OR = 0.53, 95%CI = 0.37-0.75). VMMC uptake was associated with survey year and higher education. Men aged 25-29y and those who were employed (aOR = 0.66; 95%CI = 0.49-0.89) were less likely to report VMMC.

CONCLUSIONS: HIV incidence in men 20-29y was very high, and pre-exposure prophylaxis (PrEP) should be considered in this population. Uptake of services was low. VMMC coverage increased dramatically from 2011 to 2015, especially among younger men, suggesting a demand for this service. Interventions designed with and for young men are urgently needed.

2. Kripke, K., et al. **Data triangulation to estimate age-specific coverage of voluntary medical male circumcision for HIV prevention in four Kenyan counties.** *PLoS One* 2018;13(12): e0209385.

Online at: <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0209385>

BACKGROUND: Kenya is 1 of 14 priority countries in Africa scaling up voluntary medical male circumcision (VMMC) for HIV prevention following the recommendations of the World Health Organization and the Joint United Nations Programme on HIV/AIDS. To inform VMMC target setting, we modeled the impact of circumcising specific client age groups across several Kenyan geographic areas.

METHODS: The Decision Makers' Program Planning Tool, Version 2 (DMPPT 2) was applied in Kisumu, Siaya, Homa Bay, and Migori counties. Initial modeling done in mid-2016 showed coverage estimates above 100% in age groups and geographic areas where demand for VMMC continued to be high. On the basis of information obtained from country policy makers and VMMC program implementers, we adjusted circumcision coverage for duplicate reporting, county-level population estimates, migration across county boundaries for VMMC services, and replacement of traditional circumcision with circumcisions in the VMMC program. To address residual inflated coverage following these adjustments we applied county-specific correction factors computed by triangulating model results with coverage estimates from population surveys.

RESULTS: A program record review identified duplicate reporting in Homa Bay, Kisumu, and Siaya. Using county population estimates from the Kenya National Bureau of Statistics, we found that adjusting for migration and correcting for replacement of traditional circumcision with VMMC led to lower estimates of 2016 male circumcision coverage especially for Kisumu, Migori, and Siaya. Even after addressing these issues, overestimation of 2016 male circumcision coverage persisted, especially in Homa Bay. We estimated male circumcision coverage in 2016 by applying correction factors. Modeled estimates for 2016 circumcision coverage for the 10- to 14-year age group ranged from 50% in Homa Bay to approximately 90% in Kisumu. Results for the 15- to 19-year age group suggest almost complete coverage in Kisumu, Migori, and Siaya. Coverage for the 20- to 24-year age group ranged from about 80% in Siaya to about 90% in Homa Bay, coverage for those aged 25–29 years ranged from about 60% in Siaya to 80% in Migori, and coverage in those aged 30–34 years ranged from about 50% in Siaya to about 70% in Migori.

CONCLUSIONS: Our analysis points to solutions for some of the data issues encountered in Kenya. Kenya is the first country in which these data issues have been encountered because baseline circumcision rates were high. We anticipate that some of the modeling methods we developed for Kenya will be applicable in other countries.

Male circumcision methods, including devices

1. Barone, M. A., et al. **Simplifying the ShangRing technique for circumcision in boys and men: use of the no-flip technique with randomization to removal at 7 days versus spontaneous detachment.** *Asian J Androl* 2018 Nov 30. [Epub ahead of print]

To assess safety of the no-flip ShangRing male circumcision technique and to determine clinical course and safety of spontaneous detachment (i.e., allowing the device to fall off), we conducted a case series of no-flip ShangRing circumcision combined with a randomized controlled trial of removal 7 days postcircumcision versus spontaneous detachment at two health facilities in Kenya. The primary outcome was the safety of the no-flip technique based on moderate and severe adverse events (AEs) during the procedure and through 42-day follow-up. A main secondary outcome was clinical course and safety of spontaneous detachment. Two hundred and thirty males 10 years and older underwent no-flip circumcision; 114 randomized to 7-day removal and 116 to spontaneous detachment. All circumcisions were successfully completed. Overall 5.3% (6/114) of participants in the 7-day group and 1.7% (2/116) in the spontaneous group had an AE; with no differences when compared to the 3% AE rate in historical data from African studies using the original flip technique ($P = 0.07$ and $P = 0.79$, respectively). Overall 72.4% (84/116) of participants in the spontaneous group wore the ShangRing until it detached. Among the remaining (27.6%; 32/116), the ring was removed, primarily at the participants' request, due to pain or discomfort. There was no difference in AE rates ($P = 0.169$), visit day declared healed ($P = 0.324$), or satisfaction ($P = 0.371$) between randomization groups. The median time to detachment was 14.0 (IQR: 7-21, range: 5-35) days. The no-flip technique and spontaneous detachment are safe, effective, and acceptable to boys and men 10 years and older. Phimosis and penile adhesions do not limit successful ShangRing circumcision with the no-flip technique.

Safety and quality

1. Makumbi, F., et al. **Prevalence of protective tetanus antibodies and immunological response following tetanus toxoid vaccination among men seeking medical circumcision services in Uganda.** *PLoS One* 2018;13(12): e0209167.
Online at: <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0209167>

INTRODUCTION: Tetanus infection associated with men who had male circumcision has been reported in East Africa, suggesting a need for tetanus toxoid-containing vaccines (TTCV).

OBJECTIVE: To determine the prevalence of tetanus toxoid antibodies following vaccination among men seeking circumcision.

METHODS: We enrolled 620 consenting men who completed a questionnaire and received TTCV at enrollment (day 0) prior to circumcision on day 28. Blood samples were obtained at day 0 from all enrollees and on days 14, 28 and 42 from a random

sample of 237 participants. Tetanus toxoid (TT) IgG antibody levels were assayed using EUROIMMUN. Analyses included prevalence of TT antibodies at enrollment and used a mixed effects model to determine the immunological response.

RESULTS: Mean age was 21.4 years, 65.2% had knowledge of tetanus, 56.6% knew how tetanus was contracted, 22.8% reported ever receipt of TTCV, and 16.8% had current/recently healed wounds. Insufficient tetanus immunity was 57.1% at enrollment, 7.2% at day 14, 3.8% at day 28, and 0% at day 42. Antibody concentration was 0.44IU/ml (CI 0.35-0.53) on day 0, 3.86IU/ml (CI 3.60-4.11) on day 14, 4.05IU/ml (CI 3.81-4.29) on day 28, and 4.48IU/ml (CI 4.28-4.68) on day 42. TT antibodies increased by 0.24IU/ml (CI 0.23, 0.26) between days 0 and 14 and by 0.023IU/ml (CI 0.015, 0.031) between days 14 and 42 days. Immunological response was poorer in HIV-infected clients and men aged 35+ years.

CONCLUSION: Insufficient immunity was common prior to TTCV, and a protective immunological response was achieved by day 14. Circumcision may safely be provided 14 days after vaccination in HIV-uninfected men aged less than 35 years.

Social and behavioural research

1. Ortblad, K. F., et al. **Does incident circumcision lead to risk compensation? Evidence from a population cohort in KwaZulu-Natal, South Africa.** *J Acquir Immune Defic Syndr* 2018 Nov 20. [Epub ahead of print]

BACKGROUND: Voluntary medical male circumcision reduces men's risk of HIV acquisition and may thus increase HIV risk-related sexual behaviors through risk compensation. We analyze longitudinal data from one of Africa's largest population cohorts using fixed effects panel estimation to measure the effect of incident circumcision on sexual behaviors.

SETTING: KwaZulu-Natal, South Africa.

METHODS: An open population cohort of men were followed from 2009 to 2015. Men self-reported their circumcision status and sexual behavior annually. We used linear regression models with individual-level fixed effects to measure the effect of incident circumcision on recent sex (past 12 months) and sexual behaviors that increase HIV risk (not using a condom at last sex, never using condoms with the most recent sexual partner, concurrent sexual partners at present, and multiple sexual partners in the past 12 months). We controlled for potential time-varying confounders: calendar year, age, education, and sexual debut.

RESULTS: The 5,127 men in the cohort had a median age of 18 years (IQR 16 to 24) at cohort entry. Over the study period, almost one in five of these men (19.4%) became newly circumcised. Incident circumcision affected neither recent sex (percentage point

change [PP] 0.0, 95%CI -1.2 to 1.3) nor sexual behaviors that increase HIV risk (PP -1.6, 95%CI -4.5 to 1.4).

CONCLUSION: The data from this study strongly reject the hypothesis that circumcision affects sexual risk taking. Risk compensation should not serve as an argument against increased and accelerated scale-up of circumcision in this and similar communities in South Africa. This is an open-access article distributed under the terms of the Creative Commons Attribution-Non Commercial License 4.0 (CCBY-NC), where it is permissible to download, share, remix, transform, and buildup the work provided it is properly cited. The work cannot be used commercially without permission from the journal.

2. Kalichman, S., et al. **Male circumcision for HIV prevention: Awareness, risk compensation, and risk perceptions among South African women.** *Glob Public Health* 2018;13(11): 1682-1690.

Medical male circumcision (MMC) is a proven method of HIV risk reduction for men in southern Africa. MMC promotion campaigns and scale-up programmes are widely implemented throughout the Republic of South Africa. However, the impact of promoting MMC on women's awareness, beliefs, and behaviours has been understudied. We conducted a self-administered anonymous survey of 279 women receiving health services in an impoverished township located in Cape Town, South Africa. Results showed that two in three women were unaware that male circumcision partially protects men from contracting HIV. Women who were aware of MMC for HIV prevention also endorsed beliefs that male circumcision reduces the need for men to worry about HIV and reduces the need for men to use condoms. Male circumcision awareness was also related to reduced perceptions of HIV risk among women. Multivariable models showed that women's MMC awareness, circumcision risk compensation beliefs, and risk perceptions were associated with decreased condom use and higher HIV risk index scores defined as number of condomless vaginal intercourse X number of sex partners. These results suggest a need for MMC education efforts tailored for women living in communities with high-HIV prevalence where men are targeted for MMC.

3. Grund, J. M., et al. **Association of male circumcision with women's knowledge of its biomedical effects and with their sexual satisfaction and function: A systematic review.** *AIDS Behav* 2018 Oct 24. [Epub ahead of print]

Male circumcision (MC) is a key HIV prevention intervention for men in countries with high HIV prevalence. Women's understanding of MC is important but poorly understood. We conducted a systematic review including women's knowledge of MC's biomedical impacts and its association with female sexual satisfaction and function through October 2017. Thirty-eight articles were identified: thirty-two with knowledge outcomes, seven with sexual satisfaction, and four with sexual function (N = 38). Respondent proportions aware MC protects men from HIV were 9.84-91.8% (median

60.0%). Proportions aware MC protects men from STIs were 14.3-100% (72.6%). Proportions aware MC partially protects men from HIV were 37.5-82% (50.7%). Proportions aware MC is not proven to protect women from infection by an HIV-positive partner were 90.0-96.8% (93.0%). No increases over time were noted. Women's MC knowledge is variable. Education could help women support MC and make better-informed sexual decisions.

4. Nanteza, B. M., et al. **Knowledge on voluntary medical male circumcision in a low uptake setting in northern Uganda.** *BMC Public Health* 2018;18(1): 1278.
Online at: <https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-018-6158-2>

BACKGROUND: Free VMMC services have been available in Uganda since 2010. However, uptake in Northern Uganda remains disproportionately low. We aimed to determine if this is due to men's insufficient knowledge on VMMC, and if women's knowledge on VMMC has any association with VMMC status of their male sexual partners.

METHODS: In this cross sectional study, participants were asked their circumcision status (or that of their male sexual partner for female respondents) and presented with 14 questions on VMMC benefits, procedure, risk, and misconceptions. Chi square tests or fisher exact tests were used to compare circumcision prevalence among those who gave correct responses versus those who failed to and if $p < 0.05$, the comparison groups were balanced with propensity score weights in modified poisson models to estimate prevalence ratios, PR.

RESULTS: A total of 396 men and 50 women were included in the analyses. Circumcision was 42% less prevalent among males who failed to reject the misconception that VMMC reduces sexual performance ($PR = 0.58$, 95% CI 0.38-0.89, $p = 0.012$), and less prevalent among male sexual partners of females who failed to reject the same misconception ($PR = 0.22$, 95% CI = 0.07-0.76, $p = 0.016$). Circumcision was also 35% less prevalent among male respondents who failed to reject the misconception that VMMC increases a man's desire for more sexual partners i.e. promiscuity ($PR = 0.65$, 95% CI = 0.46-0.92, $p = 0.014$).

CONCLUSION: Misconceptions regarding change in sexual drive or performance were associated with circumcision status in this population, while knowledge of VMMC benefits, risks and procedure was not.