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Understanding the partial protection of male circumcision for HIV prevention among women in Iringa Region, Tanzania: An ethnomedical model

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Communicating the partial efficacy of male circumcision for HIV prevention is challenging. Understanding how people conceptualize risk can help programs communicate messages in a way that is understandable to local communities. This article explores women’s ethnomedical model of disease transmission related to male circumcision in Iringa Region, Tanzania. We conducted in-depth interviews (IDIs) with 32 female partners of male circumcision clients and focus group discussions (FGDs) with married (n = 30) and unmarried (n = 3) women from November 2011 to February 2012. Interviews were digitally recorded, transcribed, and translated into English, and codes were developed based on emerging themes. While women understand that circumcised men are still at risk of HIV, risk is perceived to be low as long as both partners avoid abrasions during sexual intercourse and the man’s penis is kept clean. Women said that HIV transmission only occurs when both partners have abrasions on their genitalia and mixing of blood occurs. Abrasions are thought to be the result of friction from fast or dry sex and are more likely to occur with uncircumcised men; thus, HIV can be prevented if a man is circumcised and couples have gentle, lubricated sex. In addition, women reported that the foreskin traps particles of sexually transmitted infections (STIs) including HIV, which can easily be passed on to female partners. In contrast, circumcised men are viewed as being able to clean themselves of disease particles and, therefore, do not easily acquire diseases or transmit them to female partners. These findings align with the scientific understanding of increased HIV risk associated with abrasions or microflora in the foreskin; however, the ethnomedical model differs from scientific understanding in that disease transmission can in fact occur without either of these conditions. Programs can build upon these findings to better convey risks along with the benefits of male circumcision.

Keywords: Tanzania; male circumcision; ethnomedical; qualitative; risk compensation

Introduction

The partial efficacy of male circumcision to reduce female-to-male HIV transmission has been well documented in three randomized controlled trials (RCTs) and multiple observational studies (Auvert et al., 2005; Bailey, Plummer, & Moses, 2001; Bailey et al., 2007; Gray et al., 2007). In addition to the reduced risk of HIV for men, male circumcision has been shown to be partially protective against several sexually transmitted infections (STIs), including genital ulcer disease (GUD), herpes simplex virus-2 (HSV-2), trichomonas vaginalis and human papillomavirus (HPV) in men, and HPV, bacterial vaginosis, trichomonas vaginalis, and GUD in women (Gray et al., 2009; Larke, 2010). There is no evidence for a reduction of syphilis or chlamydia in men or women, and there is little evidence for any reduced risk of HIV in women with circumcised HIV-positive partners (Larke, 2010; Weiss, Hankins, & Dickson, 2009). The World Health Organization (WHO) recommends male circumcision as a component of HIV prevention programs, and several countries with high HIV prevalence and low levels of male circumcision have begun scaling up programs, including Tanzania (WHO/UNAIDS, 2007; World Health Organization, 2011).

Communicating the partial protection of male circumcision is not easy (Eaton & Kalichman, 2009). WHO recommends that messages should provide careful and balanced information that highlights the reduced risk of HIV while simultaneously emphasizing that HIV transmission is still possible, that women do not receive direct protection against HIV, and that other HIV prevention measures should be used (WHO/UNAIDS, 2007). Although there is consensus that both men and women should understand that male circumcision is only partially protective, there are few guidelines on how this can be achieved (Lombardo, 2011).

Several studies have reported that in areas where male circumcision programs are being rolled out, most people understand that circumcision is not...
100% protective (Andersson & Cockcroft, 2011; Friedland et al., 2011; Lissouba et al., 2011). However, to the best of our knowledge, no studies have probed deeper into the social and cultural context in which conceptualization of these processes occurs. Understanding how people make sense of the mechanism by which male circumcision reduces the risk of HIV and some STIs can help programs communicate messages in a way that is understandable to local communities and minimizes risk taking that might stem from misperceptions about the partial protection of male circumcision. In this article, we present an ethnomedical model of disease transmission as it relates to male circumcision in Iringa Region, Tanzania.

Methods

Study site

This study was conducted in the Iringa Region of Tanzania, which is located approximately 500 km southwest of the commercial capital, Dar es Salaam. HIV prevalence among adults in Iringa Region is 16%, more than 2.5 times the national average of 5.7% (Tanzania Commission for AIDS, 2008). Male circumcision rates are among the lowest in the country at 30%, compared with 67% nationally (Tanzania Commission for AIDS, 2008). Iringa Region is currently experiencing rapid scale-up of male circumcision services. As of December, 2011, more than 68,000 men have been circumcised (Hellar et al., 2011), and the Tanzanian government has announced plans to circumcise 2.8 million men countrywide by 2015, including 264,990 in the Iringa Region (National AIDS Control Programme, 2010).

Participant recruitment

We conducted in-depth interviews (IDIs) with both HIV-negative and HIV-positive women whose husbands were circumcised during the previous year. To triangulate findings across methods, we also conducted focus group discussions (FGDs) with married and unmarried women (Fielding & Fielding, 1986). Participants were purposively sampled from women’s groups, HIV support groups, and health centers in urban and rural areas of Iringa Region (Sandelowski, 1995). Snowball sampling was also used to identify eligible interview participants. Study participants and leaders of relevant organizations were given business cards to share with women who might be eligible to participate.

Data collection and analysis

We conducted IDIs with 18 HIV-negative women and 14 HIV-positive women whose husbands had been circumcised in the previous year. Follow-up interviews were conducted with women whenever possible; we conducted two interviews with 15 women and three interviews with three women, for a total of 53 IDIs. IDIs lasted between 20 and 90 minutes. Six FGDs with 53 participants were conducted with married women with uncircumcised partners (n = 3) and unmarried women (n = 3). FGDs consisted of between seven and 12 participants and lasted from 65 to 90 minutes. Participants were compensated for their time with 3000 Tanzanian Shillings (~US$2) at the end of each IDI or FGD.

IDIs and FGDs were conducted by four university-educated Tanzanian women who were trained in an intensive two-week course on qualitative research theory and methods, interviewing techniques, and human subjects research ethics. This research was approved by the Johns Hopkins Bloomberg School of Public Health Institutional Review Board and the Tanzania National Institute for Medical Research. Oral informed consent was obtained from all participants prior to enrollment.

All IDIs and FGDs were conducted in Kiswahili and digitally recorded. Data collectors took extensive notes during the conversations and wrote memos on the same day identifying main points from the session. All data were fully transcribed in Kiswahili and translated into English within one week. The lead author read all transcripts as soon as they were available to provide feedback to the data collectors so that emerging themes could be explored in more depth. Memos were also written by the lead author to capture meaning from each interview and to summarize main themes from the data (Charmaz, 2006). The study team decided that data saturation was reached since no new information was being revealed (Guest, Bunce, & Johnson, 2006). A codebook was developed by the study team based on emerging themes from the data, and all transcripts were then coded using Atlas.ti version 6.2. These findings are part of a larger qualitative study assessing women’s attitudes toward and experiences with male circumcision in the region. In this article, we focus on the ethnomedical model that emerged during data analysis.

Results

Almost all women understood that male circumcision was “the removal of the male foreskin,” and many noted that circumcised men could still transmit and acquire HIV. One woman explained:
Yes, even a circumcised man can be infected with HIV if he has sex with different partners and without using condoms. To be safe, he should stick to his wife. And if his wife is infected, like me, they should use condoms. (married woman, HIV-positive, IDI)

However, when asked to explain more about how male circumcision reduces the risk of HIV, two main themes emerged among all women who served as explanations for why male circumcision reduces disease transmission: (1) dirtiness and particles trapped in the foreskin and (2) abrasions in the genitals of both sexual partners.

### Uchafu

Discussions during IDIs and FGDs revealed that women almost universally believed that disease transmission, especially transmission of STIs, occurs through the exchange of uchafu (dirtiness, impurities, STIs, and HIV) from one sexual partner to the other. One participant said that “during sex, the foreskin in the penis can trap disease easily,” making it easier for uncircumcised men to both acquire and transmit diseases. One woman explained:

When an uncircumcised man has sex with a woman, the uchafu remains in his foreskin; that uchafu is the disease. So if he has sex with another woman, that woman is likely to get the diseases which remained on the foreskin of the male penis. (married woman, HIV-positive, IDI)

Participants noted that uncircumcised men are “dirty” because they can never fully clean themselves when they have a foreskin:

For an uncircumcised man the foreskin keeps and stores uchafu. No matter how much he washes himself, some of the uchafu will hide inside the foreskin. (married woman, HIV-negative, IDI)

Circumcised men, in contrast, are perceived to be able to clean their penises easily because the foreskin is no longer present to trap diseases. As described by one participant:

Circumcised men don’t carry uchafu. Where will they store it after the foreskin is removed? When you have sex with a circumcised man, he will just pull out his penis and it will be clean after sex. Obviously, an uncircumcised man will carry uchafu because he still has the foreskin which carries uchafu and stores it as well. (married woman, HIV-positive, IDI)

Participants discussed how circumcised men whose penises are clean are not at risk of STIs because they do not store diseases. One woman explained: “Even if a circumcised man has sex with a woman with gonorrhea, if he cleans his penis early after having sex, he cannot get the disease”. Another woman described how women are safe from diseases as long as their sexual partners are circumcised: “How can a woman get diseases while her man is circumcised and his genital parts are clean?” Almost all women mentioned that male circumcision prevents against syphilis and gonorrhea; many believed that all STIs would be prevented from male circumcision.

### Michubuko

The second part of the ethnomedical model for disease transmission vis-à-vis male circumcision relates to the mixing of blood through michubuko during sexual intercourse. Michubuko are a type of wound sustained from excessive friction or rubbing, for example, rubbing your knuckles raw while washing clothes by hand, and can also be translated as abrasions, wounds, or bruises. Michubuko were viewed as a necessary facilitator of HIV transmission. Discussing HIV transmission during sexual intercourse, one woman explained: “The [HIV] virus can be transferred from one person to another during the exchange of blood”. This understanding was confirmed by almost every participant. In addition, women explained that you can only come in contact with blood during sexual intercourse if both partners have michubuko in their genitalia. One woman said:

If an HIV-positive woman has michubuko in her vagina, and she has sex with a man who has michubuko on his penis, then that man will get HIV because of the interaction of blood from the woman to the man. (married woman, HIV-negative, IDI)

Furthermore, one woman described: “If you don’t have michubuko, you will not get HIV infections”. Participants noted that michubuko occur when there is “friction” during sexual intercourse. Women explained that friction is most likely to occur when couples engage in dry and “rough” sex, when there is limited or no foreplay, if the man has STIs, or when the male partner is uncircumcised. One woman described how michubuko are likely to occur during sex outside of marriage:

Usually michubuko happen to those who steal someone’s wife or someone’s husband. You can find the sexual act not being free because they are like thieves. They don’t have proper preparation since they need to hurry in order to leave quickly without being caught. That fluid, which usually acts like a lubricant, is not released before sex. If there is no foreplay and no fluid, there will be michubuko. (married woman, FGD)
Another woman described how lack of foreplay increases the risk of HIV:

If a woman and man have spent a lot of time in foreplay before sex, certain fluids come out which prevent michubuko because it becomes slippery. But if you’re in a hurry and have sex before the fluid comes out…the man will be pumping with force which brings about michubuko. And when you get michubuko, you must get diseases. (married woman, HIV-negative, IDI)

Women explained that uncircumcised men are more likely to cause michubuko due to the foreskin. One woman said: “Michubuko happen when a man has sexual intercourse without pulling back the foreskin which scratches the woman’s vagina”.

Male circumcision is thought to reduce friction and abrasions during sexual intercourse, which can eliminate the transmission of HIV. Women also mentioned that circumcised men are very unlikely to have or to cause michubuko. One woman said:

For example, I am HIV-positive. If an uncircumcised man asks me out and we have sex, and if I refuse to use a condom, I will surely transmit the disease to him. But if he is circumcised he will not get HIV, I think he cannot get HIV because he is circumcised and circumcised men do not get michubuko. (married woman, HIV-positive, IDI)

Conceptual framework

Figure 1 shows a schematic representation of the ethnomedical model discussed above. The diagram illustrates how male circumcision can lead to no risk of HIV or other STIs; however, HIV and other STIs can still be transmitted if each criterion is not fulfilled. For example, if a man is circumcised but does not have a clean penis, he can still acquire and transmit HIV (though having a clean penis is much more likely if he is circumcised). If a man is circumcised but still encounters friction during sexual intercourse, there is still a risk of HIV. Although this is a simplified model and does not explain all perceived risk of HIV, this diagram can be helpful in understanding general perceptions of the role male circumcision is thought to play in reducing risk of HIV and other STIs in Iringa Region, Tanzania.

Discussion

The ethnomedical model by which the women who participated in this study understand male circumcision as an HIV prevention strategy provides a rational explanation of how male circumcision mediates disease transmission. Participants were aware that circumcised men were still at risk of HIV, but as long as their penises were clean and there were no michubuko, they felt men would not acquire HIV or transmit it to their sexual partners. This model draws attention to the challenges of communicating partial protection of male circumcision to prevent female-to-male HIV transmission.

The explanations of how the lack of uchafu and michubuko eliminate HIV and STI transmission align with scientific understandings. The conceptualization of HIV and STIs as particles which become trapped between the foreskin and penis provide a rational explanation for why circumcised men, who do not have a foreskin in which particles can be trapped, are less likely to acquire or transmit diseases. In addition, participants discussed how they heard messages that sexual HIV transmission occurs through blood contact and conceptualized that they could only come into contact with blood if both partners have bleeding (from michubuko) in their genitals.

Studies have reported that penile abrasions (Fleming & Wasserheit, 1999) and unhygienic penile conditions (O’Farrell et al., 2006) may increase the risk of HIV transmission. Further studies have shown that circumcised men report fewer penile abrasions (Mehta et al., 2010), and changes in the microenvironment in circumcised men may possibly account for some reduction of HIV transmission (Price et al., 2010). However, while there may be increased risk of HIV and certain STIs, neither of these conditions is necessary for HIV transmission or acquisition, and the protection afforded by lack of uchafu and michubuko seems to be greatly overestimated by women in our study. In fact, although there are
several scientific reasons while male circumcision for HIV risk reduction is biologically plausible, the exact mechanism by which male circumcision reduces the risk of HIV is not known, which further complicates messages about why male circumcision partially protects men against heterosexually acquired HIV (Dinh, Fahrbach, & Hope, 2011).

The male circumcision program in Iringa Region uses mass media such as billboard and radio advertisements to promote the benefits of male circumcision. Messages emphasize that male circumcision reduces the risk of HIV by 60% and encourage men to be circumcised to protect themselves and their partners from diseases. Our findings suggest that while these messages are reaching women, they are being interpreted through the ethnomedical model presented above, which may lead women to feel more protected than they actually are. If women and men believe that steps can be taken to eliminate the risk of HIV and all STIs by ensuring that the penis is clean and michubuko are not present, they may feel comfortable engaging in more risky sexual behaviors, which could potentially offset the protective effect of male circumcision (Cassell, Halperin, Shelton, & Stanton, 2006; Dushoff, Patocs, & Shi, 2011; Eaton & Kalichman, 2007).

Using concepts from the ethnomedical model presented above in communication campaigns could be useful for programs to more effectively articulate the partial efficacy of male circumcision in a way that fits within the existing sociocultural framework. Messages that promote male circumcision but emphasize that HIV transmission to men is still possible regardless of whether uchafu or michubuko are present, that women are not directly protected against HIV if a man is circumcised, and that the risk of some – but not all – STIs is reduced in circumcised men, could be helpful to correct any misperceptions that may lead to increased risk-taking behaviors.

A limitation of this study is that participants included only women. It is not clear if men would have a different understanding of the partial protection of male circumcision. However, our findings were almost homogenous across the entire study population, and the perception that michubuko are necessary for sexual HIV transmission was spontaneously mentioned by a male STI doctor and a female sex worker in Iringa participating in another study being conducted by two of the authors. In addition, all four local, university-educated data collectors also took it for granted that michubuko were necessary for HIV transmission, suggesting that these are widely held perceptions within the community.

Conclusions
Findings suggest that women in this study believe that male circumcision reduces the risk of michubuko and allows men to clean themselves easily, which can eliminate the risk of HIV and STI transmission or acquisition. This understanding might result in unsafe sex with circumcised men because women perceive that steps can be taken to eliminate the risk of HIV through sexual intercourse. Considering the local context in which disease transmission is understood can help programs tailor messages in order to more effectively communicate complex messages about the partial protection of male circumcision.

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