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Quarterly Research Digest on Voluntary Medical Male Circumcision for HIV Prevention

Biomedical mechanisms

1. Prodger, J. L., et al. **How does voluntary medical male circumcision reduce HIV risk?** *Curr HIV/AIDS Rep.* 2022;19(6):484–90.

   Online at: https://link.springer.com/article/10.1007/s11904-022-00634-w.

   PURPOSE OF REVIEW: Voluntary medical male circumcision (VMMC) is a surgical procedure that reduces HIV acquisition risk by almost two-thirds. However, global implementation is lagging, in part due to VMMC hesitancy. A better understanding of the mechanism(s) by which this procedure protects against HIV may increase acceptance of VMMC as an HIV risk reduction approach among health care providers and their clients.

   RECENT FINDINGS: HIV acquisition in the uncircumcised penis occurs preferentially across the inner foreskin tissues, due to increased susceptibility that is linked to elevated inflammatory cytokine levels in the sub-preputial space and an increased tissue density of HIV-susceptible CD4 + T cells. Inflammation can be caused by sexually transmitted infections, but is more commonly induced by specific anaerobic components of the penile microbiome. Circumcision protects by both directly removing the susceptible tissues of the inner foreskin, and by inducing a less inflammatory residual penile microbiome. VMMC reduces HIV susceptibility by removing susceptible penile tissues, and also through impacts on the penile immune and microbial milieu. Understanding these mechanisms may not only increase VMMC acceptability and

reinvigorate global VMMC programs, but may also lead to non-surgical HIV prevention approaches focused on penile immunology and/or microbiota.

2. Goncalves, M. F. M., et al. **Microbiome in male genital mucosa (prepuce, glans, and coronal sulcus): a systematic review**. *Microorganisms.* 2022;10(12):2312.

   Online at: https://www.mdpi.com/2076-2607/10/12/2312.

   The human body represents a complex and diverse reservoir of microorganisms. Although the human microbiome remains poorly characterized and understood, it should not be underestimated, since recent studies have highlighted its importance in health. This is especially evident when considering microbiota in the male reproductive system, responsible for men's fertility and sexual behavior. Therefore, the aim of this systematic review is to provide an overview of the microbial communities of the healthy male genital mucosa and its role in disease. This study was performed according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. The search was limited to the English language and studies published until August 2022 that included culture-independent techniques for microbiome characterization in male genital mucosa. Ten articles were included. The bacterial composition of the male genital mucosa consists of several genera including Prevotella, Finegoldia, Peptoniphilus, Staphylococcus, Corynebacterium, and Anaerococcus, suggesting that the male genital microbiome composition shows similarities with the adjacent anatomical sites and is related with sexual intercourse. Moreover, male circumcision appears to influence the penile microbiome. Despite the lack of knowledge on the male genital mucosa microbiome in disease, it was reported that Staphylococcus warneri and Prevotella bivia were associated with balanoposthitis, whereas Enterobacteriaceae, Prevotella, and Fusobacterium were more abundant in male genital lichen sclerosus. The limited data and paucity of prospective controlled studies highlight the need for additional studies and established criteria for sampling methods and the microbiome assay procedure. Such a consensus would foster the knowledge about the composition of the genital microbiome of healthy males and its role in disease.

3. Mehta, S. D., et al. **Longitudinal changes in the composition of the penile microbiome are associated with circumcision status, HIV and HSV-2 status, sexual practices, and female partner microbiome composition**. *Front Cell Infect Microbiol.* 2022;12:916437.

   Online at: https://www.frontiersin.org/articles/10.3389/fcimb.2022.916437/full.

   BACKGROUND: Penile microbiome composition has been associated with HSV-2 and HIV in men and with bacterial vaginosis (BV) and HSV-2 in female sex partners. This study sought to 1) characterize penile microbiome composition over a 1-year period and 2) identify factors associated with penile microbiome composition over time.

METHODS: This prospective study of community-recruited heterosexual couples in Kenya measured penile and vaginal microbiomes via 16S ribosomal RNA gene amplicon sequencing at 4 time points over 1 year (1, 6, and 12 months after baseline). We used longitudinal mixed-effects modeling to assess associated demographic, behavioral, and disease factors and changes in community type, meatal taxa with the highest mean relative abundance, and alpha and beta diversity measures. We estimated group-based trajectories to elucidate compositional trends.

RESULTS: Among 218 men with 740 observations, men had a median age of 26 years, 11.6% were living with HIV, and 46.1% were HSV-2 seropositive. We identified 7 penile community types that varied with circumcision status, female partner vaginal microbiome community state type (CST), condom use, and penile washing. Across varying analytic approaches, 50%-60% of men had stable penile microbiome compositions. Alpha diversity measures were lower for circumcised men and those who reported condom use; they were stable over time but higher if female partners had diverse CSTs or BV. BV was positively associated with the relative abundance of numerous individual penile taxa. The decreased Bray-Curtis similarity was more common for men with HSV-2, and HSV-2 was also associated with a lower relative abundance of Corynebacterium and Staphylococcus.

CONCLUSIONS: Over a 1-year period, penile microbiome composition was stable for a substantial proportion of men and was influenced by men's circumcision status, sexual practices, female partner's vaginal CST and BV status, and men's HSV-2 status. In the female genital tract, a diverse CST is often associated with poorer health outcomes. Our results contribute toward understanding whether this framework extends to the penile microbiome and whether diversity and the associated penile microbiome compositions influence susceptibility or resilience to poorer health outcomes in men. Focusing on understanding how these factors influence the penile microbiome may lead to therapeutic avenues for reduced HSV-2 and BV infections in men and their female sex partners.

4. Chigorimbo-Murefu, N. T. L., et al. **A pilot study to show that asymptomatic sexually transmitted infections alter the foreskin epithelial proteome**. *Front Microbiol.* 2022;13:928317.

   Online at: https://www.frontiersin.org/articles/10.3389/fmicb.2022.928317/full.

   There is limited data on the role of asymptomatic STIs (aSTIs) on the risk of human immunodeficiency virus (HIV) acquisition in the male genital tract (MGT). The impact of foreskin removal on lowering HIV acquisition is well described, but molecular events leading to HIV acquisition are unclear. Here, in this pilot study, we show that asymptomatic urethral infection with Chlamydia trachomatis (CT) significantly impacts the foreskin proteome composition. We developed and optimized a shotgun liquid

chromatography coupled tandem mass spectrometry (MS)-based proteomics approach and utilized this on foreskins collected at medical male circumcision (MMC) from 16 aSTI(+) men and 10 age-matched STI- controls. We used a novel bioinformatic metaproteomic pipeline to detect differentially expressed (DE) proteins. Gene enrichment ontology analysis revealed proteins associated with inflammatory and immune activation function in both inner and outer foreskin from men with an aSTI. Neutrophil activation/degranulation and viral-evasion proteins were significantly enriched in foreskins from men with aSTI, whereas homotypic cell-cell adhesion proteins were enriched in foreskin tissue from men without an aSTI. Collectively, our data show that asymptomatic urethral sexually transmitted infections result in profound alterations in epithelial tissue that are associated with depletion of barrier integrity and immune activation.

Combination prevention

1. Nshimirimana, C., et al. **HIV testing uptake and determinants among adolescents and young people in Burundi: a cross-sectional analysis of the Demographic and Health Survey 2016-2017**. *BMJ Open.* 2022;12(10):e064052.

   Online at: https://bmjopen.bmj.com/content/12/10/e064052.long.

   OBJECTIVES: To assess HIV testing uptake and its determinants among adolescents and young adults.

   DESIGN: Cross-sectional design involving analysis of 2016 Demographic and Health Survey data.

   SETTING: Nationally representative survey of Burundi.

   PARTICIPANTS: A total of 7218 young women and 2860 young men were included.

   PRIMARY AND SECONDARY OUTCOME: We estimated the proportion of adolescent (15-19 years) and young adult (20-24 years) women and men who had tested for HIV and received results in the 12 months preceding the survey. Multivariable logistic models for determining predictors of HIV testing uptake were fitted among respondents aged 15-24 regardless of sexual activity in the 12 months before the survey and separately among a subset that reporting having had sex in the 12 months preceding the survey.

   RESULTS: An estimated 27.1% (95% CI 25.8% to 28.4%) women and 16.6% (95% CI 15.1% to 18.1%) men had tested for HIV and received results in the 12 months preceding the survey. The proportion was more than twice as high among those aged 20-24 years compared with 15-19 years, among both sexes. In multivariable analysis, older age (20-24 years) was associated with HIV testing (adjusted OR (aOR): 1.62, 95% CI 1.38 to 1.91) among women; (aOR: 1.78, 95% CI 1.32 to 2.40) among men. Higher

educational level (aOR: 1.40, 95% CI 1.11 to 1.76) was significantly associated with HIV testing uptake among women. Male circumcision status, condom use, number of sex partners, history of STIs were not associated with HIV testing among the subset that reported having had sex in the 12 months preceding the survey.

CONCLUSION: Despite the interventions implemented to reach the 90-90-90 UNAIDS goals, HIV testing among youth in Burundi was low. Youth-friendly health centres should be part of strategies to stimulate young people to increase uptake of HIV preventive services in Burundi.

2. Giddings, R., et al. **Infectious disease modelling of HIV prevention interventions: a systematic review and narrative synthesis of compartmental models**. *Pharmacoeconomics.* 2023 Mar 29. doi: 10.1007/s40273-023-01260-z.

   Online at: https://link.springer.com/article/10.1007/s40273-023-01260-z.

   BACKGROUND: The HIV epidemic remains a major public health problem. Critical to transmission control are HIV prevention strategies with new interventions continuing to be developed. Mathematical models are important for understanding the potential impact of these interventions and supporting policy decisions. This systematic review aims to answer the following question: when a new HIV prevention intervention is being considered or designed, what information regarding it is necessary to include in a compartmental model to provide useful insights to policy makers? The primary objective of this review is therefore to assess suitability of current compartmental HIV prevention models for informing policy development.

   METHODS: Articles published in EMBASE, Medline, Econlit, and Global Health were screened. Included studies were identified using permutations of (i) HIV, (ii) pre-exposure prophylaxis (PrEP), circumcision (both voluntary male circumcision [VMMC] and early-infant male circumcision [EIMC]), and vaccination, and (iii) modelling. Data extraction focused on study design, model structure, and intervention incorporation into models. Article quality was assessed using the TRACE (TRAnsparent and Comprehensive Ecological modelling documentation) criteria for mathematical models.

   RESULTS: Of 837 articles screened, 48 articles were included in the review, with 32 unique mathematical models identified. The substantial majority of studies included PrEP (83%), whilst fewer modelled circumcision (54%), and only a few focussed on vaccination (10%). Data evaluation, implementation verification, and model output corroboration were identified as areas of poorer model quality. Parameters commonly included in the mathematical models were intervention uptake and effectiveness, with additional intervention-specific common parameters identified. We identified key modelling gaps; critically, models insufficiently incorporate multiple interventions acting simultaneously. Additionally, population subgroups were generally poorly represented-with future models requiring improved incorporation of ethnicity and sexual risk group

stratification-and many models contained inappropriate data in parameterisation which will affect output accuracy.

CONCLUSIONS: This review identified gaps in compartmental models to date and suggests areas of improvement for models focusing on new prevention interventions. Resolution of such gaps within future models will ensure greater robustness and transparency, and enable more accurate assessment of the impact that new interventions may have, thereby providing more meaningful guidance to policy makers.

3. Maseko, B., et al. **Opinions on integrating couple counselling and female sexual reproductive health services into voluntary medical male circumcision services in Lilongwe, Malawi**. *PLoS One.* 2022;17(9):e0273627.

   Online at: https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0273627.

   BACKGROUND: Couples HIV Counselling and Testing (CHCT) has been found to be potentially beneficial than individual HIV Counselling and Testing for prevention and treatment of HIV. However, there are few health care opportunities for men and women to access health services together, leading to underutilization of CHCT service. Integrating female Sexual and Reproductive Health (SRH) services into male-dominated service could be more effective than trying to integrate men's health services into female-dominated health services. A potential site for male-female service integration could be Voluntary Medical Male Circumcision (VMMC) centers.

   METHODOLOGY: We conducted a qualitative study in Lilongwe, Malawi between June to August 2018. Twenty VMMC clients, 20 peers and 20 VMMC providers completed individual in-depth interviews to share their opinions on what they thought about integrating CHCT and other SRH Services into VMMC services. These proposed SRH services include family planning, cervical cancer screening, sexually transmitted infection management and pre-exposure prophylaxis (PrEP). Content analysis was used to analyze the results.

   RESULTS: All participants were receptive to integration of CHCT, and most accepted the integration of SRH services into VMMC Services. Most VMMC clients, peers and care providers said that CHCT integration would help couples to know their HIV status, prevent HIV transmission, encourage healthy relationships, and provide a chance for women to participate in VMMC counselling and wound care. However, integration of other services, such as family planning and cervical cancer screening, drew mixed opinions among participants. Most VMMC clients, peers and providers felt that integration of services would promote male involvement and increase men's knowledge in feminine sexual reproductive health services. A few providers expressed concerns over service integration, citing reasons such as overcrowding, work overload, gender mixing, and lack of provider capacity and space. Most participants supported integrating PrEP with VMMC Services and felt that PrEP would complement VMMC in HIV

prevention. Few providers, peers and VMMC clients felt the addition of PrEP to VMMC services would lead to high-risk sexual activity that would then increase the risk for HIV acquisition. A few participants recommended community sensitization when integrating some of sexual reproductive health services into VMMC Services to mitigate negative perceptions about VMMC services and encourage service uptake among couples.

CONCLUSION: Most participants service providers, VMMC clients and Peers were receptive to integrating SRH services, particularly HIV prevention services such as CHCT and PrEP, into male dominated VMMC services. Adequate community sensitization is required when introducing other SRH services into VMMC services.

Cost and costing

1. Jaradeh, K., et al. **Cost comparison of a rapid results initiative against standard clinic-based model to scale-up voluntary medical male circumcision in Kenya**. *PLOS Glob Public Health.* 2023;3(3):e0000817.

   Online at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10057778/.

   Voluntary male medical circumcision (VMMC) reduces HIV acquisition by up to 60%. Kenya has successfully scaled up VMMC to an estimated 91% of eligible men and boys in certain regions in combination due to VMMC and cultural circumcisions. VMMC as a program is implemented regionally in traditionally non-circumcising counties where the prevalence is still below 91%, ranging from 56.4% to 66.7%. Given that funding toward VMMC is expected to decline in the coming years, it is important to identify what models of service delivery are most appropriate and efficient to sustainably meet the VMMC needs of new cohorts' eligible men. To this end, we compared the costs of facility-based VMMC and one within a rapid results initiative (RRI), a public health service scheduled during school holidays to perform many procedures over a short period. We employed activity-based micro-costing to estimate the costs, from the implementer perspective, of facility-based VMMC and RRI-based VMMC conducted between October 2017 and September 2018 at 41 sites in Kisumu County, Kenya supported by the Family AIDS care & Education Services (FACES). We conducted site visits and reviewed financial ledger and programmatic data to identify and quantify resources consumed and the number of VMMC procedures performed during routine care and RRIs. Ledger data were used to estimate fixed costs, recurring costs, and cost per circumcision (CPC) in United States dollar (USD). A sensitivity analysis was done to estimate CPC where we allocated 6 months of the ledger to facility-based and 6 months to RRI. Overall, FACES spent $3,092,891 toward VMMC services and performed 42,139 procedures during the funding year. This included $2,644,910 in stable programmatic costs, $139,786 procedure costs, and $308,195 for RRI-specific activities. Over the year, 49% (n = 20,625) of procedures were performed as part of routine care and 51% (n = 21,514) were performed during the RRIs. Procedures conducted during facility-based

cost $99.35 per circumcision, those conducted during the RRIs cost $48.51 per circumcision, and according to our sensitivity analysis, CPC for facility-based ranges from $99.35 to $287.24 and for RRI costs ranged from $29.81 to $48.51. The cost of VMMC during the RRI was substantially lower than unit costs reported in previous costing studies. We conclude that circumcision campaigns, such as the RRI, offer an efficient and sustainable approach to VMMC.

2. Su, Y., et al. **Cost savings in male circumcision post-operative care continuum in rural and urban South Africa: evidence on the importance of initial counselling and daily SMS**. *medRxiv.* 2023 Feb 11;2023.02.08.23284877. doi: 10.1101/2023.02.08.23284877. Preprint.

   Online at: https://pubmed.ncbi.nlm.nih.gov/36798405/.

   INTRODUCTION: Voluntary medical male circumcision (VMMC) clients are required to attend multiple post-operative follow-up visits in South Africa (SA). However, up to 98% of VMMC clients heal without adverse events (AEs). With demonstrated VMMC safety across global programs, stretched clinic staff in SA may conduct more than 400,000 unnecessary reviews for males without complications per year. As part of a randomized controlled trial (RCT) to test two-way texting (2wT) follow-up as compared to routine, in-person visits for adult VMMC clients, the objective of this study was to compare costs of 2wT-based telehealth to routine post-VMMC care in both rural and urban SA settings.

   METHODS: We used an activity-based costing (ABC) approach to estimate the costs in post-VMMC care, including counselling, follow-ups, and tracing activities. All costs were estimated in $US dollars for both 2wT and routine care to test the hypotheses that 2wT follow-up would result in per-client cost savings. Data were collected from routine National Department of Health VMMC forms, the RCT database, and time-and-motion surveys. Sensitivity analysis presents different scale-up scenarios.

   RESULTS: We included 1,084 clients: 537 in routine care and 547 in 2wT. Average client follow-up cost is $6.48 for routine care and $4.25 for 2wT. 2wT saved costs in both rural and urban locations. Average savings of $2.23 was greater in rural ($1.61) than urban areas ($0.62). 2wT would save $0.88, $2.23, and $4.93, respectively, if: men attended one visit; men attended visits in similar proportions to that observed in the RCT; and men attended both visits.

   CONCLUSION: 2wT reduces post-VMMC care costs by supporting most men to heal at home while using telehealth to triage clients with potential AEs to timely, in-person care. 2wT savings are higher in rural areas. Scale-up of 2wT-based follow-up could significantly reduce overall VMMC costs while maintaining service quality.

3. Bansi-Matharu, L., et al. **Cost-effectiveness of voluntary medical male circumcision for HIV prevention across sub-Saharan Africa: results from five independent models**. *Lancet Glob Health.* 2023;11(2):e244–55.

Online at: https://www.thelancet.com/journals/langlo/article/PIIS2214-109X(22)00515-0/fulltext.

BACKGROUND: Voluntary medical male circumcision (VMMC) has been a recommended HIV prevention strategy in sub-Saharan Africa since 2007, particularly in countries with high HIV prevalence. However, given the scale-up of antiretroviral therapy programmes, it is not clear whether VMMC still represents a cost-effective use of scarce HIV programme resources.

METHODS: Using five existing well described HIV mathematical models, we compared continuation of VMMC for 5 years in men aged 15 years and older to no further VMMC in South Africa, Malawi, and Zimbabwe and across a range of setting scenarios in sub-Saharan Africa. Outputs were based on a 50-year time horizon, VMMC cost was assumed to be US$90, and a cost-effectiveness threshold of US$500 was used.

FINDINGS: In South Africa and Malawi, the continuation of VMMC for 5 years resulted in cost savings and health benefits (infections and disability-adjusted life-years averted) according to all models. Of the two models modelling Zimbabwe, the continuation of VMMC for 5 years resulted in cost savings and health benefits by one model but was not as cost-effective according to the other model. Continuation of VMMC was cost-effective in 68% of setting scenarios across sub-Saharan Africa. VMMC was more likely to be cost-effective in modelled settings with higher HIV incidence; VMMC was cost-effective in 62% of settings with HIV incidence of less than 0.1 per 100 person-years in men aged 15-49 years, increasing to 95% with HIV incidence greater than 1.0 per 100 person-years.

INTERPRETATION: VMMC remains a cost-effective, often cost-saving, prevention intervention in sub-Saharan Africa for at least the next 5 years.

FUNDING: Bill & Melinda Gates Foundation for the HIV Modelling Consortium.

4. Serwadda, D., et al. **Is voluntary male medical circumcision still cost-effective in the setting of antiretroviral therapy scaleup in sub-Saharan Africa?** *Lancet Glob Health.* 2023;11(2):e179–80.

Online at: https://www.thelancet.com/journals/langlo/article/PIIS2214-109X(23)00001-3/fulltext.

No abstract available.

5. Bershteyn, A., et al. **Understanding the evolving role of voluntary medical male circumcision as a public health strategy in eastern and southern Africa: opportunities and challenges**. *Curr HIV/AIDS Rep.* 2022;19(6):526–36.

   Online at: https://link.springer.com/article/10.1007/s11904-022-00639-5.

   PURPOSE OF REVIEW: Voluntary male medical circumcision (VMMC) has been a cornerstone of HIV prevention in Eastern and Southern Africa (ESA) and is credited in part for declines in HIV incidence seen in recent years. However, these HIV incidence declines change VMMC cost-effectiveness and how it varies across populations.

   RECENT FINDINGS: Mathematical models project continued cost-effectiveness of VMMC in much of ESA despite HIV incidence declines. A key data gap is how demand generation cost differs across age groups and over time as VMMC coverage increases. Additionally, VMMC models usually neglect non-HIV effects of VMMC, such as prevention of other sexually transmitted infections and medical adverse events. While small compared to HIV effects in the short term, these could become important as HIV incidence declines. Evidence to date supports prioritizing VMMC in ESA despite falling HIV incidence. Updated modeling methodologies will become necessary if HIV incidence reaches low levels.

Enhancing uptake

1. Kohler, J., et al. **Ethical implications of economic compensation for voluntary medical male circumcision for HIV prevention and epidemic control**. *PLOS Glob Public Health.* 2022;2(12):e0001361.

   Online at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10021191/.

   Despite tremendous efforts in fighting HIV over the last decades, the estimated annual number of new infections is still a staggering 1.5 million. There is evidence that voluntary medical male circumcision (VMMC) provides protection against men's heterosexual acquisition of HIV-1 infection. Despite good progress, most countries implementing VMMC for HIV prevention programmes are challenged to reach VMMC coverage rates of 90%. Particularly for men older than 25 years, a low uptake has been reported. Consequently, there is a need to identify, study and implement interventions that could increase the uptake of VMMC. Loss of income and incurred transportation costs have been reported as major barriers to uptake of VMMC. In response, it has been suggested to use economic compensation in order to increase VMMC uptake. In this discussion paper, we present and review relevant arguments and concerns to inform decision-makers about the ethical implications of using economic compensation, and to provide a comprehensive basis for policy and project-related discussions and decisions.

2. Mphepo, K. Y. G., et al. **Exploring culturally-preferred communication approaches for increased uptake of voluntary medical male circumcision (VMMC) services in rural Malawi**. *BMC Public Health.* 2023;23(1):590.

   Online at: https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-023-15363-x.

   BACKGROUND: In 2007 WHO and UNAIDS recommended communication interventions as a key strategy for creating demand for Voluntary Medical Male Circumcision (VMMC) in Southern Africa. In Malawi, VMMC communication interventions, implemented by health communication agencies, have effectively raised awareness of services. However, high awareness of VMMC has not resulted in increased uptake. Consequently, Malawi has achieved the lowest number of circumcisions in Southern Africa.

   METHODS: These researchers carried out a study among the traditionally circumcising Yaos of Mangochi in Southern Region and the non-circumcising Chewas in Central Region. Data were collected using FGDs, KIIs, IDIs, Life Histories and Participatory Rural Appraisal methods. Data were analyzed thematically.

   RESULTS: This study demonstrates two lessons. First, Laswell's Theory, which has traditionally been used in politics, is relevant to the health sector where the message delivery continuum also needs to be clear on source, message, audience, channel and intended effects. Secondly, according to informants, allowing communities to give feedback to the VMMC messages delivered by health promoters is fundamental. Therefore, failure by Laswell Theory to emphasize on feedback compromises its efficacy. It weakens its ability to foster a common vision between the source and the audience which is prerequisite for behavioral change.

   CONCLUSION: The study concluded that community engagement and interpersonal communication which provide room for real-time feedback in any communicative event are the most preferred communication interventions for VMMC services among Yaos and Chewas.

3. Bendera, A., et al. **Factors associated with low uptake of medical male circumcision among adolescent boys in Tanzania: a multinomial logistic regression modeling**. *HIV AIDS (Auckl)*. 2022;14:565–75.

   Online at: https://www.dovepress.com/factors-associated-with-low-uptake-of-medical-male-circumcision-among--peer-reviewed-fulltext-article-HIV.

   BACKGROUND: Human immunodeficiency virus (HIV) remains the leading cause of years of life lost among adolescent boys in eastern and southern Africa. Medical male circumcision (MMC) is a cost-effective one-time intervention that can reduce the risk of heterosexual HIV acquisition in men by approximately 60%. Despite its importance in HIV prevention, the uptake of MMC remains suboptimal among adolescent boys. This

study aimed to identify factors associated with low MMC uptake among adolescent boys in Tanzania.

METHODS: This study was a secondary analysis of the 2016-17 Tanzania HIV Impact Survey. Descriptive statistics were used to summarize the participants' characteristics. Unadjusted and adjusted multinomial logistic regression models were fitted to identify factors associated with low MMC uptake among adolescent boys.

RESULTS: A total of 2605 older adolescents (15-19 years) and 1296 young adolescents (10-14 years) were analyzed. The MMC uptake rates among older and young adolescents were 56.5% and 45.1%, respectively. Lower MMC uptake was found among respondents in rural areas (adjusted relative risk ratio [aRRR] = 0.40, 95% CI: 0.28-0.57), in the traditionally non-circumcising zone (aRRR = 0.30, 95% CI: 0.23-0.41), participants with no formal education (aRRR = 0.32, 95% CI: 0.23-0.41), and those living in lower wealth quintile households (aRRR = 0.20, 95% CI: 0.11-0.36). Respondents who were not covered by health insurance (aRRR = 0.67, 95% CI: 0.48-0.94) and those who had no comprehensive HIV knowledge (aRRR = 0.55, 95% CI: 0.44-0.70) were also found to have lower uptake of MMC.

CONCLUSION: To achieve and maintain high MMC coverage, MMC interventions for HIV prevention should focus on uncircumcised adolescent boys who are rural residents, of lower socioeconomic status, and residing in traditionally non-circumcising communities. Furthermore, dissemination of HIV knowledge and increasing health insurance coverage may encourage more adolescent boys to undergo MMC.

4. Ong, K. S., et al. **Factors beyond compensation associated with uptake of voluntary medical male circumcision in Zambia**. *AIDS Behav.* 2022 Nov 11. doi: 10.1007/s10461-022-03915-y. Online ahead of print.

   Online at: https://link.springer.com/article/10.1007/s10461-022-03915-y.

   Voluntary medical male circumcision (VMMC) provides partial protection against female-to-male transmission of HIV. The Maximizing the Impact of Voluntary Medical Male Circumcision in Zambia (MAXZAM) project was a phased implementation of a demand generation strategy for VMMC through economic compensation. Previously published findings showed increased uptake of VMMC when compensation was provided. This paper is a follow-up evaluation of the MAXZAM project exploring additional factors associated with uptake of VMMC. Factors found associated include the outreach setting in which men were approached, number of information sources seen, heard, or read about VMMC, their self-reported HIV risk behaviors, their self-reported intention to go through the procedure, and their behavioral-psychographic profile. The findings highlight the importance of considering general (e.g., intensifying mass communications and targeting specific settings) and person-centered demand

generation approaches (e.g., considering the client's psychographic profile and HIV risk level) to maximize effect on VMMC uptake.

5. Tusabe, J., et al. **Factors influencing the uptake of voluntary medical male circumcision among boda-boda riders aged 18-49 years in Hoima, Western Uganda**. *HIV AIDS (Auckl).* 2022;14:437–49.

   Online at: https://www.dovepress.com/factors-influencing-the-uptake-of-voluntary-medical-male-circumcision--peer-reviewed-fulltext-article-HIV.

   INTRODUCTION: We assessed factors influencing the uptake of voluntary medical male circumcision (VMMC) among boda-boda riders aged 18-49 years in Hoima, western Uganda. Despite high levels of awareness about availability and benefits of VMMC, uptake was still low.

   METHODS: We employed the convergent parallel mixed methods design among boda-boda riders in Hoima district between August and September 2020. We administered a structured questionnaire to 316 boda-boda riders to determine factors associated with uptake of VMMC. We also conducted eight focus group discussions (FGDs) and six key informant interviews (KIIs) to explore perceptions of VMMC. To determine factors associated with VMMC, we conducted modified Poisson regression analysis at 5% level of significance. We identified sociocultural barriers and facilitators for VMMC using thematic content analysis.

   RESULTS: Uptake of VMMC was at 33.9% (95% CI 28.6-39.1) and was associated with higher level of education, adjusted prevalence ratio (APR) 1.63, (95% CI 1.12-2.40); concern about being away from work, APR 0.66 (95% CI 0.49-0.88); and the belief that VMMC does not diminish sexual performance, APR 1.78 (95% CI 1.08-2.9). Facilitators of uptake of VMMC were health education and awareness creation, improved penile hygiene, and perceived sexual functioning; and reduced chances of HIV and sexually transmitted infections (STIs). On the other hand, the barriers to uptake were fear of pain and compulsory HIV testing, healing duration, financial loss during the healing period, fear of sexual misbehavior after circumcision, interruption of God's creation, and fear of loss of male fertility.

   CONCLUSION: Although VMMC is largely perceived as protective against HIV and other STIs, deliberate measures using multiple strategies should be put in place to address the barriers to its uptake among this key population.

6. Betunga, B., et al. **Factors influencing the use of multiple HIV prevention services among transport workers in a city in southwestern Uganda**. *PLOS Glob Public Health.* 2023;3(3):e0001350.

   Online at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10021771/.

The use of multiple HIV prevention services has been found to decrease the risk of acquiring HIV when tailored to individuals at risk of HIV exposure, including transport workers. Therefore, we assessed the uptake of multiple HIV prevention services (>/=2) and associated factors among transport workers in a city in Southwestern Uganda. This cross-sectional study comprised motorcycle taxi riders, motor vehicle and truck drivers, aged 18 to 55 years who were selected and responded to an interviewer-administered questionnaire, between November 2021 and February 2022. Data was analyzed using descriptive statistical and modified Poisson regression analyses. Out of 420 participants, 97.6% were male, with a median age of 28 years and the majority were aged <34 years (84.6%). Overall, less than half (45.3%) of the participants had used multiple (>/=2) HIV prevention services within a one-year period. Many participants had used condoms (32.2%) followed by voluntary HIV counseling and testing (27.1%), and safe male circumcision (17.3%). Most participants who tested for HIV had ever used condoms (16.2%), followed by those who received safe male circumcision and had ever used condoms (15%), and those who tested for HIV and had started on antiretroviral therapy (ART) (9.1%). In the adjusted model, factors that were significantly associated with the use of multiple HIV prevention services included religion (aPR = 1.25, 95% CI = 1.05-1.49), the number of concurrent sex partners (aPR = 1.33, 95% CI = 1.10-1.61), prior HIV testing and awareness of HIV serostatus (aPR = 0.55, 95% CI = 0.43-0.70), awareness of HIV prevention services (aPR = 2.49, 95% CI = 1.16-5.38), and financial payment to access HIV services (aPR = 2.27, 95% CI = 1.47-3.49). In conclusion, the uptake of multiple HIV prevention services among transport workers remains suboptimal. Additionally, individual behavioral factors influence the use of multiple HIV services compared with other factors. Therefore, differentiated strategies are needed to increase the utilization of HIV prevention services among transport workers.

7. Lukobo-Durrell, M., et al. **Maximizing the impact of voluntary medical male circumcision for HIV prevention in Zambia by targeting high-risk men: a pre/post program evaluation**. *AIDS Behav.* 2022;26(11):3597–606.

   Online at: https://www.ncbi.nlm.nih.gov/pubmed/35900708.

   A well-documented barrier to voluntary medical male circumcision (VMMC) is financial loss due to the missed opportunity to work while undergoing and recovering from VMMC. We implemented a 2-phased outcome evaluation to explore how enhanced demand creation and financial compensation equivalent to 3 days of missed work influence uptake of VMMC among men at high risk of HIV exposure in Zambia. In Phase 1, we implemented human-centered design-informed interpersonal communication. In Phase 2, financial compensation of ZMW 200 (~ US$17) was added. The proportion of men undergoing circumcision was significantly higher in Phase 2 compared to Phase 1 (38% vs 3%). The cost of demand creation and compensation per client circumcised was $151.54 in Phase 1 and $34.93 in Phase 2. Financial compensation is a cost-effective

strategy for increasing VMMC uptake among high-risk men in Zambia, and VMMC programs may consider similar interventions suited to their context.

8. Kiyai, R. N., et al. **Missed opportunity: low uptake of VMMC among men attending the OPD of a public health facility offering free VMMC services in Uganda**. *BMC Public Health.* 2023;23(1):129.

   Online at: https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-023-15056-5.

   BACKGROUND: Studies in various countries including Uganda and Kenya have shown a much lower incidence of the human immunodeficiency virus (HIV) among men that underwent voluntary medical male circumcision (VMMC) compared to uncircumcised men. Wakiso district, the district with the highest prevalence of HIV in Uganda (7%), has a very low estimated proportion of men who have undergone VMMC (30.5%). Within the district, various public health facilities provide free VMMC services. This study examined the prevalence and factors associated with the uptake of VMMC among men attending the outpatient department (OPD) of a public facility offering VMMC services.

   METHODS: We conducted a cross-sectional study between July to August 2021 using a sample of men attending the OPD at Kira Health Centre IV. We defined VMMC uptake as the removal of all or part of the foreskin of the penis by a trained healthcare professional. We determined factors independently associated with VMMC uptake using a modified Poisson regression analysis with robust standard errors at a 5% statistical significance level. Adjusted prevalence risk ratios (APRR) were reported as the measure of outcome.

   RESULTS: Overall, 389 participants were enrolled in the study. The mean age of the participants was 27.2 (standard deviation +/- 9.02) years. The prevalence of VMMC uptake was 31.4% (95% Confidence Interval [CI] 26.8-36.2). In the adjusted analysis, the uptake of VMMC among men attending the OPD of Kira HC IV was less likely among married participants compared to unmarried participants (APRR 0.64, 95% CI 0.48-0.88), among participants from Western tribes (APRR 0.50, 95% CI 0.41-0.86) or Eastern tribes (APPR 0.31, 95% CI 0.13-0.72) compared to participants from the Central tribes and among participants who didn't disclose their sexual partner number compared to those that had one or no sexual partner (APRR 0.62, 95% CI 0.40-0.97). On the other hand, the prevalence of uptake of VMMC was 7 times among participants who were aware of VMMC compared to those who were not aware of VMMC (APRR 7.85 95% CI 1.07-9.80) and 2.7 times among participants who knew their HIV status compared to those that didn't know (APRR 2.75, 95% CI 1.85-4.0). Also, the uptake of VMMC was 85% more among participants who knew that Kira HC IV provided free VMMC services compared to those that didn't (APRR 1.85, 95% CI 1.85-4.08).

CONCLUSION: VMMC among men attending the OPD at the largest public healthcare facility proving free VMMC services in Kira Municipality was low. The OPD may provide a quick win for improving VMMC uptake. Collaborative efforts among the administration of Kira HC IV, the Ministry of Health and VMMC implementation partners could work towards developing health-facility-based strategies that can improve VMMC awareness and uptake with emphasis on the OPD.

9. Grund, J. M., et al. **Strategies to increase uptake of voluntary medical male circumcision among men aged 25-39 years in Nyanza Region, Kenya: results from a cluster randomized controlled trial (the TASCO study)**. *PLoS One.* 2023;18(2):e0276593.

   Online at: https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0276593.

   INTRODUCTION: Voluntary medical male circumcision (VMMC) for HIV prevention began in Nyanza Region, Kenya in 2008. By 2014, approximately 800,000 VMMCs had been conducted, and 84.9% were among males aged 15-24 years. We evaluated the impact of interpersonal communication (IPC) and dedicated service outlets (DSO) on VMMC uptake among men aged 25-39 years in Nyanza Region.

   MATERIALS AND METHODS: We conducted a cluster randomized controlled trial in 45 administrative Locations (clusters) in Nyanza Region between May 2014 and June 2016 among uncircumcised men aged 25-34 years. In arm one, an IPC toolkit was used to address barriers to VMMC. In the second arm, men were referred to DSO that were modified to address their preferences. Arm three combined the IPC and DSO arms, and arm four was standard of care (SOC). Randomization was done at Location level (11-12 per arm). The primary outcome was the proportion of enrolled men who received VMMC within three months. Generalized estimating equations were used to evaluate the effect of interventions on the outcome.

   RESULTS: At baseline, 9,238 households with men aged 25-39 years were enumerated, 9,679 men were assessed, and 2,792 (28.8%) were eligible. For enrollment, 577 enrolled in the IPC arm, 825 in DSO, 723 in combined IPC + DSO, and 667 in SOC. VMMC uptake among men in the SOC arm was 3.2%. In IPC, DSO, and combined IPC + DSO arms, uptake was 3.3%, 4.5%, and 4.4%, respectively. The adjusted odds ratio (aOR) of VMMC uptake in the study arms compared to SOC were IPC aOR = 1.03; 95% CI: 0.50-2.13, DSO aOR = 1.31; 95% CI: 0.67-2.57, and IPC + DSO combined aOR = 1.31, 95% CI: 0.65-2.67.

   DISCUSSION: Using these interventions among men aged 25-39 years did not significantly impact VMMC uptake. These findings suggest that alternative demand creation strategies for VMMC services are needed to reach men aged 25-39 years.

   TRIAL REGISTRATION: clinicaltrials.gov identifier: NCT02497989.

10. Zewdie, K., et al. **Uptake of medical male circumcision with household-based testing, and the association of traditional male circumcision and HIV infection**. *AIDS.* 2023;37(5):795–802.

    Online at: https://journals.lww.com/aidsonline/Abstract/2023/04010/Uptake_of_medical_male_circumcision_with.12.aspx.

    OBJECTIVES: Voluntary medical male circumcision (VMMC) is an important component of combination HIV prevention. Inclusion of traditionally circumcised HIV negative men in VMMC uptake campaigns may be important if traditional male circumcision is less protective against HIV acquisition than VMMC.

    METHODS: We used data from the HIV Prevention Trials Network (HPTN) 071 (PopART) study. This cluster-randomized trial assessed the impact of a combination prevention package on population-level HIV incidence in 21 study communities in Zambia and South Africa. We evaluated uptake of VMMC, using a two-stage analysis approach and used discrete-time survival analysis to evaluate the association between the types of male circumcision and HIV incidence.

    RESULTS: A total of 10 803 HIV-negative men with self-reported circumcision status were included in this study. At baseline, 56% reported being uncircumcised, 26% traditionally circumcised and 18% were medically circumcised. During the PopART intervention, 11% of uncircumcised men reported uptake of medical male circumcision. We found no significant difference in the uptake of VMMC in communities receiving the PopART intervention package and standard of care adj. rate ratio=1.10 [95% confidence interval (CI) 0.82, 1.50, P = 0.48]. The rate of HIV acquisition for medically circumcised men was 70% lower than for those who were uncircumcised adjusted hazard ratio (adjHR) = 0.30 (95% CI 0.16-0.55; P < 0.0001). There was no difference in rate of HIV acquisition for traditionally circumcised men compared to those uncircumcised adjHR = 0.84 (95% CI 0.54, 1.31; P = 0.45).

    CONCLUSIONS: Household-based delivery of HIV testing followed by referral for medical male circumcision did not result in substantial VMMC uptake. Traditional circumcision is not associated with lower risk of HIV acquisition.

Epidemiologic studies

1. Okhue, S. O., et al. **Evaluation of factors associated with medical male circumcision in South Africa: a case-control study**. *Afr J Prim Health Care Fam Med.* 2022;14(1):e1–9.

    Online at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9634705/.

    BACKGROUND: The World Health Organization recommends medical male circumcision (MMC) to prevent human immunodeficiency virus (HIV). More research is needed in

South Africa on factors influencing the uptake of MMC. AIM: To evaluate factors associated with uptake of MMC.

SETTING: Diepsloot, Johannesburg, South Africa.

METHODS: An observational case-control study. Cases (men attending a private general practice (GP) offering free MMC) were compared to controls (uncircumcised men attending a local shopping mall) for a variety of demographic, sociocultural and financial factors. Factors were analysed using bivariate and multiple-variable binary forward logistic regression with the Statistical Package for Social Sciences.

RESULTS: There were 350 cases and 350 controls. Four factors were associated with the uptake of MMC: being a student (adjusted odds ratio [AOR]: 6.29, 95% confidence interval [CI]: 2.29-17.26), attending a mainline Christian denomination (AOR 2.85, 95% CI: 1.39-5.78), speaking an African language other than Zulu (range of AORs: 2.5-6.8, p 0.05) and being South African (AOR: 2.50, 95% CI: 1.58-3.96). MMC was associated with feeling susceptible to HIV, seeing it as a serious health problem and being encouraged by partners. Men who were sterilised, not sexually active and without symptoms of a sexually transmitted infection felt less susceptible. Other barriers included the pain of the procedure, indirect costs, anticipated impact on sexual activity, lack of information, cultural beliefs, embarrassment and access to health services.

2. Schwitters, A., et al. **High HIV prevalence and associated factors in Lesotho: results from a population-based survey**. *PLoS One.* 2022;17(7):e0271431.

   Online at: https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0271431.

   Despite extensive global efforts, sub-Saharan Africa remains disproportionately affected by the HIV epidemic. This generalized epidemic can be seen in Lesotho which in 2014 the HIV prevalence rate of those aged 15-49 years was 24.6%, with and incidence of 1.9 new infections per 100-person-year exposures. To better understand the impact of Lesotho's national HIV response and significant predictors associated with HIV infection, the Lesotho Population-based HIV Impact Assessment was conducted. This survey provided a nationally representative sample of individuals aged 15-59 years old in which participants were tested for HIV and given an individual questionnaire that included socio-demographic and behavioral risk questions. The association of factors between survey questions and HIV incident was assessed using logistic regression. Multivariate logistic regression models for men and women were constructed for each outcome using variables known to be or plausibly associated with recent or chronic infection. Overall annualized incidence among people aged 15-49 was 1.19% (95% CI 0.73-1.65) per year. The overall prevalence of HIV was 25.6% with women having significantly higher prevalence. Multiple variables, including decreased wealth status, lower education levels, marital status, condom use at first sex, and circumcision (men only) were identified as being significantly associated with HIV infection for both men and

women. In combination with improving the awareness of HIV status, an increased focus is needed on AGYW and men 35-49 years old to prevent new infections. HIV education and prevention programs should focus heavily on younger age groups prior to and soon after sexual debut to prevent HIV transmission. The findings of the survey showed significant room for improvement in increasing awareness of HIV status and reinforcing the need for continued HIV prevention and treatment efforts in Lesotho to prevent new infections.

3. Zuma, K., et al. **The HIV epidemic in South Africa: key findings from 2017 National Population-Based Survey**. *Int J Environ Res Public Health.* 2022;19(13):8125.

   Online at: https://www.mdpi.com/1660-4601/19/13/8125.

   South Africa has the largest number of people living with HIV worldwide. South Africa has implemented five population-based HIV prevalence surveys since 2002 aimed at understanding the dynamics and the trends of the epidemic. This paper presents key findings from the fifth HIV prevalence, incidence, and behaviour survey conducted in 2017 following policy, programme, and epidemic change since the prior survey was conducted in 2012. A cross-sectional population-based household survey collected behavioural and biomedical data on all members of the eligible households. A total of 39,132 respondents from 11,776 households were eligible to participate, of whom 93.6% agreed to be interviewed, and 61.1% provided blood specimens. The provided blood specimens were used to determine HIV status, HIV incidence, viral load, exposure to antiretroviral treatment, and HIV drug resistance. Overall HIV incidence among persons aged 2 years and above was 0.48% which translates to an estimated 231,000 new infections in 2017. HIV prevalence was 14.0% translating to 7.9 million people living with HIV. Antiretroviral (ARV) exposure was 62.3%, with the lowest exposure among those aged 15 to 24 years (39.9%) with 10% lower ARV coverage among males compared to females. Viral suppression among those on treatment was high (87.3), whilst HIV population viral load suppression was much lower (62.3%). In terms of risk behaviours, 13.6% of youth reported having had an early sexual debut (first sex before the age of 15 years), with more males reporting having done so (19.5%) than females (7.6%). Age-disparate relationships, defined as having a sexual partner 5+ years different from oneself,) among adolescents were more common among females (35.8%) than males (1.5%). Self-reported multiple sexual partnerships (MSPs), defined as having more than one sexual partner in the previous 12 months, were more commonly reported by males (25.5%) than females (9.0%). Condom use at last sexual encounter was highest among males than females. Three quarters (75.2%) of people reported they had ever been tested for HIV, with more females (79.3%) having had done so than males (70.9%). Two-thirds of respondents (66.8%) self-reported having tested for HIV in the past 12 months. Finally, 61.6% of males in the survey self-reported as having been circumcised, with circumcision being more common among youth aged 15-24 years (70.2%), Black

Africans (68.9%), and those living in both rural informal (tribal) areas (65%) and urban areas (61.9%). Slightly more (51.2%) male circumcisions were reported to have occurred in a medical setting than in traditional settings (44.8%), with more young males aged 15-24 (62.6%) and men aged 25-49 (51.5%) reporting to have done so compared to most men aged 50 and older (57.1%) who reported that they had undergone circumcision in a traditional setting. The results of this survey show that strides have been made in controlling the HIV epidemic, especially in the reduction of HIV incidence, HIV testing, and treatment. Although condom use at last sex act remains unchanged, there continue to be some challenges with the lack of significant behaviour change as people, especially youth, continue to engage in risky behaviour and delay treatment initiation. Therefore, there is a need to develop or scale up targeted intervention programmes to increase HIV testing further and put more people living with HIV on treatment as well as prevent risky behaviours that put young people at risk of HIV infection.

4. Lewis, L., et al. **HIV incidence and associated risk factors in adolescent girls and young women in South Africa: a population-based cohort study**. *PLoS One.* 2022;17(12):e0279289.

   Online at: https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0279289.

   BACKGROUND: In sub-Saharan Africa, high HIV incidence rates in adolescent girls and young women (AGYW) persist despite extensive HIV prevention efforts.

   METHODS: A prospective cohort of 2,710 HIV-negative AGYW (15-24 years) in KwaZulu-Natal, South Africa were interviewed at baseline and followed-up approximately 18 months later (2014-2017). Associations between HIV seroconversion and socio-demographic and behavioural variables measured at baseline and follow-up were examined using Cox regression and a proximate determinants framework. Inter-relationships between determinants were measured using logistic regression. Separate models were built for 15-19 and 20-24-year-olds.

   RESULTS: Weighted HIV incidence was 3.92 per 100 person-years (95% confidence interval: 3.27-4.69; 163 seroconversions over 4,016 person-years). Among 15-19-year-olds, absence of family support (adjusted hazards ratio (aHR): 3.82 (1.89-7.72)), having a circumcised partner (aHR: 0.5 (0.27-0.94)) or one who was HIV-positive and not on antiretroviral therapy (ART) (aHR: 6.21 (2.56-15.06)) were associated with HIV incidence. Those reporting an absence of family support were also more likely to report >1 partner during follow-up (odds ratio (OR): 2.7(1.11-6.57)). Among 20-24-year-olds, failure to complete secondary school (aHR: 1.89 (1.11-3.21)), inconsistent condom use (aHR: 3.01 (1.14-7.96)) and reporting partner(s) who were HIV-positive and not on ART (aHR: 7.75 (3.06-19.66)) were associated with HIV incidence. Failure to complete secondary school among 20-24-year-olds was associated with inconsistent condom use (OR: 1.82 (1.20-

2.77)) and reporting an HIV-positive partner not on ART (OR: 3.53(1.59-7.82)) or an uncircumcised partner (OR: 1.39 (1.08-1.82).

CONCLUSION: Absence of family support and incomplete schooling are associated with risky sexual behaviours and HIV acquisition in AGYW. In addition, partner-level prevention-condom use, medical circumcision, and viral suppression-continue to play an important role in reducing HIV risk in AGYW. These findings support the use of combination HIV prevention programs that consider structural as well as biological and behavioural HIV risk factors in their design.

5. Rao, A., et al. **Status of the HIV epidemic in Manicaland, east Zimbabwe prior to the outbreak of the COVID-19 pandemic**. *PLoS One.* 2022;17(9):e0273776.

   Online at: https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0273776.

   BACKGROUND: Manicaland province in eastern Zimbabwe has a high incidence of HIV. Completion of the seventh round of the Manicaland Survey in 2018-2019 provided the opportunity to assess the state of the epidemic prior to the start of the COVID-19 pandemic. The study aims were to: a) estimate HIV seroprevalence and assess whether prevalence has declined since the last round of the survey (2012-2013), b) describe and analyse the socio-demographic and behavioural risk factors for HIV infection and c) describe the HIV treatment cascade.

   METHODS: Participants were administered individual questionnaires collecting data on socio-demographic characteristics, sexual relationships, HIV prevention methods and treatment access, and were tested for HIV. Descriptive analyses were followed by univariate and multivariate analyses of risk factors for HIV seropositivity using logistic regression modelling based on the proximate-determinants framework.

   RESULTS: HIV prevalence was 11.3% [95% CI; 10.6-12.0] and was higher in females than males up to 45-49 years. Since 2012-2013 HIV prevalence has significantly declined in 30-44 year-olds in males, and 20-44 year-olds in females. The HIV epidemic has aged since 2012-2013, with an increase in the mean age of HIV positive persons from 38 to 41 years. Socio-demographic determinants of HIV prevalence were church denomination in males, site-type, wealth-status, employment sector and alcohol use in females, and age and marital status in both sexes. Behavioural determinants associated with increased odds of HIV were a higher number of regular sexual partners (lifetime), non-regular sexual partners (lifetime) and condom use in both sexes, and early sexual debut and concomitant STIs in females; medical circumcision was protective in males. HIV status awareness among participants testing positive in our study was low at 66.2%. ART coverage amongst all participants testing positive for HIV in our study was 65.0% and was lower in urban areas than rural areas, particularly in males.

CONCLUSIONS: Prevalence has declined, and ART coverage increased, since 2012-2013. Majority of the associations with prevalence hypothesised by the theoretical framework were not observed in our data, likely due to underreporting of sexual risk behaviours or the treatment-as-prevention effect of ART curtailing the probability of transmission despite high levels of sexual risk behaviour. Further reductions in HIV incidence require strengthened primary prevention, HIV testing and linkage to risk behaviour counselling services. Our results serve as a valuable baseline against which to measure the impact of the COVID-19 pandemic on HIV prevalence and its determinants in Manicaland, Zimbabwe, and target interventions appropriately.

6. Patel, C. J., et al. **The demographic and socioeconomic correlates of behavior and HIV infection status across sub-Saharan Africa**. *Commun Med (Lond).* 2022;2:104.

   Online at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9388647/.

   BACKGROUND: Predisposition to become HIV positive (HIV +) is influenced by a wide range of correlated economic, environmental, demographic, social, and behavioral factors. While evidence among a candidate handful have strong evidence, there is lack of a consensus among the vast array of variables measured in large surveys.

   METHODS: We performed a comprehensive data-driven search for correlates of HIV positivity in >600,000 participants of the Demographic and Health Survey across 29 sub-Saharan African countries from 2003 to 2017. We associated a total of 7251 and of 6,288 unique variables with HIV positivity in females and males respectively in each of the 50 surveys. We performed a meta-analysis within countries to attain 29 country-specific associations.

   RESULTS: Here we identify 344 (5.4% out possible) and 373 (5.1%) associations with HIV + in males and females, respectively, with robust statistical support. The associations are consistent in directionality across countries and sexes. The association sizes among individual correlates and their predictive capability were low to modest, but comparable to established factors. Among the identified associations, variables identifying being head of household among females was identified in 17 countries with a mean odds ratio (OR) of 2.5 (OR range: 1.1-3.5, R(2) = 0.01). Other common associations were identified, including marital status, education, age, and ownership of land or livestock.

   CONCLUSIONS: Our continent-wide search for variables has identified under-recognized variables associated with being HIV + that are consistent across the continent and sex. Many of the association sizes are as high as established risk factors for HIV positivity, including male circumcision.

Impact and coverage

1. Chagoma, N., et al. **Applying mathematical modelling to estimate the impact of COVID-19-related VMMC service disruptions on new HIV infections in Zimbabwe**. *BMC Infect Dis.* 2023;23(1):113.

   Online at: https://bmcinfectdis.biomedcentral.com/articles/10.1186/s12879-023-08081-7.

   BACKGROUND: The COVID-19 pandemic has overwhelmed health systems with knock on effects on diagnosis, treatment, and care. To mitigate the impact, the government of Zimbabwe enforced a strict lockdown beginning 30 March 2020 which ran intermittently until early 2021. In this period, the Ministry of Health and Childcare strategically prioritized delivery of services leading to partial and full suspension of services considered non-essential, including HIV prevention. As a result, Voluntary Medical Male Circumcision (VMMC) services were disrupted leading to an 80% decline in circumcisions conducted in 2020. Given the efficacy of VMMC, we quantified the potential effects of VMMC service disruption on new HIV infections in Zimbabwe.

   METHODS: We applied the GOALS model to evaluate the impact of COVID-19-related disruptions on reducing new HIV infections over 30-years. GOALS is an HIV simulation model that estimates number of new HIV infections based on sexual behaviours of population groups. The model is parameterized based on national surveys and HIV program data. We hypothesized three coverage scenarios by 2030: scenario I - pre-COVID trajectory: 80% VMMC coverage; Scenario II - marginal COVID-19 impact: 60% VMMC coverage, and scenario III - severe COVID-19 impact: 45% VMMC coverage. VMMC coverage between 2020 and 2030 was linearly interpolated to attain the estimated coverage and then held constant from 2030 to 2050, and discounted outcomes at 3%.

   RESULTS: Compared to the baseline scenario I, in scenario II, we estimated that the disruption of VMMC services would generate an average of 200 (176-224) additional new infections per year and 7,200 new HIV infections over the next 30 years. For scenario III, we estimated an average of 413 (389-437) additional new HIV infections per year and 15,000 new HIV infections over the next 30 years. The disruption of VMMC services could generate additional future HIV treatment costs ranging from $27 million to $55 million dollars across scenarios II and III, respectively.

   CONCLUSION: COVID-19 disruptions destabilized delivery of VMMC services which could contribute to an additional 7,200 new infections over the next 30 years. Unless mitigated, these disruptions could derail the national goals of reducing new infections by 2030.

2. Lin, Y., et al. **Does voluntary medical male circumcision reduce HIV risk in men who have sex with men? (abstract)** *Curr HIV/AIDS Rep.* 2022;19(6):522–5.

   Online at: https://pubmed.ncbi.nlm.nih.gov/36520379/.

   PURPOSE OF REVIEW: To review the evidence on the effect of voluntary medical male circumcision (VMMC) on reducing HIV risk among men who have sex with men (MSM) and assess the limitations of available evidence.

   RECENT FINDINGS: Individual studies have shown conflicting results, but recent meta-analyses have consistently suggested that VMMC was associated with 7 to 23% reductions in HIV prevalence or incidence in MSM, particularly among a subgroup of men who predominantly practice insertive role in anal sex. Mathematical models have also suggested a moderate population-level impact of VMMC intervention. All original studies have been observational and are subject to confounding and bias. Randomized clinical trials (RCTs) are needed to provide strong evidence of assessing the efficacy of VMMC on HIV risk among MSM. VMMC is a promising HIV risk reduction tool for MSM. RCTs are needed to evaluate the efficacy of VMMC intervention.

3. Peck, M. E., et al. **Effects of COVID-19 pandemic on voluntary medical male circumcision services for HIV prevention, Sub-Saharan Africa, 2020**. *Emerg Infect Dis.* 2022;28(13):S262–9.

   Online at: https://wwwnc.cdc.gov/eid/article/28/13/21-2455_article.

   Beginning in March 2020, to reduce COVID-19 transmission, the US President's Emergency Plan for AIDS Relief supporting voluntary medical male circumcision (VMMC) services was delayed in 15 sub-Saharan African countries. We reviewed performance indicators to compare the number of VMMCs performed in 2020 with those performed in previous years. In all countries, the annual number of VMMCs performed decreased 32.5% (from 3,898,960 in 2019 to 2,631,951 in 2020). That reduction is largely attributed to national and local COVID-19 mitigation measures instituted by ministries of health. Overall, 66.7% of the VMMC global annual target was met in 2020, compared with 102.0% in 2019. Countries were not uniformly affected; South Africa achieved only 30.7% of its annual target in 2020, but Rwanda achieved 123.0%. Continued disruption to the VMMC program may lead to reduced circumcision coverage and potentially increased HIV-susceptible populations. Strategies for modifying VMMC services provide lessons for adapting healthcare systems during a global pandemic.

4. Mehta, S. D. **The effects of medical male circumcision on female partners' sexual and reproductive health**. *Curr HIV/AIDS Rep.* 2022;19(6):501–7.

   Online at: https://link.springer.com/article/10.1007/s11904-022-00638-6.

PURPOSE OF REVIEW: Voluntary medical male circumcision (VMMC) reduces the risk of HIV acquisition by 60% among heterosexual men, provides protection against certain sexually transmitted infections (STI), and leads to penile microbiome composition changes associated with reduced risk of HIV infection. Intuitively, the benefits of VMMC for female sex partners in relation to STI are likely and have been evaluated. The purpose of this review is to examine emerging findings of broader sexual and reproductive health (SRH) benefits of VMMC for female sex partners.

RECENT FINDINGS: Systematic reviews find strong evidence for beneficial effects of VMMC on female sex partners risk of HPV, cervical dysplasia, cervical cancer, and with likely protection against trichomoniasis and certain genital ulcerative infections. Few studies assess the direct impact of VMMC on the vaginal microbiome (VMB), though several studies demonstrate reductions in BV, which is mediated by the VMB. Studies are lacking regarding male circumcision status and outcomes associated with non-optimal VMB, such as female infertility and adverse pregnancy outcomes. VMMC has positive effects on women's perceptions of sexual function and satisfaction, and perceptions of disease risk and hygiene, without evidence of risk compensation. VMMC has consistent association with a broad range of women's SRH outcomes, highlighting the biological and non-biological interdependencies within sexual relationships, and need for couples-level approaches to optimize SRH for men and women. The paucity of information on VMMC and influence on VMB is a barrier to optimizing VMB-associated SRH outcomes in female partners.

5. Shapiro, S. B., et al. **Male circumcision and genital human papillomavirus (HPV) infection in males and their female sexual partners: findings from the HPV Infection and Transmission Among Couples Through Heterosexual Activity (HITCH) cohort study (abstract)**. *J Infect Dis.* 2022;226(7):1184–94.

   Online at: https://academic.oup.com/jid/article-abstract/226/7/1184/6569355?redirectedFrom=fulltext.

   BACKGROUND: Previous studies examining the association between male circumcision (MC) and human papillomavirus (HPV) infections have reported inconsistent results. We used data from the HPV Infection and Transmission Among Couples Through Heterosexual Activity (HITCH) cohort study to examine the association between MC and HPV infections in males and their female sexual partners.

   METHODS: We enrolled monogamous couples in a longitudinal study between 2005 and 2011 in Montreal, Canada. We used logistic and Poisson regression models with propensity score adjustment to estimate odds ratios (ORs) and rate ratios for the association between MC and the prevalence, transmission, and clearance of HPV infections.

RESULTS: Four hundred thirteen couples were included in our study. The prevalence OR for the association between MC and baseline infections was 0.81 (95% confidence interval [CI], .56-1.16) in males and 1.05 (95% CI, .75-1.46) in females. The incidence rate ratio for infection transmission was 0.59 (95% CI, .16-2.20) for male-to-female transmission and 0.77 (95% CI, .37-1.60) for female-to-male transmission. The clearance rate ratio for clearance of infections was 0.81 (95% CI, .52-1.24).

CONCLUSIONS: We found little evidence of an association between MC and HPV infection prevalence, transmission, or clearance in males and females. Further longitudinal couple-based studies are required to investigate this association.

6. Renko, M., et al. **Meta-analysis of the risk factors for urinary tract infection in children**. *Pediatr Infect Dis J.* 2022;41(10):787–92.

   Online at: https://journals.lww.com/pidj/Fulltext/2022/10000/Meta_analysis_of_the_Risk_Factors_for_Urinary.1.aspx.

   CONTEXT: The incidence of urinary tract infection (UTI) varies with age, but there is limited evidence on the role of other risk factors.

   OBJECTIVE: The aim of this meta-analysis was to investigate the risk factors for UTIs in children.

   DATA SOURCES: PubMed from 1966 to May 2019.

   STUDY SELECTION: All studies assessing at least 1 possible risk factor for occurrence or recurrence of UTI with a clear definition of symptomatic UTI in children were eligible. We excluded studies with UTIs related to hospital treatment or severe congenital renal abnormalities.

   DATA EXTRACTION: After the quality assessment we extracted data on the given risk factor in children with and without UTI. The data were extracted separately for the occurrence and recurrence of UTIs.

   RESULTS: We included 24 studies in the meta-analysis. Circumcision decreased the occurrence of UTIs with an odds ratio (OR) of 0.1 [95% confidence interval (CI): 0.06-0.17) and breast-feeding with an OR of 0.4 (CI: 0.19-0.86), both with low heterogeneity. Being overweight or obese increased the risk of UTI (OR: 2.23; CI: 1.37-3.63). Both poor fluid intake (OR: 6.39; CI: 3.07-13.39) and infrequent voiding (OR: 3.54; CI: 1.68-7.46) were associated with recurrent UTIs.

   LIMITATIONS: The design, populations and definitions varied between the studies.

CONCLUSIONS: Being overweight or obese and having poor fluid intake are modifiable risk factors that increase the risk for UTIs in children. Breast-feeding and circumcision are associated with a decreased occurrence of UTIs.

Infant male circumcision

1. Davis, S. M., et al. **Can the ShangRing bring us closer to endorsing early infant male circumcision in sub-Saharan Africa?** *Lancet Glob Health.* 2022;10(10):e1377–8.

   Online at: https://www.thelancet.com/journals/langlo/article/PIIS2214-109X(22)00380-1/fulltext.

   No abstract available.

2. Akova, F., et al. **How does circumcision performed under regional anesthesia affect sleep, feeding, and maternal attachment in babies aged 0-4 months?** *J Pediatr Surg.* 2022;57(10):469–75.

   Online at: https://www.jpedsurg.org/article/S0022-3468(22)00003-3/fulltext.

   BACKGROUND: There is no consensus whether circumcision performed in the first months of life has negative effects on feeding, sleep, and maternal attachment in babies. This prospective study aimed to investigate this relation in the first months of life. This study is the first to investigate the effects of circumcision on feeding, sleep, and maternal attachment simultaneously.

   METHODS: The study group consisted of 75 families with their babies aged 0-4 months. Surgical circumcision procedure under regional anesthesia was applied to all patients. The questionnaires were used to evaluate the babies' feeding and sleeping habits, and the Maternal Attachment Inventory (MAI) was used to assess mother-baby attachment level. All assessments were performed before and one month after the circumcision.

   RESULTS: The mean age of the patients when circumcision was performed was 75 (74.52 +/- 37.03) (3-120) days. The mean ages of mothers were 32 (32.51 +/- 4.05) years. There was no statistically significant change in the sleep habits and feeding status of babies before and after circumcision. The mean maternal attachment value before circumcision was 101 (98.89 +/- 6.77) points, while it was 103 (101.36 +/- 4.21) points after circumcision. This result indicates that the maternal attachment score increased significantly after circumcision ($p < 0.001$).

   CONCLUSIONS: The circumcision performed under regional anesthesia between 0 and 4 months did not have any negative effect on sleep, feeding, and maternal attachment in babies.

3. Morris, B. J., et al. **Infant circumcision for sexually transmitted infection risk reduction globally**. *Glob Health Sci Pract.* 2022;10(4):e2100811.

Online at: https://www.ghspjournal.org/content/10/4/e2100811.long.

Population-based studies in high-income countries have failed to find that male circumcision protects against sexually transmitted infections. Using evidence from several sources, we show that male circumcision does protect against HIV during insertive intercourse for men who have sex with men.

Population-based studies in high-income countries have generally failed to find protection of male circumcision (MC) against sexually transmitted infections (STIs). This stems from the overrepresentation of men who have sex with men (MSM) in national STI statistics, with inability of MC to protect against STIs during receptive anal intercourse. Studies of men from settings where MC is performed early in life showed lower prevalence of STIs in circumcised men. However, a Danish database study reported an association of early MC with an increased risk of STIs. The study's findings were underpowered, contained questionable statistical methods, failed to consider receptive anal intercourse by MSM, and failed to adequately exclude non-ethnic Danes. Biological plausibility of infant MC in reducing infection risk is supported by its well-established ability to protect against infant urinary tract infections, as well as pathogenic bacteria and other microorganisms, across all ages. Childhood MC appears effective for protection against various specific STIs irrespective of the country where it was performed.

4. Zaliznyak, M., et al. **YouTube as a source for information on newborn male circumcision: Is YouTube a reliable patient resource?** *J Pediatr Urol.* 2022;18(5):678.e1–7.

   Online at: https://www.jpurol.com/article/S1477-5131(22)00315-1/fulltext.

   INTRODUCTION: YouTube is the most popular open access media-sharing platform and is the second most visited websites worldwide. However, due to a lack of peer-review, YouTube is largely unregulated and can be susceptible to the spread of biased or misleading information.

   OBJECTIVE: To evaluate the quality and potential bias of videos pertaining to newborn male circumcision (NMC) on YouTube.

   MATERIALS & METHODS: A YouTube search was performed on August 27, 2021 using the search term 'circumcision', and the top 100 videos were analyzed by two independent reviewers. Videos were categorized into groupings based on their source, and each video was evaluated for bias and was determined to be either pro-circumcision, anti-circumcision or neutral. Video quality was assessed using the DISCERN instrument (1-5 scale) and the Global Quality Scale (GQS) (1-5 scale). Video popularity was measured using the video power index (VPI).

RESULTS: We found that the overall quality of videos on YouTube pertaining to NMC is generally low (DISCERN: 2.9 +/- 0.7, GQS: 2.9 +/- 1.1). When describing potential bias, 56% of videos were neutral and 44% were biased, of which 30% being anti-circumcision and 14% being pro-circumcision. Videos which were neutral, produced by health channels, or which featured physicians were associated with the highest quality ratings. However, when correlating total video views and likes with our quality assessments, we observed a significant negative correlation between the overall popularity of a video and its DISCERN (rho = -0.297, p = 0.031) and GQS quality ratings (rho = -0.274, p = 0.048).

CONCLUSION: Information pertaining to NMC on YouTube is generally of low quality and has a high potential for bias. Lower quality content is overrepresented on YouTube and tended to be more popular than higher quality content. Patients and their families should be cautious when accessing YouTube for health information pertaining to NMC.

5. Rodriguez, V. J., et al. **Zambian parents' perspectives on early-infant versus early-adolescent male circumcision (abstract)**. *AIDS Behav.* 2023 Jan 24. 10.1007/s10461-022-03912-1. Online ahead of print.

   Online at: https://pubmed.ncbi.nlm.nih.gov/36692607/.

   Despite increasing interest in Early-Infant and Early-Adolescent Medical Circumcision (EIMC and EAMC, respectively) in Zambia, parental willingness to have their sons undergo the procedure has not been explored. This study describes Zambian parents' perspectives on EIMC and EAMC. A total of N = 600 men and women (n = 300 couples) were recruited. Most parents, 89% and 83%, planned to have their newborn or adolescent sons circumcised, respectively, and 70% and 57% had plans for EIMC and EAMC, respectively. Most (91% for infants and 86% for adolescents) reported they were considering the pros and cons of circumcision. Parents' age (OR 1.05), having children living in one's home (OR 3.58), and lower education (OR 0.63) were associated with sons' circumcision. The minimal risks associated with circumcision and the lifetime benefits conferred underscore its contribution to public health in high HIV prevalence areas.

Male circumcision methods, including devices

1. Hohlfeld, A. S., et al. **Circumcision devices versus standard surgical techniques in adolescent and adult male circumcisions: a Cochrane review**. *BJU Int.* 2022;130(1):26–34.

   Online at: https://bjui-journals.onlinelibrary.wiley.com/doi/10.1111/bju.15604.

   OBJECTIVES: To assess the effects of device-based circumcisions compared with standard surgical techniques in adolescent and adult males (10 years old and above).

METHODS: We performed a comprehensive search with no restrictions to the language of publication or publication status. We included randomised controlled trials (RCTs) of device-based circumcisions compared to standard surgical dissection-based circumcision conducted by health professionals in a medical setting. We reported study results as risk ratios (RRs) or mean differences (MDs) using 95% confidence intervals (CIs) and a random-effects model. We used the Grading of Recommendations, Assessment, Development, and Evaluation (GRADE) approach to evaluate the overall certainty of the evidence for each outcome.

RESULTS: A total of 18 trials met the inclusion criteria. These trials did not report severe adverse events (AEs; 11 trials, 3472 participants). There may be a slight increase in moderate AEs for devices compared to surgical techniques (RR 1.31, 95% CI 0.55-3.10; I(2) = 68%; 10 trials, 3370 participants; low-certainty evidence); this corresponds to eight more (ranging from 15 fewer to 84 more) moderate AEs per 1000 participants. We are uncertain about the difference in mild AEs between groups when devices are used compared to surgical techniques (RR 1.09, 95% CI 0.44-2.72; I(2) = 91%; 10 trials, 3370 participants; very low-certainty evidence).

CONCLUSIONS: We found no serious AEs using a circumcision device compared to surgical techniques. Still, they may slightly increase moderate AEs, and it is unclear whether there is a difference in mild AEs. High-quality trials evaluating this intervention are needed to provide further certainty regarding the rates of AEs. Clinicians, patients, and policymakers can use these results combined with their contextual factors to inform the best approach that suits their healthcare settings.

2. Ahmed, N., et al. **Circumcision with the Plastibell technique: a descriptive case series**. *Cureus.* 2022;14(10):e30601.

   Online at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9679988/.

   BACKGROUND: The Plastibell technique is one of the most commonly performed procedures used for male circumcision (MC) and is in practice throughout the world. It is a procedure done under local anaesthesia, mostly on infants. The results of the technique have been evaluated in many studies throughout the world. We have done a series of cases and present the results of our retrospective descriptive study. The objective of this study was to describe the outcomes of circumcision performed via the Plastibell technique.

   MATERIALS AND METHODS: This retrospective descriptive study was conducted at the Surgical A Unit, Khyber Teaching Hospital, Peshawar from July 2013 to June 2021. Clinical records of the infants who underwent circumcision were collected. Infants under the age of six months brought by their parents were included in the study. Infants whose parents requested methods other than Plastibell and infants with bleeding disorders or a family history of such disorders were excluded from the study. The

indication for circumcision was for religious reasons in all cases. Post-operative complications were noted in all cases.

RESULTS: A total of 364 male babies under the age of six months (mean age 43.5+/-15 days) underwent circumcision with the Plastibell technique. The mean operative time was 11.3+/-3.7 minutes. The time it took for the ring to fall off was 7.8+/-3.04 days. In one case, primary haemorrhage required exploration and diathermy of the bleeder. Oedema occurred in 76(20.8%) of the babies. Adhesions of the foreskin with the glans were formed in 3(0.82%) cases.

CONCLUSION: Male circumcision is one of the oldest surgical procedures performed. Several methods are in practise in this regard. The results of our study showed that circumcision with the Plastibell method is safe and has fewer side effects.

3. Zhang, Q., et al. **Comparative analysis on the outcomes in circumcising children using modified Chinese ShangRing and conventional surgical circumcision (abstract)**. *Pediatr Surg Int.* 2022;39(1):59.

   Online at: https://www.ncbi.nlm.nih.gov/pubmed/36550318.

   OBJECTIVE: To compare the differences and outcomes of surgical procedures, clinical effect, complications and patients' satisfaction between disposable oval-shaped circumcision device (Modified Chinese ShangRing series, Kiddie love((R))) and conventional circumcision in the treatment of children with phimosis or redundant prepuce.

   METHODS: The clinical data were retrospectively analyzed in 114 children with phimosis or redundant foreskin undergone circumcision using a disposable oval-shaped circumcision device, a modified Chinese ShangRing series, Kiddie Love((R)) (Kiddie Love group) in our hospital between January 2018 and February 2020, and another 114 children with similar conditions circumcised by conventional surgical procedure before January 2018 (conventional group). The two groups were compared regarding the operative time, intraoperative blood loss, postoperative pain scores, healing time, the incidence of complications and guardian's satisfaction.

   RESULTS: Circumcision was successfully completed in children in both groups. The operative time, intraoperative blood loss, postoperative pain scoring in 24 h by VAS, pain at the removal of the device or stitches and wound healing were (6.4 +/- 1.6) min, (34.1 +/- 6.4) min; (0.7 +/- 0.2) ml, (2.6 +/- 0.6) ml; (2.2 +/- 1.0) points, (1.3 +/- 0.5) points; (23.7 +/- 3.9)day, (15.9 +/- 2.8)day, respectively for Kiddie Love group and conventional group(either $P < 0.05$ or $P > 0.05$). The two groups were significantly different in the incidence of hematoma, edema and incision dehiscence yet were insignificant in incision infection. Children in both groups were followed up from 6 to 31 months (mean: 23 months), and the satisfaction rate was 94.7% (108/114) in parents of

the children circumcised by the ShangRing and 83.3% (95/114) in those of children treated by conventional circumcision (P < 0.05).

CONCLUSION: Modified Chinese ShangRing, Kiddie Love((R)), has superiorities, including simpler procedure, shorter operative time, less blood loss, fewer complications, better cosmetic results and higher satisfaction of patients over conventional circumcision in the treatment of children with phimosis or redundant foreskin, and worthy of wider clinical recommendation.

4. Essa, M. **Safety, acceptability, and feasibility of male circumcision using the Alisklamp device (abstract)**. *J Pediatr Urol.* 2023;19(1):107e1–10.

   Online at: https://www.ncbi.nlm.nih.gov/pubmed/36266169.

   Greater than 20 surgical circumcision devices are available worldwide for male circumcision. These have been developed so as to decrease complications. The hemostasis system classifies these devices as crush, clamp or ligature. This study assessed the safety, acceptability, and feasibility of male neonatal circumcision using the Alisklamp device (AKD). The AKD is one of the latest medical devices designed for assisted circumcision. It takes less time to install, has a better complication rate, and has a better cosmetic appearance than conventional surgical circumcision. The study was divided into two sections: assessing the safety of the AKD and evaluating parents' satisfaction. Convenience sampling was used in this study. In the first section, a form was filled by operating pediatric surgeon for children whose parents agreed to participate in the study. In the second section, a total of 100 male children were included in the study based on the sample size guidelines of the World Health Organization. The circumcision was performed by an experienced pediatric surgeon following the manufacturer's instructions. The procedures were completed without AKD failure or unwelcome preputial loss. The results showed that 63.54% of the children were circumcised in their first four weeks of life. About 60.42% of the procedures were completed within 5-10 min. Also, 95.83% of the children had no postoperative complications. Further, 90.63% of parents were satisfied with the AKD and willing to recommend it to others. During the follow-up, all of the children's parents were pleased with the cosmetic and final results of the AKD. In conclusion, the AKD has an outstanding protection profile suitable for male circumcision procedures.

5. Basourakos, S. P., et al. **ShangRing versus Mogen clamp for early infant male circumcision in eastern sub-Saharan Africa: a multicentre, non-inferiority, adaptive, randomised controlled trial**. *Lancet Glob Health.* 2022;10(10):e1514–22.

   Online at: https://www.thelancet.com/journals/langlo/article/PIIS2214-109X(22)00326-6/fulltext.

BACKGROUND: Use of medical devices represents a unique opportunity to facilitate scale-up of early infant male circumcision (EIMC) across sub-Saharan Africa. The ShangRing, a circumcision device prequalified by WHO, is approved for use in adults and adolescents and requires topical anaesthesia only. We aimed to investigate the safety and efficacy of the ShangRing versus the Mogen clamp for EIMC in infants across eastern sub-Saharan Africa.

METHODS: In this multicentre, non-inferiority, open-label, randomised controlled trial, we enrolled healthy male infants (aged <60 days), with a gestational age of at least 37 weeks and a birthweight of at least 2.5 kg, from 11 community and referral centres in Kenya, Tanzania, and Uganda. Infants were randomly assigned (1:1) by a computer-generated text message service to undergo EIMC by either the ShangRing or the Mogen clamp. The primary endpoint was safety, defined as the number and severity of adverse events (AEs), analysed in the intention-to-treat population (all infants who underwent an EIMC procedure) with a non-inferiority margin of 2% for the difference in moderate and severe AEs. This trial is registered with Clinical.

TRIALS: gov, NCT03338699, and is complete.

FINDINGS: Between Sept 17, 2018, and Dec 20, 2019, a total of 1420 infants were assessed for eligibility, of whom 1378 (97.0%) were enrolled. 689 (50.0%) infants were randomly assigned to undergo EIMC by ShangRing and 689 (50.0%) by Mogen clamp. 43 (6.2%) adverse events were observed in the ShangRing group and 61 (8.9%) in the Mogen clamp group (p=0.078). The most common treatment-related AE was intraoperative pain (Neonatal Infant Pain Scale score >/=5), with 19 (2.8%) events in the ShangRing and 23 (3.3%) in the Mogel clamp group. Rates of moderate and severe AEs were similar between both groups (29 [4.2%] in the ShangRing group vs 30 [4.4%] in the Mogen clamp group; difference -0.1%; one-sided 95% CI upper limit of 1.7%; p=0.89). No treatment-related deaths were reported.

INTERPRETATION: Use of the ShangRing device for EIMC showed safety, achieved high caregiver satisfaction, and did not differ from the Mogen clamp in other key measures. The ShangRing could be used by health systems and international organisations to further scale up EIMC across sub-Saharan Africa.

FUNDING: Bill & Melinda Gates Foundation.

Public health policy

1. Asangbeh-Kerman, S. L., et al. **Cervical cancer prevention in countries with the highest HIV prevalence: a review of policies**. *BMC Public Health*. 2022;22(1):1530.

   Online at: https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-022-13827-0.

INTRODUCTION: Cervical cancer (CC) is the leading cause of cancer-related death among women in sub-Saharan Africa. It occurs most frequently in women living with HIV (WLHIV) and is classified as an AIDS-defining illness. Recent World Health Organisation (WHO) recommendations provide guidance for CC prevention policies, with specifications for WLHIV. We systematically reviewed policies for CC prevention and control in sub-Saharan countries with the highest HIV prevalence.

METHODS: We included countries with an HIV prevalence >/= 10% in 2018 and policies published between January 1(st) 2010 and March 31(st) 2022. We searched Medline via PubMed, the international cancer control partnership website and national governmental websites of included countries for relevant policy documents. The online document search was supplemented with expert consultation for each included country. We synthesised aspects defined in policies for HPV vaccination, sex education, condom use, tobacco control, male circumcision, cervical screening, diagnosis and treatment of cervical pre-cancerous lesions and cancer, monitoring mechanisms and cost of services to women while highlighting specificities for WLHIV.

RESULTS: We reviewed 33 policy documents from nine countries. All included countries had policies on CC prevention and control either as a standalone policy (77.8), or as part of a cancer or non-communicable diseases policy (22.2%) or both (66.7%). Aspects of HPV vaccination were reported in 7 (77.8%) of the 9 countries. All countries (100%) planned to develop or review Information, Education and Communication (IEC) materials for CC prevention including condom use and tobacco control. Age at screening commencement and screening intervals for WLHIV varied across countries. The most common recommended screening and treatment methods were visual inspection with acetic acid (VIA) (88.9%), Pap smear (77.8%); cryotherapy (100%) and loop electrosurgical procedure (LEEP) (88.9%) respectively. Global indicators disaggregated by HIV status for monitoring CC programs were rarely reported. CC prevention and care policies included service costs at various stages in three countries (33.3%).

CONCLUSION: Considerable progress has been made in policy development for CC prevention and control in sub Saharan Africa. However, in countries with a high HIV burden, there is need to tailor these policies to respond to the specific needs of WLHIV. Countries may consider updating policies using the recent WHO guidelines for CC prevention, while adapting them to context realities.

2. Peck, M. E., et al. **Defining the global research and programmatic agenda and priority actions for voluntary medical male circumcision for HIV prevention**. *Curr HIV/AIDS Rep.* 2022;19(6):537–47.

   Online at: https://link.springer.com/article/10.1007/s11904-022-00640-y.

   PURPOSE OF REVIEW: Since 2007, voluntary medical male circumcision (VMMC) programs have been associated with substantially reduced HIV incidence across 15

prioritized countries in Eastern and Southern Africa. Drawing on the programmatic experience of global VMMC leaders, this report reviews progress made in the first 15 years of the program, describes programmatic and research gaps, and presents considerations to maximize the impact of VMMC.

RECENT FINDINGS: Overall, key programmatic and research gaps include a lack of robust male circumcision coverage estimates due to limitations to the data and a lack of standardized approaches across programs; challenges enhancing VMMC uptake include difficulties reaching populations at higher risk for HIV infection and men 30 years and older; limitations to program and procedural quality and safety including variations in approaches used by programs; and lastly, sustainability with limited evidence-based practices. Considerations to address these gaps include the need for global guidance on estimating coverage, conducting additional research on specific sub-populations to improve VMMC uptake, implementation of responsive and comprehensive approaches to adverse event surveillance, and diversifying financing streams to progress towards sustainability. This report's findings may help establish a global VMMC research and programmatic agenda to inform policy, research, and capacity-building activities at the national and global levels.

Safety and quality

1. Elias, H. I., et al. **Evaluation of the health information system for monitoring and evaluating the voluntary medical male circumcision program in Mozambique, 2013-2019**. *Pan Afr Med J.* 2022;42:236.

   Online at: https://www.panafrican-med-journal.com/content/article/42/236/full/.

   INTRODUCTION: the prevalence of human immunodeficiency virus (HIV) in Mozambique has increased from 11.5% in 2009 to 13.2% in 2015. The Mozambique Ministry of Health (MOH) developed a 5-year strategy (2013-2017) for male voluntary medical circumcision (VMMC) to increase in the provinces where there is the greatest number of HIV. We aimed to evaluate the health information system for monitoring and evaluating VMMC in Mozambique from 2013-2019.

   METHODS: we reviewed the records of the National Health Information System for Monitoring and Evaluation (SIS-MA) database for VMMC of the MOH. The evaluation was based on the updated guidelines for the evaluation of public health surveillance systems of the Centers for Disease Control and Prevention.

   RESULTS: the coverage rate for VMMC in Mozambique in the period under study was (89%) (1,784,335/2,000,000). The system was expected to circumcise for the year 2019 (162,052) and 390,590 was reached, exceeding the target 241.0% (390,590/162,052). Of the total number of men circumcised, 0.7% (12,391/1,784,335) were HIV-positive (previously tested) and 0.4% (6,382/1,784,335) had a record of adverse events in the

period under review (2013-2019). Zambezia Province had the highest VMMC coverage (in numbers) at 16.0% (396,876/2,476,395) while Maputo City had the least 19.7% (107,104/543,096). The system was able to operate both online and offline and continue functioning with introducing new changes (e.g. the new male circumcision complication reporting).

CONCLUSION: the system was representative, flexible, simple, with good data quality and low acceptability. We recommended continuous and routine entry of quality data into the system, guide organizations for improved functioning.

2. Lucas, T., et al. **Consolidated overview of notifiable adverse events in the U.S. President's Emergency Plan for AIDS Relief's voluntary medical male circumcision program through 2020**. *Curr HIV/AIDS Rep.* 2022;19(6):508–15.

   Online at: https://link.springer.com/article/10.1007/s11904-022-00636-8.

   PURPOSE OF REVIEW: Through December 2020, the U.S. President's Emergency Plan for AIDS Relief (PEPFAR) supported more than 25 million voluntary medical male circumcisions (VMMC) as part of the combined HIV prevention strategy in 15 African countries. PEPFAR monitors defined adverse events (AEs) occurring within 30 days of VMMC through its notifiable adverse event reporting system (NAERS). All NAERS reports through December 2020 were reviewed to quantify AE type, severity, and relation to the VMMC procedure. Interventions to improve client safety based on NAERS findings are described.

   RECENT FINDINGS: Fourteen countries reported 446 clients with notifiable adverse events (NAEs); 394/446 (88%) were determined VMMC-related, representing approximately 18 NAE reports per million circumcisions. Fatalities comprised 56/446 (13%) with 24/56 (43%) of fatalities determined VMMC-related, representing 0.96 VMMC-related fatalities per million circumcisions. The remaining 390 NAEs were non-fatal with 370/390 (95%) VMMC-related. Multiple programmatic changes have been made based on NAERS data to improve client safety. Client safety is paramount in this surgical program designed for individual and population-level benefit. Surveillance of rare but severe complications following circumcision has identified pre-existing or new safety concerns and guided continuous programmatic improvement.

3. Nts'upa, M., et al. **Factors influencing non-compliance with standards for medical male circumcision in Lesotho**. *Nurs Open.* 2023 Mar 20. doi: 10.1002/nop2.1705. Online ahead of print.

   Online at: https://onlinelibrary.wiley.com/doi/10.1002/nop2.1705.

   AIM: Medical male circumcision (MMC) standards are critical in promoting clients' safety and quality care. The aim is to report on factors that influence non-compliance with standards for MMC in the Lesotho context.

DESIGN: A qualitative, explorative, descriptive research design was used.

METHOD: Four focus group interviews were held with 19 purposively selected registered nurses providing routine MMC for one year or more.

RESULTS: Three themes emerged namely: knowledge of quality standards, barriers to compliance, and perceived enabling working environment. Findings highlight barriers such as infrastructure, the high targets that are set for programmes, and societal and cultural issues. Fatigue and burnout were prevalent among MMC providers due to workload. These providers stated carelessness in their work was brought on by overconfidence in their skills, leading to poor compliance with quality standards.

PUBLIC CONTRIBUTION: Implementing public health interventions in a clinical setting requires careful planning to respond to epidemics.

4. Conde, I., et al. **Neonatal and postneonatal tetanus at a referral hospital in Kamsar, Guinea: a retrospective audit of paediatric records (2014-2018)**. *Int Health.* 2022;14(5):468–74.

   Online at: https://academic.oup.com/inthealth/article/14/5/468/6287897?login=false.

   BACKGROUND: Tetanus is a vaccine-preventable disease caused by the bacterium Clostridium tetani. In 2018, all of Guinea was considered to be at risk of the disease and the country is currently in the elimination phase.

   METHODS: A 5-y audit (1 January 2014-31 December 2018) of all admissions to the neonatal and general paediatric units of Kamsar Hospital (Western Guinea) was undertaken to identify cases of neonatal tetanus (NNT) and postneonatal tetanus (PNNT).

   RESULTS: There were 5670 admissions during the study period, of which 39 (0.7%) were due to tetanus (22 NNT and 17 PNNT). Among NNT patients, the bacterial entry site was the umbilical cord (n=20) or wound following circumcision (n=2). For PNNT, the entry site was surface wound (n=12), limb fracture (n=1) or could not be established (n=4). A majority of the patients (36/39, 92.3%) were born to unvaccinated mothers or those who received suboptimal vaccination during pregnancy. Overall, 21 (53.8%) children died within 7 d of admission with a higher mortality observed among neonates (16/22, 72.7%) compared with postneonates (5/17, 29.4%).

   CONCLUSIONS: Tetanus was a rare cause of admission at Kamsar Hospital with a very high case fatality rate. The disease primarily occurred among children born to mothers who were unvaccinated/inadequately vaccinated during pregnancy.

5. Tran, V., et al. **REDCap mobile data collection: Using implementation science to explore the potential and pitfalls of a digital health tool in routine voluntary medical male circumcision outreach settings in Zimbabwe**. *Digit Health.* 2022;8:20552076221112163.

   Online at: https://journals.sagepub.com/doi/10.1177/20552076221112163?url_ver=Z39.88-2003&rfr_id=ori:rid:crossref.org&rfr_dat=cr_pub%20%200pubmed.

   BACKGROUND: Digital data collection tools improve data quality but are limited by connectivity. ZAZIC, a Zimbabwean consortium focused on scaling up male circumcision (MC) services, provides MC in outreach settings where both data quality and connectivity is poor. ZAZIC implemented REDCap Mobile app for data collection among roving ZAZIC MC nurses. To inform continued scale-up or discontinuation, this paper details if, how, and for whom REDCap improved data quality using the Reach, Effectiveness, Adoption, Implementation, and Maintenance (RE-AIM) framework.

   METHODS: Data were collected for this retrospective, cross-sectional study for nine months, from July 2019 to March 2020, before COVID-19 paused MC services. Data completeness was compared between paper- and REDCap-based tools and between two ZAZIC partners using two sample, one-tailed t-tests.

   RESULTS: REDCap reached all roving nurses who reported 26,904 MCs from 1773 submissions. REDCap effectiveness, as measured by data completeness, decreased from 89.2% in paper to 76.6% in REDCap app for Partner 1 ($p < 0.001$, 95% CI: -0.24, -0.12) but increased modestly from 86.2% to 90.3% in REDCap for Partner 2 ($p = 0.05$, 95% CI: -.007, 0.12). Adoption of REDCap was 100%; paper-based reporting concluded in October 2019. Implementation varied by partner and user. Maintenance appeared high.

   CONCLUSION: Although initial transition from paper to REDCap showed mixed effectiveness, post-hoc analysis from service resumption found increased REDCap data completeness across partners, suggesting locally-led momentum for REDCap-based data collection. Staff training, consistent mentoring, and continued technical support appear critical for continued use of digital health tools for quality data collection in rural Zimbabwe and similar low connectivity settings.

Social and behavioural research

1. Zaliznyak, M., et al. **Anatomic maps of erogenous sensation and pleasure in the penis: are there difference between circumcised and uncircumcised men?** *J Sex Med.* 2023;20(3):253–9.

   Online at: https://academic.oup.com/jsm/article-abstract/20/3/253/7000317?redirectedFrom=fulltext&login=false.

BACKGROUND: The effects of male circumcision on sexual function remain controversial. Heterogeneity across previous studies and low-quality scientific evidence have resulted in poor understanding of the effects of circumcision on erogenous sensation of the penis and orgasm function.

AIM: In this study we sought to describe and assess differences in erogenous genital sensation and reported orgasm function in circumcised compared with uncircumcised men.

METHODS: Adult male subjects who were recruited on a paid anonymous online survey platform were shown illustrations of 12 anatomic regions of the penis. Subjects were prompted to designate regions as pleasurable when touched during partnered sex and to rate each on a 1-10 scale, with higher erogeneity scores correlating with greater pleasure. Subjects were also asked to characterize their orgasms across 6 experiential domains.

OUTCOMES: Outcomes were differences between circumcised and uncircumcised men in the probabilities that regions would be designated as pleasurable, average pleasure scores, and self-reported orgasm parameters.

RESULTS: In total, 227 circumcised (mean [SD] age 46.6 [17.7] years) and 175 uncircumcised men (47.8 [18.1] years) completed the survey. There were no significant differences in average ratings across all regions between circumcised and uncircumcised men. However, significantly more circumcised men reported preferences for the tip of the penis (38% vs 17%, P = .02) and the middle third of the ventral penile shaft (63% vs 48%, P = .04). Additionally, there were no significant differences in orgasm quality and function across all queried domains between circumcised and uncircumcised cohorts.

CLINICAL IMPLICATIONS: Our findings suggest that circumcision does not change how men describe erogenous genital sensation or how they experience orgasm.

STRENGTHS AND LIMITATIONS: In this study we expanded upon existing literature regarding comparison of sexual function in circumcised and uncircumcised men in its scale and investigation of diverse domains. Limitations include the survey format of data collection.

CONCLUSION: We found no differences in reported erogenous ratings or orgasm function between circumcised and uncircumcised men. These findings suggest that male circumcision does not negatively impact penile erogeneity or orgasm function.

2. Shezi, M. H., et al. **Knowledge, attitudes and acceptance of voluntary medical male circumcision among males attending high school in Shiselweni region, Eswatini: a cross sectional study**. *BMC Public Health.* 2023;23(1):349.

   Online at: https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-023-15228-3.

   BACKGROUND: In countries such as Eswatini, where there is a high HIV prevalence and low male circumcision the World Health Organization and the Joint United Nations Programme for HIV/AIDS recommend infant and adult circumcision be implemented. The aim of this study was to assess the knowledge, attitudes and acceptability of voluntary medical male circumcision amongst males attending high school in Eswatini.

   METHODS: An observational cross-sectional study was conducted during February and March of 2018 amongst 407 young males (15-21 years) attending Form 4, in nine high schools in the Shiselweni region of Eswatini using a self-administered questionnaire of 42 close ended questions. Sociodemographic details, circumcision status, acceptance of voluntary medical male circumcision, knowledge and attitude scores analysed in Stata(R) 14 statistical software were described using frequencies, medians and ranges respectively. Bivariate and multivariate linear regression was used to assess the impact of independent variables on circumcision status and acceptance of voluntary medical male circumcision. The level of statistical significance was $p < 0.05$.

   RESULTS: Amongst the 407 high school-going males, 48.98% (n = 201) reported being circumcised. The majority of the adolescents (75.74%; n = 306) were knowledgeable about voluntary medical male circumcision. However, an even larger majority (84.90% (n = 343) had a negative attitude towards it. In the multivariate logistic regression analysis, having parented their own children (aOR: 3.55; 95%CI: 1.2-10.48), and having circumcised friends (aOR: 3.99; 95%CI: 1.81-8.84) were significantly associated with being circumcised. Neither knowledge nor attitude were associated with the acceptability of voluntary medical male circumcision.

   CONCLUSION: In Eswatini male high school students are knowledgeable about voluntary medical male circumcision but have a negative attitude towards it. Having parented their own children, and having circumcised friends influenced being circumcised.

3. Gao, Y., et al. **Risk compensation in voluntary medical male circumcision programs (abstract)**. *Curr HIV/AIDS Rep.* 2022;19(6):516–21.

   Online at: https://www.ncbi.nlm.nih.gov/pubmed/36350470.

   PURPOSE OF REVIEW: Evidence from clinical trials identified the effectiveness of voluntary medical male circumcision (VMMC) as an additional strategy to reduce the risk of HIV transmission from women to men. However, concerns about post-circumcision sexual risk compensation may hinder the scale-up of VMMC programs. We reviewed the

evidence of changes in risky sexual behaviors after circumcision, including condomless sex, multiple sex partners, and early resumption of sex after surgery.

RECENT FINDINGS: Most clinical trial data indicate that condomless sex and multiple partners did not increase for men after circumcision, and early resumption of sex is rare. Only one post-trial surveillance reports that some circumcised men had more sex partners after surgery, but this did not offset the effect of VMMC. Conversely, qualitative studies report that a small number of circumcised men had increased risky sexual behaviors, and community-based research reports that more men resumed sex early after surgery. With the large-scale promotion and expansion of VMMC services, it may be challenging to maintain effective sexual health educations due to various restrictions. Misunderstandings of the effect of VMMC in preventing HIV infection are the main reason for increasing risky sexual behaviors after surgery. Systematic and practical sexual health counseling services should be in place on an ongoing basis to maximize the effect of VMMC.

4. Adams, A. K., et al. **Towards a context-specific understanding of masculinities in Eswatini within voluntary medical male circumcision programming (abstract)**. *Cult Health Sex.* 2022;24(9):1168–80.

   Online at: https://www.tandfonline.com/doi/abs/10.1080/13691058.2021.1933185?journalCode=tchs20.

   Compelling evidence from three randomised controlled trials, which showed that voluntary medical male circumcision (VMMC) reduces HIV acquisition from women to men by up to 60%, led to WHO recommending that VMMC be implemented in 14 priority countries. As one of the priority countries, Eswatini aimed to reach 80% VMMC coverage among boys and men aged 10-49 years since programme inception in 2009. By the end of 2019, however, the country had reached a modest 40%. VMMC is intrinsically tied to perceptions of masculinity and male gender identity. Comprehending the role of context-specific masculinity as it relates to VMMC may contribute to our understanding of community attitudes towards VMMC and men's decision-making. Drawing on focus group discussion data, this study aimed to explore the linkage between sexuality, masculinity and health interventions within Eswatini. Using critical discourse analysis, the study identified two discourses: sexuality, masculinity and circumcision, and income, masculinity, and circumcision. In the first discourse, participants constructed discursive linkages between circumcision as an adult and loss of penile sensitivity, decreased libido and sexual performance, and adverse events. The second discourse, income, masculinity, and circumcision located circumcision within the social and material realities faced by Swazi men, gender norms and provision within family structures.

5. Jere, J., et al. **Exploring preferences of market traders on the type and delivery methods of HIV services in Lilongwe, Malawi (abstract)**. *Afr J AIDS Res.* 2022;21(4):373–84.

   Online at: https://www.ncbi.nlm.nih.gov/pubmed/36538541.

   BACKGROUND: Reaching all people with HIV services, including traders in the informal economy, is critical to meeting UNAIDS' 95-95-95 goals. However, traders prioritise their business over attendance at health facilities. This limits their access to health services. This study explores market traders' preferences for the potential type and delivery methods of HIV services at Lilongwe Central market.

   METHOD: The study used an exploratory qualitative study design in Lilongwe, Malawi. Sixteen in-depth interviews were conducted among traders at Lilongwe Central Market between June and September 2022. In the same period, we also conducted four key informant interviews involving three officers responsible for HIV services at the district and council levels, and the market chairman.

   RESULTS: HIV services preferred by market traders include HIV testing, antiretroviral therapy, condom dispensation, voluntary medical male circumcision and HIV awareness campaigns. These services should be offered daily or when the market is less crowded, and they could be delivered in the market. These services can be provided by both lay and health workers, depending on traders' preferences, and must be integrated with other health services to mitigate unintended HIV status disclosure concerns.

   CONCLUSION: The achievement of UNAIDS' 95-95-95 goals by 2030 requires that HIV services should be available to all those who require them at times and locations that are convenient for them, through providers they have chosen either as integrated or standalone, depending on the target group perception of the role of these two models in mitigating stigma. This will necessitate the development of new approaches targeting underserved groups, such as traders in markets.

Traditional male circumcision

1. Ndou-Mammbona, A. A. **Exploring initiation schools' impact on HIV and AIDS management in the Vhembe district of South Africa: an ethnography**. *Health SA*. 2023;28:2105.

   Online at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9982478/.

   BACKGROUND: This article presents the positive and negative impact traditional initiation schools have on the management of HIV and AIDS in the Vhembe district in South Africa.

   AIM: To explore the impact of initiation schools regarding the management of HIV and AIDS.

SETTING: This ethnographic study was conducted in rural villages in the Vhembe district.

METHODS: Nine purposively sampled key informants from the Vhavenda traditional healers and leaders participated in the study. Data were collected using semi-structured face-to-face interviews guided by an interview and observation guide. Data were analysed using ethnographic content analysis.

RESULTS: The results indicated that the Vhavenda have different traditional initiation schools for boys and girls. For boys, there is Mula [traditional male circumcision], while Musevhetho [first stage of girls' traditional initiation before puberty], Vhusha [girls' second stage of traditional initiation] and Domba [final stage of girls' traditional initiation] are for girls. Some of the information provided perpetuates engagement in multiple concurrent relationships predisposing them to contract HIV. Boys are encouraged to be strong and to control women when it comes to sexual activities to suit their desire, whether the woman consented or not, while girls are taught to be submissive to their husbands which can fuel the spread of HIV.

CONCLUSION: As the initiates are attentive to whatever is said during those initiation schools, there is an opportunity for using these initiation schools for proper prevention of HIV and instilling positive behaviours by using Leininger's cultural care modalities which focus on preservation of beneficial practices and repatterning of practices which fuel the spread of HIV.

CONTRIBUTION: The study findings will aid in the review and update of the manuals and procedures for HIV and AIDS management.