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Morris, BJ; Hankins, CA; (2017) Effect of male circumcision on risk of sexually transmitted infections and cervical cancer in women. *The Lancet Global health*, 5 (11). e1054-e1055. ISSN 2214-109X DOI: [https://doi.org/10.1016/S2214-109X\(17\)30386-8](https://doi.org/10.1016/S2214-109X(17)30386-8)

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## Effect of male circumcision on risk of sexually transmitted infections and cervical cancer in women



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Current scientific evidence demonstrates compellingly that male circumcision confers a lifetime of medical and health benefits to men.<sup>1</sup> Are there also any benefits for women who have a male sexual partner who is circumcised?

In *The Lancet Global Health*, researchers from the US Centers for Disease Control and Prevention and Johns Hopkins University report results of a systematic review<sup>2</sup> that directly addresses the question of whether male circumcision reduces acquisition of sexually transmitted infections (STIs) and cervical cancer in women. Clearly, reduced population prevalence of STIs in men will translate into lower risk of STI exposure in women. But will circumcised men with STIs be less infective?

Jonathan Grund and colleagues' extensive search of nine literature databases generated 112 eligible publications, of which 60 reported quantitative biomedical health outcomes and 57 were included. Of these, most studies were observational and nine were randomised controlled trials (RCTs). Women were from populations in Africa, North America, South America, Asia, and Europe. Their ages spanned from either 15 or 18 years through to either 49 or 65 years.

Strong, consistent evidence was found for protection against cervical cancer (eight of nine studies involving women in multiple non-African settings), cervical dysplasia (four of five studies involving women in Africa and other continents), herpes simplex virus type 2 infection (six of six studies, including one RCT, involving women in Africa, Asia, and the USA), chlamydia (four of five studies, involving women in five continents), and syphilis (six of six studies, involving women in Africa and Asia).

Persistent human papillomavirus (HPV) infection is the cause of almost all cervical cancers. Women with circumcised partners were protected against any HPV (five of five studies including three RCTs, involving women from multiple settings in Africa and Europe) and low-risk HPV types (three of three studies, two being RCTs, involving women in Africa and Europe). These HPV findings stemmed from medium-consistency evidence.

For six outcomes—protection against any STI, candidiasis, dysuria, genital warts, gonorrhoea, high-risk

HPV viral load, and *Mycoplasma genitalium*—evidence was regarded as intermediate consistency because there were fewer than the minimum of three studies required for medium consistency. Seven other outcomes—bacterial vaginosis, gonorrhoea, HIV infection, high-risk HPV infection, non-specific genital ulcers, trichomonas, and vaginal discharge—had discrepant values, which rendered the evidence as low-consistency.

Over her lifetime, a woman might have sexual partners of either male circumcision status, potentially confounding associations between male partner's circumcision status and a woman's HPV risk. A noteworthy global multinational study of HPV and cervical cancer obtained data for women who had had only one male partner.<sup>3</sup> Sampling of urethra and glans or coronal sulcus revealed HPV infection in 5.5% of circumcised versus 19.6% of uncircumcised men.<sup>3</sup> Among women who had a high-risk sexual partner (defined as one who had had  $\geq 6$  sexual partners and first intercourse before the age of 17 years), cervical cancer was 82% less prevalent if that partner was circumcised than if he was uncircumcised. Reduction of cervical cancer risk from circumcision was 50% for women whose male partner had an intermediate risk index. Analysis of this multinational dataset<sup>4</sup> demonstrated that male circumcision conferred a 79% reduction in the risk of *Chlamydia trachomatis* infection for single-partnered women whose lifetime partner tested positive for this STI. The authors speculated that infected cervicovaginal secretions might be retained under the foreskin of an uncircumcised penis for longer, so increasing risk of urethral infection and transmission to a subsequent female partner.<sup>4</sup>

A study<sup>5</sup> of women in Kenya and Uganda enrolled in an RCT and followed up for 3 years found circumcision of their male partners was associated with a 59% reduction in incident syphilis among the women. A prospective study<sup>6</sup> in Kenya by the same authors found that those with circumcised male partners had a 58% lower risk of incident *Trachomatis vaginalis* than did women with uncircumcised partners.<sup>6</sup>

The systematic review<sup>2</sup> emphasises that male circumcision confers an STI risk reduction to women. Prophylactic vaccines against HIV and most other

STIs have remained elusive. HPV vaccination against a subset of HPV types in early adolescence can help to partly mitigate cervical cancer risk, but uptake is not widespread in all settings. The emerging switch from Papanicolaou smears to primary screening for HPV<sup>7</sup> in high-income countries will improve risk detection, but is not practicable in resource-constrained settings. Thus, although the diagnosis and treatment of STIs continue to improve in effectiveness, prevention has to remain a priority for many reasons, not the least of which is cost.

The benefits of male circumcision for men are well established, with the science driving affirmative policy recommendations by WHO, UNAIDS, the World Bank, the American Academy of Pediatrics, and the US Centers for Disease Control and Prevention. The findings of this systematic review support affirmative policy recommendations for women. Women can have considerable power in regard to male circumcision. They can and do influence the choice of male circumcision for their sons ideally soon after birth,<sup>8</sup> and later, as well as for their brothers and other male family members. Women can choose a circumcised sexual partner or encourage an uncircumcised partner to get circumcised. Most studies, including an RCT,<sup>9</sup> have noted that women generally favour male circumcision for aesthetic reasons, sexual pleasure, vaginal penetration, hygiene, and reduced infection risk.

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BJM holds US Patents 5,783,412 and 6,218,104, European Patent 88902077.2-2107 (British, 0357611; German, P 3853678.1; Swiss, 3853678.1; Swedish, 0357611), Japanese patent 3096704 and Australian Patent 611135, with Priority date 26 Feb 1987, for use of PCR technology for HPV detection in cervical screening; he is a member of the Circumcision Academy of Australia, a not-for-profit, government-registered, medical association that provides evidence-based information on male circumcision and a list of doctors who perform male circumcision in Australia and New Zealand on its website. CAH declares no competing interests.

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