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Circumcision could avert three million AIDS deaths over next 20 years in Africa

Keith Alcorn, Wednesday, July 12, 2006

The widespread adoption of male circumcision throughout Africa could avert up to 5.7 million HIV infections by 2026, according to a scientific modelling study published this week in *Public Library of Science Medicine*.

If male circumcision reduces the risk of male acquisition of HIV by 60%, as a South African study suggested last year, and does not encourage men to believe that they can have multiple sexual partners without taking precautions, African countries could begin to see marked reductions in HIV incidence within a few years of promoting adult male circumcision for all, the study suggests.

Circumcision is believed to reduce the risk of male infection because it removes the vulnerable tissue inside the foreskin, which contains Langerhans cells (a type of cell particularly vulnerable to HIV infection). The area under the foreskin is also vulnerable to trauma, and is more likely to become abraded if vaginal lubrication is not present. Also, uncircumcised men may be more vulnerable to sexually transmitted infections, because the area under the foreskin can retain bacteria acquired during sex, thus increasing the chance that an infection will become established.

Results

The study used data from UNAIDS on country HIV prevalence and from a 2004 survey of male circumcision in Africa, and made the following assumptions based on evidence from African research:

- Each case of HIV infection will generate approximately six further cases, assuming an average age of 27 at infection and a life expectancy of approximately ten years.
- 52% of those infected are women
- Men are twice as likely to pass on HIV to women as women are to men

Male circumcision could avert two million new infections and 0.3 million deaths over the next ten years. It could avert a further 3.7 million infections and 2.7 million deaths by 2026.

One quarter of all infections and deaths averted would be in South Africa, the country with one of the lowest circumcision rates in Africa among the black African population.

Because circumcision reduces male vulnerability to HIV infection, the proportion of HIV-positive people who are women in sub-Saharan Africa would continue to grow, reaching 58% by 2026.

Among circumcised men in South Africa, HIV prevalence would be one-fifth lower than in uncircumcised men.

Cautions

The authors of the study, who include epidemiologists from the World Health Organization, UNAIDS, the University of California, South Africa and France, warn that better data will be needed before these figures can be used to make public health policy decisions.

In particular better information is needed on HIV prevalence. UNAIDS prevalence estimates have a margin of error of up to 30%.

Information on the prevalence of circumcision, the age at circumcision and the safety of current circumcision practices will also be needed.

Most importantly however, the researchers say information is needed from two large clinical trials currently running in Kenya and Uganda and due to report next year.

Information is also needed on the durability of the effect (the South African study lasted 21 months and the average age of the men who underwent circumcision was around 20 years). If circumcision causes men to be less cautious about their sexual behaviour, any protective benefit may be diluted over time.

Policy moves

The World Health Organization, UNICEF and UNAIDS are already working with experts and countries that have expressed interest in the possibility of promoting circumcision on what will need to be done to turn it into a viable and effective HIV prevention activity.

Swaziland, Lesotho, Botswana, Tanzania, and Zambia all want to look more closely at the implications of this study and others on their countries, and at the recent PEPFAR Implementers meeting in Durban, South Africa, Mark Stirling of UNAIDS said that the UN agencies were already developing programming and technical guidance in anticipation of further positive results.

However, he warned: "If male circumcision is reduced to a donor-driven tool, there will be huge resistance without a consensus among country stakeholders that this is the way to go."

According to Bertrand Auvert, the researcher who carried out last year's South African study (see above), acceptability studies conducted in Kenya, South Africa and Uganda show that between 50% and 75% of uncircumcised men would opt to have themselves and their sons circumcised if it was proven to reduce the risk of HIV transmission.

Circumcision prevalence varies in Africa from 80-95% in the Muslim-influenced countries of West Africa, to 85% in Kenya, 25% in Uganda and Botswana and 10-15% in Zambia, Lesotho, Rwanda and Zimbabwe, according to data gathered between 1967 and 2004 in three separate surveys. Less is known about variations within countries according to ethnic groups.

Reference

Williams BG et al. *The potential impact of male circumcision on HIV in sub-Saharan Africa*. PLoS Medicine 3 (7): e262, 2006.

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