

Quarterly Research Digest on Voluntary Medical Male Circumcision for HIV Prevention

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Combination HIV prevention

1. Muwanguzi, P. A., et al. **The effects of workplace-based HIV self-testing on uptake of testing and linkage to HIV care or prevention by men in Uganda (WISe-Men): protocol for a cluster randomized trial.** *JMIR Res Protoc.* 2021;10(11):e25099.

Online at: <https://www.researchprotocols.org/2021/11/e25099/>.

BACKGROUND: HIV testing uptake remains low among men in sub-Saharan Africa. HIV self-testing (HIVST) at the workplace is a novel approach to increase the availability of, and access to, testing among men. However, both access and linkage to posttest services remain a challenge.

OBJECTIVE: The aim of this protocol is to describe a cluster randomized trial (CRT)-Workplace-Based HIV Self-testing Among Men (WISe-Men)-to evaluate the effect of HIVST in workplace settings on the uptake of HIV testing services (HTS) and linkage to treatment and prevention services among men employed in private security services in Uganda.

METHODS: This is a two-arm CRT involving men employed in private security services in two Ugandan districts. The participants in the intervention clusters will undergo workplace-based HIVST using OraQuick test kits. Those in the control clusters will receive routine HTS at their work premises. In addition to HTS, participants in both the intervention and control arms will undergo other tests and assessments, which include blood pressure assessment, blood glucose and BMI measurement, and rapid diagnostic testing for syphilis. The primary outcome is the uptake of HIV testing. The secondary outcomes include HIV status reporting, linkage into HIV care and confirmatory testing following HIVST, initiation of antiretroviral therapy following a confirmatory HIV test, the uptake of voluntary medical male circumcision, consistent condom use, and the uptake of pre-exposure prophylaxis by the most at-risk populations.

RESULTS: Participant enrollment commenced in February 2020, and the trial is still recruiting study participants. Follow-up for currently enrolled participants is ongoing. Data collection and analysis is expected to be completed in December 2021.

CONCLUSIONS: The WISE-Men trial will provide information regarding whether self-testing at worksites increases the uptake of HIV testing as well as the linkage to care and prevention services at male-dominated workplaces in Uganda. Additionally, the findings will help us propose strategies for improving men's engagement in HTS and ways to improve linkage to further care following a reactive or nonreactive HIVST result.

TRIAL REGISTRATION: ClinicalTrials.gov NCT04164433;
<https://clinicaltrials.gov/ct2/show/NCT04164433>.

INTERNATIONAL REGISTERED REPORT IDENTIFIER (IRRID): DERR1-10.2196/25099.

2. Gutin, S. A., et al. **Relationship, partner factors and stigma are associated with safer conception information, motivation, and behavioral skills among women living with HIV in Botswana.** *BMC Public Health.* 2021;21(1):2231.

Online at: <https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-021-12268-5>.

BACKGROUND: A significant proportion (20-59%) of people living with HIV in sub-Saharan Africa desire childbearing, are of reproductive age, and are in sero-different relationships (~50%). Thus it is plausible that some portion of new HIV transmissions are due to attempts to become pregnant. Safer conception (SC) methods that effectively reduce the risk of HIV transmission exist and can be made available in resource-constrained settings. Few studies in the region, and none in Botswana, have quantitatively examined the correlates of information, motivation, and behavioral skills for SC uptake.

METHODS: We surveyed 356 women living with HIV from 6/2018 to 12/2018 at six public-sector health clinics in Gaborone, Botswana. Participants were 18-40 years old, not pregnant, and desired future children or were unsure about their childbearing plans. We examined correlates of SC information, motivation, and behavioral skills using nested linear regression models, adjusting for socio-demographic, interpersonal, and structural variables.

RESULTS: Knowledge of SC methods varied widely. While some SC methods were well known (medical male circumcision by 83%, antiretroviral therapy for viral suppression by 64%), most other methods were known by less than 40% of participants. Our final models reveal that stigma as well as relationship and partner factors affect SC information, motivation, and behavioral skills. Both internalized childbearing stigma ($ss=-0.50$, 95%CI:-0.17, -0.02) and perceived community childbearing stigma were negatively associated with SC information ($ss=-0.09$, 95%CI:-0.80, -0.21). Anticipated ($ss=-0.06$, 95%CI:-0.12, -0.003) and internalized stigma ($ss=-0.27$, 95%CI:-0.44; -0.10) were associated with decreased SC motivation, while perceived community childbearing stigma was associated with increased SC motivation ($ss=0.07$, 95%CI:0.02, 0.11). Finally, internalized childbearing stigma was associated with decreased SC behavioral skills ($ss=-0.80$, 95%CI: -1.12, -0.47) while SC information ($ss=0.24$, 95%CI:0.12, 0.36), motivation ($ss=0.36$, 95%CI:0.15, 0.58), and perceived partner willingness to use SC ($ss=0.47$, 95%CI:0.36, 0.57) were positively associated with behavioral skills

CONCLUSIONS: Low SC method-specific information levels are concerning since almost half (47%) of the study participants reported they were in sero-different relationships and desired more children. Findings highlight the importance of addressing HIV stigma and partner dynamics in interventions to improve SC information, motivation, and behavioral skills.

Cost and cost-effectiveness

1. Schmitt, L., et al. **Concomitant health benefits package design and research prioritisation: development of a new approach and an application to Malawi.** *BMJ Glob Health.* 2021;6(12):e007047.

Online at: <https://gh.bmj.com/content/6/12/e007047.long>.

Health benefits packages (HBPs) are increasingly used in many countries to guide spending priorities on the path towards universal health coverage. Their design is, however, informed by an uncertain evidence base but research funds available to address this are limited. This gives rise to the question of which piece of research relating to the cost-effectiveness of interventions would most contribute to improving resource allocation. We propose to incorporate research prioritisation as an integral part of HBP design. We have, therefore, developed a framework and a freely available companion stand-alone tool, to quantify in terms of net disability-adjusted life-years (DALYs) averted, the value of research for the interventions considered for inclusion in a package. Using the tool, the framework can be implemented using sensitivity analysis results typically reported in cost-effectiveness studies. To illustrate the framework, we applied the tool to the evidence base that informed the Malawi Health Sector Strategic Plan 2017-2022. Out of 21 interventions considered, 8 investment decisions were found to be uncertain and three showed strong potential for research to generate large health gains: 'male circumcision', 'community-management of acute malnutrition in children' and 'isoniazid preventive therapy in HIV +individuals', with a potential to avert up to 65 762, 36 438 and 20 132 net DALYs, respectively. Our work can help set research priorities in resource-constrained settings so that research funds are invested where they have the largest potential to impact on the population health generated via HBPs.

2. Holmes, M., et al. **An economic evaluation of an intervention to increase demand for medical male circumcision among men aged 25-49 years in South Africa.** *BMC Health Serv Res.* 2021;21(1):1097.

Online at: <https://bmchealthservres.biomedcentral.com/articles/10.1186/s12913-021-06793-7>.

BACKGROUND: Studies estimate that circumcising men between the ages of 20-30 years who have exhibited previous risky sexual behaviour could reduce overall HIV prevalence. Demand creation strategies for medical male circumcision (MMC) targeting men in this age group may significantly impact these prevalence rates.

OBJECTIVES: The objective of this study is to evaluate the cost-effectiveness and cost-benefit of an implementation science, pre-post study designed to increase the uptake of male circumcision for ages 25-49 at a fixed MMC clinic located in Gauteng Province, South Africa.

METHODS: A health care provider perspective was utilised to collect all costs. Costs were compared between the standard care scenario of routine outreach strategies and a full intervention strategy. Cost-effectiveness was measured as cost per mature man enrolled and cost per mature man circumcised. A cost-benefit analysis was employed by using the Bernoulli model to estimate the cases of HIV averted due to medical male circumcision (MMC), and subsequently translated to averted medical costs.

RESULTS: In the 2015 intervention, the cost of the intervention was \$9445 for 722 men. The total HIV treatment costs averted due to the intervention were \$542,491 from a public care model and \$378,073 from a private care model. The benefit-cost ratio was 57.44 for the public care model and 40.03 for the private care model. The net savings of the intervention were \$533,046 or \$368,628 - depending on treatment in a public or private setting.

CONCLUSIONS: The intervention was cost-effective compared to similar MMC demand interventions and led to statistically significant cost savings per individual enrolled.

Enhancing uptake of VMMC

1. Tshenko, G. N., et al. **Mediation analysis of a theory-based culture and age-appropriate HIV/STI prevention (abstract)**. *Prev Sci* 2021 Dec 22. Online ahead of print.

Online at: <https://link.springer.com/article/10.1007%2Fs11121-021-01306-8>.

Few studies have investigated mediator effects of HIV prevention interventions on adolescents in sub-Saharan Africa. Herein, we report on a secondary analysis of an intervention that increased intentions to use condoms, abstain from sexual intercourse, and seek safe male circumcision among adolescents in Botswana. In a study conducted in Botswana, 806 grade 9 students from 21 public Junior Secondary Schools were randomly assigned to either the OWN THE FUTURE: Pulling Together We Will" (PTWW) intervention group or a health promotion control group. Both conditions consisted of 12 1-h modules, with two modules delivered during each of the six sessions on six consecutive school days. The students in both groups completed confidential computer-based surveys at several time points: pre-, immediately post-, 3, 6, and 12 months post-intervention. Mediation was assessed using the product-of-coefficients approach in a generalized estimating equations (GEE) framework. The analyses showed that condom use beliefs were significant mediators of the intervention effect on the intention to consistently use condoms over time. Also, negative socio-cultural beliefs, prevention beliefs, and HIV/STI knowledge were significant mediators of the intervention's effects on the intention to abstain from sex. Additionally, normative beliefs, prevention beliefs, parental negotiation, and circumcision knowledge were significant mediators of the intervention's effect on intention to seek safe male circumcision. The mediation analysis delineated a theoretical model and isolated activities that positively impact condom use, abstinence from sex, and circumcision intentions of Botswana middle school adolescents.

2. Letsela, L., et al. **The role and effectiveness of school-based extra-curricular interventions on children's health and HIV related behaviour: the case study of Soul Buddyz Clubs Programme in South Africa.** *BMC Public Health.* 2021;21(1):2259.

Online at: <https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-021-12281-8>.

BACKGROUND: HIV education targeting children and adolescents is a key component of HIV prevention. This is especially important in the context of increasing HIV prevalence rates among adolescents and young people. The authors sought to examine the role and effectiveness of an extra-curricular school based programme, Soul Buddyz Clubs (SBC) on HIV knowledge, attitudes, behaviours and biomedical outcomes.

METHODS: This paper employs a mixed methods approach drawing on data from independent qualitative and quantitative sources. Secondary data analysis was performed using survey data from a nationally representative sample that was restricted to 10-14 year-old males and females living in South Africa. Ten focus group discussions and ten in-depth interviews conducted with SBC members and facilitators from 5 provinces, as part of a process evaluation are used to triangulate the effectiveness of SBC intervention.

RESULTS: The analysis of survey data from 2 198 children indicated that 12% of respondents were exposed to SBC with 4% reporting that they had ever belonged to a club. Children exposed to SBC were more likely to be medically circumcised (AOR 2.38; 95%CI 1.29 -4.40, p=0.006), had correct HIV knowledge (AOR 2.21; 95%CI 1.36 - 3.57, p<0.001) and had less HIV stigmatising attitudes (AOR 0.54; 95%CI 0.31-0.93, p=0.025), adjusting for age, sex, province and exposure to other media - in comparison to those not exposed. Propensity Score Matching findings were consistent with the regression findings. Qualitative findings also supported some of the quantitative results. SBC members reported having learnt about HIV prevention life skills, including condom use, positive attitudes towards people living with HIV, and alcohol abuse.

CONCLUSIONS: Participation in SBC is associated with accessing biomedical HIV prevention services, specifically MMC, correct HIV prevention knowledge and less HIV stigmatizing attitudes. This paper demonstrates the effectiveness of a school-based extracurricular intervention using a club approach targeting boys and girls ages 10-14 years on some of the key HIV prevention biomarkers as well as knowledge and attitudes. The article suggests that extra-curricular interventions can form an effective component of school-based comprehensive sexuality education in preventing HIV and promoting medical male circumcision.

Epidemiological studies

1. Ntombela, N. P., et al. **Prevalence and risk factors for HIV infection among heterosexual men recruited from socializing venues in rural KwaZulu-Natal, South Africa (abstract).** *AIDS Behav.* 2021;25(11):3528–37.

Online at: <https://link.springer.com/article/10.1007%2Fs10461-021-03182-3>.

Young heterosexual men have low uptake of HIV prevention and treatment services and represent an important key population that may require novel strategies. We recruited 1271 heterosexual men, 12 years and older from socializing venues such as "shebeens", transport

hubs, "spaza" shops, and community centers in rural KwaZulu-Natal, South Africa. Participants completed a questionnaire and were tested for HIV serostatus. Generalized estimating equations (GEE) with exchangeable covariance structure estimated factors independently associated with prevalent HIV infection. Median age was 25 years [Interquartile range (IQR) 21-29]. HIV prevalence was 15.5% [95% confidence interval (CI) 11.0-21.9] and increased significantly by age. Factors associated with higher odds of HIV infection were being 25 years and older [adjusted odds ratio (aOR) 4.82, 95% CI 3.47-6.69; $p < 0.001$], not completing high school (aOR 1.60, 95% CI 1.39-1.85; $p < 0.001$), not using condoms at first sex (aOR 1.43, 95% CI 1.20-1.70; $p < 0.001$), consuming alcohol (aOR 1.63, 95% CI 1.15-2.31; $p = 0.006$) or substances (aOR 1.37, 95% CI 1.31-1.44; $p < 0.001$), and absence of medical circumcision (aOR 2.05, 95% CI 1.71-2.44; $p < 0.001$). Risk was lower among those testing for HIV in last 12 months (aOR 0.54, 95% CI 0.36-0.80; $p = 0.002$). Greater effort is needed to implement innovative programs within settings that are easily accessible and where heterosexual men are likely to be.

Impact and coverage

1. Loevinsohn, G., et al. **Effectiveness of voluntary medical male circumcision for human immunodeficiency virus prevention in Rakai, Uganda (abstract)**. *Clin Infect Dis*. 2021;73(7):e1946e1953.

Online at: <https://academic.oup.com/cid/article-abstract/73/7/e1946/5921021?redirectedFrom=fulltext>.

BACKGROUND: The efficacy of voluntary medical male circumcision (VMMC) for human immunodeficiency virus (HIV) prevention in men was demonstrated in 3 randomized trials. This led to the adoption of VMMC as an integral component of the United States President's Emergency Plan for AIDS Relief (PEPFAR) combination HIV prevention program in sub-Saharan Africa. However, evidence on the individual-level effectiveness of VMMC programs in real-world, programmatic settings is limited.

METHODS: A cohort of initially uncircumcised, non-Muslim, HIV-uninfected men in the Rakai Community Cohort Study in Uganda was followed between 2009 and 2016 during VMMC scale-up. Self-reported VMMC status was collected and HIV tests performed at surveys conducted every 18 months. Multivariable Poisson regression was used to estimate the incidence rate ratio (IRR) of HIV acquisition in newly circumcised vs uncircumcised men.

RESULTS: A total of 3916 non-Muslim men were followed for 17 088 person-years (PY). There were 1338 newly reported VMMCs (9.8/100 PY). Over the study period, the median age of men adopting VMMC declined from 28 years (interquartile range [IQR], 21-35 years) to 22 years (IQR, 18-29 years) (P for trend $< .001$). HIV incidence was 0.40/100 PY (20/4992.8 PY) among newly circumcised men and 0.98/100 PY (118/12 095.1 PY) among uncircumcised men with an adjusted IRR of 0.47 (95% confidence interval, .28-.78). The effectiveness of VMMC was sustained with increasing time from surgery and was similar across age groups and calendar time.

CONCLUSIONS: VMMC programs are highly effective in preventing HIV acquisition in men. The observed effectiveness is consistent with efficacy in clinical trials and supports current recommendations that VMMC is a key component of programs to reduce HIV incidence.

2. Stover, J., et al. **The risks and benefits of providing HIV services during the COVID-19 pandemic.** *PLoS One.* 2021;16(12):e0260820.

Online at: <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0260820>.

INTRODUCTION: The COVID-19 pandemic has caused widespread disruptions including to health services. In the early response to the pandemic many countries restricted population movements and some health services were suspended or limited. In late 2020 and early 2021 some countries re-imposed restrictions. Health authorities need to balance the potential harms of additional SARS-CoV-2 transmission due to contacts associated with health services against the benefits of those services, including fewer new HIV infections and deaths. This paper examines these trade-offs for select HIV services.

METHODS: We used four HIV simulation models (Goals, HIV Synthesis, Optima HIV and EMOD) to estimate the benefits of continuing HIV services in terms of fewer new HIV infections and deaths. We used three COVID-19 transmission models (Covasim, Cooper/Smith and a simple contact model) to estimate the additional deaths due to SARS-CoV-2 transmission among health workers and clients. We examined four HIV services: voluntary medical male circumcision, HIV diagnostic testing, viral load testing and programs to prevent mother-to-child transmission. We compared COVID-19 deaths in 2020 and 2021 with HIV deaths occurring now and over the next 50 years discounted to present value. The models were applied to countries with a range of HIV and COVID-19 epidemics.

RESULTS: Maintaining these HIV services could lead to additional COVID-19 deaths of 0.002 to 0.15 per 10,000 clients. HIV-related deaths averted are estimated to be much larger, 19-146 discounted deaths per 10,000 clients.

DISCUSSION: While there is some additional short-term risk of SARS-CoV-2 transmission associated with providing HIV services, the risk of additional COVID-19 deaths is at least 100 times less than the HIV deaths averted by those services. Ministries of Health need to take into account many factors in deciding when and how to offer essential health services during the COVID-19 pandemic. This work shows that the benefits of continuing key HIV services are far larger than the risks of additional SARS-CoV-2 transmission.

Safety and quality

1. O'Bryan, G., et al. **Adverse event profile and associated factors following surgical voluntary medical male circumcision in two regions of Namibia, 2015-2018.** *PLoS One.* 2021;16(10):e0258611.

Online at: <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0258611>.

INTRODUCTION: Monitoring clinical safety of voluntary medical male circumcision (VMMC) is critical to minimize risk as VMMC programs for HIV prevention are scaled. This cross-sectional

analysis describes the adverse event (AE) profile of a large-scale, routine VMMC program and identifies factors associated with the development, severity, and timing of AEs to provide recommendations for program quality improvement.

MATERIALS AND METHODS: From 2015-2018 there were 28,990 circumcisions performed in International Training and Education Center for Health (I-TECH) supported regions of Namibia in collaboration with the Ministry of Health and Social Services. Two routine follow-up visits after VMMC were scheduled to identify clients with AEs. Summary statistics were used to describe characteristics of all VMMC clients and the subset who experienced an AE. We used chi-square tests to evaluate associations between AE timing, patient age, and other patient and AE characteristics. We used a logistic regression model to explore associations between patient characteristics and AE severity.

RESULTS: Of the 498 clients with AEs (AE rate of 1.7%), 40 (8%) occurred ≤ 2 days, 262 (53%) occurred 3-7 days, 161 (32%) between day 8 and 14, and 35 (7%) were ≥ 15 days post-VMMC. Early AEs (on or before day 2) tended to be severe and categorized as bleeding, while infections were the most common AEs occurring later ($p < 0.001$). Younger clients (aged 10-14 years) experienced more infections, whereas older clients experienced more bleeding ($p < 0.001$).

CONCLUSIONS: Almost 40% of AEs occurred after the second follow-up visit, of which 179 (91%) were infections. Improvements in pre-surgical and post-surgical counselling and post-operative educational materials encouraging clients to seek care at any time, adoption of alternative follow-up methods, and the addition of a third follow-up visit may improve outcomes for patients. Enhancing post-surgical counselling and emphasizing wound care for younger VMMC clients and their caregivers could help mitigate elevated risk of infection.

2. Victor, O., et al. **Adverse event trends within a large-scale, routine, voluntary medical male circumcision program in Zimbabwe, 2014-2019.** *J Acquir Immune Defic Syndr.* 2021;88(2):173–80.

Online at:

https://journals.lww.com/jaids/Fulltext/2021/10010/Adverse_Event_Trends_Within_a_Large_Scale,.8.aspx.

BACKGROUND: Between 2008 and 2020, over 22.6 million male circumcisions (MCs) were performed among men ≥ 10 years in 15 priority countries of East and Southern Africa. Few studies from routine MC programs operating at scale describe trends of adverse events (AEs) or AE rates over time.

SETTING: Routine program data from a large MC program in Zimbabwe.

METHODS: chi2 compared characteristics of patients with AEs. Univariable and multivariable logistic models examined factors associated with AE severity. Cochran-Armitage trend tests compared AE rate trends by year (2014-2019), age, and MC method (2017-2019).

RESULTS: From 2014 to 2019, 469,000 men were circumcised; of the total men circumcised, 38%, 27%, and 35% were conducted among individuals aged 10-14; 15-19; and ≥ 20 years, respectively. Most MCs (95%) used surgical (dorsal slit or forceps-guided) methods; 5% were

device based (PrePex). AEs were reported among 632 (0.13%) MCs; 0.05% were severe. From 2015 to 2019, overall AE rates declined from 34/10,000 to 5/10,000 (P-value <0.001). Severe AE rates also decreased over this period from 12/10,000 to 2/10,000 (P-value <0.001). AE rates among younger clients, aged 10-14 (18/10,000) were higher than among older age men (9/10,000) aged ≥ 20 years (P < 0.001); however, there was no significant association between age and AE severity.

CONCLUSION: AE rates each year and over time were lower than the World Health Organization acceptable maximum (2% AEs). ZAZIC quality assurance activities ensured guideline adherence, mentored clinicians to MC competency, promoted quality client education and counseling, and improved AE reporting over time. Decreases in AE rates are likely attributed to safety gains and increasing provider experience.

Social and behavioural research

1. Rosen, J. G., et al. **Barriers, benefits, and behaviour: voluntary medical male circumcision ideation in a population-based sample of Zambian men.** *Afr J AIDS Res.* 2021;20(4):314–23.

Online at: <https://www.tandfonline.com/doi/abs/10.2989/16085906.2021.2006727>.

Reaching ambitious voluntary medical male circumcision (VMMC) coverage targets requires a deeper understanding of the multifaceted processes shaping men's willingness to access VMMC. Guided by the Ideation Model for Health Communication, this population-based study identifies correlates of Zambian men's future VMMC intentions. Multistage cluster sampling was used to identify households with adult men in 14 districts. Multivariable Poisson regression with robust standard errors modelled associations of future VMMC intent with ideational factors (e.g. perceived benefits and barriers) and sexual behaviours respectively. Forty per cent (40%) of uncircumcised men (N = 1 204) expressed future VMMC intentions. In multivariable analysis, VMMC intent was associated with secondary education or higher (Adjusted Prevalence Ratio [APR] 1.30, 95% Confidence Interval [95% CI]: 1.02-1.66), perceiving VMMC to increase sexual satisfaction (APR 1.45, 95% CI: 1.11-1.89), reporting distance to services as a barrier to VMMC uptake (APR = 0.54, 95% CI: 1.27-1.87), unprotected last sex (APR 1.54, 95% CI: 1.11-2.14), and ≥ 2 sexual partners in the past 12 months (APR 1.45, 95% CI: 1.05-1.99). Being aged ≥ 45 years (vs 18-24 years: APR 0.23, 95% CI: 0.13-0.40) and perceiving that circumcision: (1) is unimportant (APR 0.71, 95% CI: 0.51-0.98); (2) is incompatible with local customs (APR 0.41, 95% CI: 0.18-0.94); or (3) reduces sexual satisfaction (APR 0.10, 95% CI: 0.02-0.62) were inversely associated with future VMMC intent. Demand-creation efforts must confront salient cognitive and social barriers to VMMC uptake, including concerns around incompatibility with local customs. Simultaneously, promotional efforts should emphasise relevant VMMC benefits beyond HIV prevention that resonate with men (e.g. penile hygiene) without reinforcing harmful gender norms.

2. Pineda-Antunez, C., et al. **Characterizing health care provider knowledge: evidence from HIV services in Kenya, Rwanda, South Africa, and Zambia.** *PLoS One.* 2021;16(12):e0260571.

Online at: <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0260571>.

BACKGROUND: Identifying approaches to improve levels of health care provider knowledge in resource-poor settings is critical. We assessed level of provider knowledge for HIV testing and counseling (HTC), prevention of mother-to-child transmission (PMTCT), and voluntary medical male circumcision (VMMC). We also explored the association between HTC, PMTCT, and VMMC provider knowledge and provider and facility characteristics.

METHODS: We used data collected in 2012 and 2013. Vignettes were administered to physicians, nurses, and counselors in facilities in Kenya (66), Rwanda (67), South Africa (57), and Zambia (58). The analytic sample consisted of providers of HTC (755), PMTCT (709), and VMMC (332). HTC, PMTCT, and VMMC provider knowledge scores were constructed using item response theory (IRT). We used GLM regressions to examine associations between provider knowledge and provider and facility characteristics focusing on average patient load, provider years in position, provider working in another facility, senior staff in facility, program age, proportion of intervention exclusive staff, person-days of training in facility, and management score. We estimated three models: Model 1 estimated standard errors without clustering, Model 2 estimated robust standard errors, and Model 3 estimated standard errors clustering by facility.

RESULTS: The mean knowledge score was 36 for all three interventions. In Model 1, we found that provider knowledge scores were higher among providers in facilities with senior staff and among providers in facilities with higher proportions of intervention exclusive staff. We also found negative relationships between the outcome and provider years in position, average program age, provider working in another facility, person-days of training, and management score. In Model 3, only the coefficients for provider years in position, average program age, and management score remained statistically significant at conventional levels.

CONCLUSIONS: HTC, PMTCT, and VMMC provider knowledge was low in Kenya, Rwanda, South Africa, and Zambia. Our study suggests that unobservable organizational factors may facilitate communication, learning, and knowledge. On the one hand, our study shows that the presence of senior staff and staff dedication may enable knowledge acquisition. On the other hand, our study provides a note of caution on the potential knowledge depreciation correlated with the time staff spend in a position and program age.

3. Nxumalo, C.T., et al. **The development of an explanatory model for voluntary medical male circumcision in KwaZulu-Natal, South Africa.** *S Afr Fam Pract (2004).* 2021;63(1):5346.

Online at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8661273/>.

BACKGROUND: KwaZulu-Natal (KZN) remains the epicentre of the human immunodeficiency virus/acquired immunodeficiency syndrome (HIV/AIDS) epidemic in South Africa. The incidence of HIV infection in KZN necessitates cost-effective strategies to curb the spread of infection. Voluntary medical male circumcision (VMMC) has been adopted as an additional biomedical

preventive strategy since 2010 in line with recommendations from the World Health Organization. Despite several attempts to scale-up VMMC to reach age specific targets to achieve immediate aversion of infections, the uptake of VMMC remains sub-optimal, particularly in KZN. The purpose of this study is to describe the processes that were followed in developing, describing and evaluating an explanatory model for VMMC in KZN, South Africa.

METHODS: A qualitative theory-generative phenomenographic study design was used to analyse the qualitative differences in primary healthcare stakeholders' experiences, understanding and conceptions of VMMC in KZN, South Africa. The emerging results informed the development of the VMMC explanatory model for KZN, South Africa. The model development process followed four steps, namely (1) concept analysis, (2) construction of relational statements, (3) model description and (4) model evaluation. The criteria of relevance for the target audience - applicability, clarity, user friendliness and originality of work - were used to evaluate the model.

RESULTS: The model's central premise is that the decision to undergo VMMC is shaped by a complex interplay of factors in the context or external environment of males (the extrinsic variable), which influences specific experiences, conceptions and understanding regarding VMMC (the influential/intrinsic variables). These collectively determine men's responses to VMMC (the outcome variable).

CONCLUSION: The model describes the process by which contextual, extrinsic and intrinsic variables interact to determine an individual male's response to VMMC, thus providing a guide to primary healthcare providers on care, practice and policy interventions to support the uptake of VMMC in the rural primary healthcare context of KZN, South Africa.

4. Mapanga, W., et al. **Impact of excluded studies on medical male circumcision and HIV risk compensation.** *Lancet Glob Health.* 2021;9(11):e1505.

Online at: [https://www.thelancet.com/journals/langlo/article/PIIS2214-109X\(21\)00435-6/fulltext](https://www.thelancet.com/journals/langlo/article/PIIS2214-109X(21)00435-6/fulltext).

Yanxiao Gao and colleagues (July, 2021)¹ present a systematic review and meta-analysis on the important topic of the association between voluntary medical male circumcision and HIV risk compensation among heterosexual men. Their findings indicate that there were no significant associations between medical male circumcision and multiple sex partners or condomless sex, suggesting that medical male circumcision does not increase higher risk sexual behaviours in heterosexual men.

5. Gao, Y., et al. **Impact of excluded studies on medical male circumcision and HIV risk compensation - authors' reply.** *Lancet Glob Health.* 2021;9(11):e1506.

Online at: [https://www.thelancet.com/journals/langlo/article/PIIS2214-109X\(21\)00437-X/fulltext](https://www.thelancet.com/journals/langlo/article/PIIS2214-109X(21)00437-X/fulltext).

We thank Witness Mapanga and colleagues for their comment on our meta-analysis.¹ The [appendix \(pp 1–4\)](#) shows a list of the excluded studies and reasons they were excluded, based on the exclusion criteria.

6. Fish, M., et al. **Medical male circumcision and risk compensation**. *Lancet Glob Health*. 2021;9(10):e1368.

Online at: [https://www.thelancet.com/journals/langlo/article/PIIS2214-109X\(21\)00360-0/fulltext](https://www.thelancet.com/journals/langlo/article/PIIS2214-109X(21)00360-0/fulltext).

14 years into the medical male circumcision (MMC) campaign for HIV prevention in sub-Saharan Africa, questions about scaling up remain. Researchers have reported evidence of increased sexual risk behaviours among a subset of men in some communities, possibly due to a false sense of security against HIV transmission from MMC. Other studies, involving different samples, assumptions, or measurements, have not found evidence of such risk compensation.

7. Serwadda, D. M., et al. **Medical male circumcision and risk compensation - authors' reply**. *Lancet Glob Health*. 2021;9(10):e1369.

Online at: [https://www.thelancet.com/journals/langlo/article/PIIS2214-109X\(21\)00358-2/fulltext](https://www.thelancet.com/journals/langlo/article/PIIS2214-109X(21)00358-2/fulltext).

An extensive meta-analysis by Gao and colleagues¹ showed that, overall, there is no association between medical male circumcision (MMC) and increased risk of sexual behaviour. In response to our Comment on this Article,² Fish and colleagues³ have taken exception to our conclusion that such findings “refute the alleged associations between MMC and risk compensation”. The evidence suggests that, in aggregate, there is no evidence of net risk compensation after MMC; however, this does not exclude the possibility of individual risk compensation behaviours.

8. Fleming, P. J., et al. **Integration of voluntary male medical circumcision for HIV prevention into norms of masculinity: findings from Kisumu, Kenya (abstract)**. *Cult Health Sex*. 2021;23(10):1451–63.

Online at: <https://www.tandfonline.com/doi/full/10.1080/13691058.2020.1829057?scroll=top&needAccess=true>.

While it is clear that in many communities ideas about masculinity and circumcision are connected, it is still unclear how young Kenyan men in the former Nyanza province from the traditionally non-circumcising Luo people perceive voluntary medical male circumcision as connected to masculinity and the role of voluntary medical male circumcision in the transition from boyhood to manhood. The objective of this study was to explore norms of masculinity and the decision-making process among Luo young men to provide a better understanding of how circumcision and masculinity relate to cultural norms within this community. The methodology consisted of eight FGDs with male peer groups and 24 in-depth interviews to elicit young men's perceptions of masculinity and voluntary medical male circumcision. Findings from thematic analysis reveal that young men described several key characteristics of masculinity including responsibility, bravery and sexual attractiveness. For some young men, voluntary medical male circumcision has embedded itself into cultural norms of masculinity by being a step in the transition from boyhood to manhood and by being a marker of some of these masculine characteristics. In the case of voluntary medical male circumcision, there may be opportunities to integrate other programming that helps men transition into healthy adulthood.

Traditional male circumcision

1. Gittings, L., et al. **'If you are found taking medicine, you will be called names and considered less of a man': young men's engagement with HIV treatment and care during ulwaluko (traditional initiation and circumcision) in the Eastern Cape Province of South Africa.** *SAHARA J.* 2021;18(1):64–76.

Online at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8049467/>.

This paper explores how HIV-positive *abakhwetha* (young male initiates) undergoing *ulwaluko* (traditional Xhosa initiation and circumcision) engage with HIV-related biomedical care and treatment. Health-focused life history narratives (n = 36), semi-structured interviews (n = 32) and analysis of health facility files (n = 41) with adolescent boys and young men (ages 13-24) living with HIV, and semi-structured interviews with traditional and biomedical health practitioners (n = 14) were conducted in 2017 and 2018. This research was part of the Mzantsi Wakho study, a longitudinal, mixed methods study of adolescents living with HIV (n = 1060). Findings demonstrate that *ulwaluko* rules of not engaging with biomedical care and treatment pose a challenge for initiates who are taking chronic medicine. Fears of inadvertent disclosure of their HIV-positive status collide with the pressure to successfully complete *ulwaluko* in order to be legitimised as men. In response to this dilemma, they engage a variety of strategies - including taking medicine in secret by hiding them, having a trusted person deliver them discretely, and stopping medicine-taking altogether. The three months following *ulwaluko* also pose a challenge in accessing biomedical treatment and care. In this time of high surveillance, *amakrwala* (new men) do not present at health facilities for fear of being thought to have had a botched circumcision or to have contravened 'manhood rules' and left *ulwaluko* before having healed properly. To get around this, those who continued taking medicine engaged caregiver pick-ups. Beyond suggesting that *ulwaluko* is a high-risk time for disengagement from biomedical treatment and care, this paper builds on a robust scholarship on the importance of locality and context in gender and health research. It documents the creativity, agency and resilience of initiates and their families as they subvert and re-signify health-related masculine norms.

2. Masese, R., et al. **Key challenges to voluntary medical male circumcision uptake in traditionally circumcising settings of Machinga district in Malawi.** *BMC Public Health.* 2021;21(1):1957.

Online at: <https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-021-11979-z>.

BACKGROUND: Voluntary medical male circumcision (VMMC) is becoming more popular as an important HIV prevention strategy. Malawi, with a high HIV and AIDS prevalence rate of 8.8% and a low male circumcision prevalence rate of 28% in 2016, is one of the priority countries recommended for VMMC scale-up. This paper investigates the attitudes and key challenges to VMMC adoption in a traditionally circumcising community in Malawi where male circumcision is culturally significant.

METHODS: A mixed design study using quantitative and qualitative data collection methods was carried out to determine the attitudes of 262 randomly selected males towards VMMC in a culturally circumcising community in Malawi. Statistical Package for the Social Sciences (SPSS)

version 20 was used to analyse the quantitative data. To identify predictors of VMMC uptake, we used logistic regression analysis. To identify the themes, qualitative data were analysed using content analysis.

RESULTS: The findings indicate that, while more males in this community prefer medical circumcision, traditional circumcision is still practised. Panic (63%) perceived surgical complications (31%), and cost (27%) in accessing VMMC services were some of the barriers to VMMC uptake. Age and culture were found to be statistically significant predictors of voluntary medical male circumcision in the logistic analysis. According to qualitative data analysis, the key challenges to VMMC uptake were the involvement of female health workers in the circumcision team and the incentives provided to traditional circumcisers.

CONCLUSION: According to the findings of this study, VMMC services should be provided in a culturally competent manner that respects and considers existing cultural beliefs and practices in the community. Coordination between local leaders and health workers should be encouraged so that VMMC services are provided in traditional settings, allowing for safe outcomes, and increasing VMMC uptake.